THE ROLE OF TEACHERS IN STUDENTS' SOCIAL INCLUSION IN THE CLASSROOM

EDITED BY: Luciano Gasser, Antonius H. N. Cillessen, Christian Huber, Tim Mainhard, Christoph Michael Müller and Carmen L. A. Zurbriggen

PUBLISHED IN: Frontiers in Education and Frontiers in Psychology

frontiers Research Topics

frontiers

ISSN 1664-8714
ISBN 978-2-88974-698-9
DOI 10.3389/978-2-88974-698-9

About Frontiers

Frontiers is more than just an open-access publisher of scholarly articles: it is a pioneering approach to the world of academia, radically improving the way scholarly research is managed. The grand vision of Frontiers is a world where all people have an equal opportunity to seek, share and generate knowledge. Frontiers provides immediate and permanent online open access to all its publications, but this alone is not enough to realize our grand goals.

Frontiers Journal Series

The Frontiers Journal Series is a multi-tier and interdisciplinary set of open-access, online journals, promising a paradigm shift from the current review, selection and dissemination processes in academic publishing. All Frontiers journals are driven by researchers for researchers; therefore, they constitute a service to the scholarly community. At the same time, the Frontiers Journal Series operates on a revolutionary invention, the tiered publishing system, initially addressing specific communities of scholars, and gradually climbing up to broader public understanding, thus serving the interests of the lay society, too.

Dedication to Quality

Each Frontiers article is a landmark of the highest quality, thanks to genuinely collaborative interactions between authors and review editors, who include some of the world's best academicians. Research must be certified by peers before entering a stream of knowledge that may eventually reach the public - and shape society; therefore, Frontiers only applies the most rigorous and unbiased reviews.
Frontiers revolutionizes research publishing by freely delivering the most outstanding research, evaluated with no bias from both the academic and social point of view. By applying the most advanced information technologies, Frontiers is catapulting scholarly publishing into a new generation.

What are Frontiers Research Topics?

Frontiers Research Topics are very popular trademarks of the Frontiers Journals Series: they are collections of at least ten articles, all centered on a particular subject. With their unique mix of varied contributions from Original Research to Review Articles, Frontiers Research Topics unify the most influential researchers, the latest key findings and historical advances in a hot research area! Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers Editorial Office: frontiersin.org/about/contact

THE ROLE OF TEACHERS IN STUDENTS' SOCIAL INCLUSION IN THE CLASSROOM

Topic Editors:
Luciano Gasser, University of Teacher Education Bern, Switzerland
Antonius H. N. Cillessen, Radboud University Nijmegen, Netherlands
Christian Huber, University of Wuppertal, Germany
Tim Mainhard, Utrecht University, Netherlands
Christoph Michael Müller, Université de Fribourg, Switzerland
Carmen L. A. Zurbriggen, University of Luxembourg, Luxembourg

Citation: Gasser, L., Cillessen, A. H. N., Huber, C., Mainhard, T., Müller, C. M., Zurbriggen, C. L. A., eds. (2022). The Role of Teachers in Students' Social Inclusion in the Classroom. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88974-698-9

Table of Contents

frontiers in Education

EDITORIAL
published: 24 February 2022
doi: 10.3389/feduc.2022.830973

Editorial: The Role of Teachers in Students' Social Inclusion in the Classroom

Luciano Gasser[1]*, *Antonius H. N. Cillessen*[2], *Christian Huber*[3], *Tim Mainhard*[4], *Christoph Michael Müller*[5] and *Carmen L. A. Zurbriggen*[6]

[1] Institute of Research, Development and Evaluation, Bern University of Teacher Education, Bern, Switzerland, [2] Behavioural Science Institute, Radboud University, Nijmegen, Netherlands, [3] School of Education, University of Wuppertal, Wuppertal, Germany, [4] Education and Child Studies, Leiden University, Leiden, Netherlands, [5] Department of Special Education, University of Fribourg, Fribourg, Switzerland, [6] Department of Social Sciences, University of Luxembourg, Esch-sur-Alzette, Luxembourg

Keywords: peer relationships, teacher behaviors, student-teacher relationships, friendships, peer acceptance, bullying, social reference theory, special educational needs

Editorial on the Research Topic

The Role of Teachers in Students' Social Inclusion in the Classroom

Students' social inclusion has serious implications for their social, emotional and academic adjustment (Ladd and Troop-Gordon, 2003; Sette et al., 2020). The current Research Topic conceptualizes social inclusion from a contextual perspective and not merely as the result of students' individual social competences. From this perspective, teachers represent an important element in the classroom social ecology significantly contributing to peer group dynamics and thereby also to individual students' social inclusion (Farmer et al., 2011; Juvonen et al., 2019). Based on attachment theory, some researchers have argued that teacher behaviors expressing warmth, sensitivity and responsiveness contribute to students' safe exploration of their peer worlds (Sabol and Pianta, 2012; Verschueren and Koomen, 2012; Roorda et al., 2021). Other researchers have highlighted the importance of teachers' feedback toward individual students because they act as social referrers that communicate evaluative information about the likability of individual students (Hendrickx et al., 2017; Huber et al., 2018). However, despite an increasing interest in the role of teachers in peer relationships, we still know relatively little about the multiple avenues along which teachers affect their students' social inclusion.

The current Research Topic substantially contributes to this research gap. It includes fourteen articles that focus on different aspects of children's social inclusion in the classroom (e.g., social acceptance, friendships, victimization, marginalization). These articles cover a broad spectrum of teacher practices (e.g., grouping strategies, behavior management) at different levels of the classroom (the group vs. dyadic relations). Several of the included studies applied a longitudinal design (e.g., Chen et al.; Kim et al.), included relatively large samples (e.g., Furrer et al.; Klang et al.), and used observational methods to assess teacher behaviors (e.g., Garrote et al.; Hendrickx et al.). Moreover, the Research Topic also includes studies that highlight students' and teachers' social-cognitive processing of teachers' influence on social inclusion (e.g., Demol et al.; Mulvey et al.). Finally, some of the studies addressed teacher professional development and interventions to improve students' social inclusion (Farmer et al.). This summary classifies the articles into the following four groups.

Edited and reviewed by:
Ángel De-Juanas, National University of Distance Education (UNED), Spain

***Correspondence:**
Luciano Gasser
luciano.gasser@phbern.ch

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *07 December 2021*
Accepted: *27 January 2022*
Published: *24 February 2022*

Citation:
Gasser L, Cillessen AHN, Huber C, Mainhard T, Müller CM and Zurbriggen CLA (2022) Editorial: The Role of Teachers in Students' Social Inclusion in the Classroom. Front. Educ. 7:830973. doi: 10.3389/feduc.2022.830973

TEACHERS' BEHAVIORS AT THE CLASSROOM LEVEL

Classroom-level practices refer to the behaviors that teachers show toward the whole group of students instead of individual students. Two studies focused on teacher behaviors in the domain of classroom organization. Garrote et al. used a longitudinal design to study how teachers' inclusive attitudes and observed classroom management (i.e., clear expectations, efficient use of instructional time) predicted children's social acceptance. Classroom management was significantly related to children's social acceptance, suggesting that behavioral measures might be more closely related to students' social inclusion than to affective-motivational teacher characteristics. Kim et al. longitudinally studied the effects of teachers' self-reported grouping strategies on students' friendships and conflicts (e.g., managing behavior problems, heterogeneous ability grouping). Heterogeneous ability grouping negatively predicted children's friendships. The authors explained this finding by children's tendency to form their friendships based on similarity.

Two additional studies addressed teachers' behaviors in the domain of emotional support. Furrer et al. investigated how physical education teachers' support for cooperative skills and individual reference norm orientation (e.g., praising all students for individual improvements) related to the social acceptance of students with and without intellectual disabilities. While teachers' support of cooperative skills positively contributed to the social acceptance of all children, individual reference norm orientation strategies showed stronger effects in children with intellectual disabilities. Finally, Owens et al. showed that the teacher practice of spending individual time with students positively affected students' later social acceptance and academic functioning. Moreover, they found that teachers' behaviors were differentially related to social acceptance of students with and without ADHD.

TEACHERS' BEHAVIORS AT THE DYADIC LEVEL

Three studies focused on teacher's behaviors toward specific students. The longitudinal study of Hendrickx et al. found that teachers rarely interacted with socially marginalized students. However, consistent with social referencing theory, positive teacher feedback toward socially marginalized and rejected students predicted increases in these students' social acceptance over time. Chen et al. showed that the quality of dyadic relationships with individual students (closeness and conflict) longitudinally predicted younger children's perceptions of peer support and victimization. The study further revealed significant effects of teachers' behavior management on children's perceived victimization. The quality of student-teacher relationships not only enhanced students' social inclusion, but also reduced ingroup bias. Grütter et al. used network analyses to show that students were more likely to prefer peers from different ethnic groups when they perceived their teachers as caring. In contrast, less teacher care was significantly related to ingroup bias. The positive effect of teacher care was even larger in classrooms with strong ethnic group boundaries.

TEACHERS' AND STUDENTS' THINKING ABOUT SOCIAL INCLUSION

Four studies in this Research Topic investigated social-cognitive processes underlying the role of teachers in students' social inclusion, mainly by using hypothetical scenarios on social inclusion or exclusion.

Demol et al. presented children hypothetical scenarios that described either absent teacher intervention to bullying or active teacher interventions (i.e., comforting the victim or correcting the bully). Children expected more antibullying teacher attitudes and more positive bystander interventions from peers and self if teachers actively intervened. Mulvey et al. further showed that students evaluated bystander behaviors such as defending more positively if they perceived the school climate as supportive. Beissert et al. studied pre-service teachers' social cognitions about hypothetical intergroup exclusion. They found that teachers were more likely to condemn exclusion and to intervene if the scenario described interethnic compared to same-ethnic exclusion. Finally, Wilbert et al. argued that teachers' knowledge of their students' social inclusion in the classroom provides them with important diagnostic information for effective individualized interventions. They showed that teachers were moderately accurate in their ratings of their students' social acceptance and rejection. This study also revealed high individual variability in teachers' rating accuracy.

INTERVENTIONS AIMED AT IMPROVING STUDENTS' SOCIAL INCLUSION

Three articles addressed intervention programs to improve students' social inclusion. Farmer et al. provided an overview of their intervention program "Behavior, Academic and Social Engagement" (BASE). BASE starts with systematic data collection of students' social functioning to determine the specific needs of classrooms. Based on these assessments, teachers join professional development activities that are responsive to students' specific social difficulties (e.g., passive or popular-aggressive students). Klang et al. highlighted the potential of a cooperative learning format for an integrated approach to promote both academic and social learning. Their intervention study provided weak support for the effectiveness of such a format on students' friendships and social acceptance. The researchers recommended more attention to implementation quality of cooperative learning interventions. In a case study, Kraatz et al. compared the teachers' role in high and low effective collaborative discussion groups that were part of a dialogic intervention study (Collaborative Social Reasoning). Their results illustrated the dynamic interplay between teachers' scaffolding and peer group dynamics. Moreover, the cognitive depth of student talk strongly depended on teachers' success in managing challenging group dynamics.

Collectively, the 14 papers of this Research Topic substantially contribute to our understanding of the role of teachers in students' social inclusion in the classroom. We would like to thank all authors for their contributions and hope that the presented findings will inspire future research in this field.

AUTHOR CONTRIBUTIONS

LG wrote a first draft of the editorial text. All co-editors provided revisions on the text. All authors contributed to the article and approved the submitted version.

REFERENCES

Farmer, T. W., Lines, M. M., and Hamm, J. V. (2011). Revealing the invisible hand: The role of teachers in children's peer experiences. *J. Appl. Dev. Psychol.* 32, 247–256. doi: 10.1016/j.appdev.2011.04.006

Hendrickx, M. M. H. G., Mainhard, T., Oudman, S., Boor-Klip, H. J., and Brekelmans, M. (2017). Teacher behavior and peer liking and disliking: The teacher as a social referent for peer status. *J. Educ. Psychol.* 109, 546–558. doi: 10.1037/edu0000157

Huber, C., Gerullis, A., Gebhardt, M., and Schwab, S. (2018). The impact of social referencing on social acceptance of children with disabilities and migrant background: An experimental study in primary school settings. *Eur. J. Spec. Needs Educ.* 33, 269–285. doi: 10.1080/08856257.2018.1424778

Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H. L., and Smith, D. S. (2019). Promoting social inclusion in educational settings: Challenges and opportunities. *Edu. Psych.* 54, 250–270. doi: 10.1080/00461520.2019.1655645

Ladd, G. W., and Troop-Gordon, W. (2003). The role of chronic peer difficulties in the development of children's psychological adjustment problems. *Child Dev.* 74, 1344–1367. doi: 10.1111/1467-8624.00611

Roorda, D. L., Zee, M., and Koomen, H. M. Y. (2021). Don't forget student-teacher dependency! A meta-analysis on associations with students' school adjustment and the moderating role of student and teacher characteristics. *Attach Hum Dev. 23*, 490–503. doi: 10.1080/14616734.2020.1751987

Sabol, T. J., and Pianta, R. C. (2012). Recent trends in research on teacher–child relationships. *Attach Hum Dev.* 14, 213–231. doi: 10.1080/14616734.2012.672262

Sette, S., Gasser, L., and Grütter, J. (2020). Links between teachers' liking of students, peer inclusion, and students' academic achievement: A two-wave longitudinal study. *J. Youth Adolesc.* 49, 747–756. doi: 10.1007/s10964-019-01048-5

Verschueren, K., and Koomen, H. M. Y. (2012). Teacher–child relationships from an attachment perspective. *Attach Hum Dev.* 14, 205–211. doi: 10.1080/14616734.2012.672260

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

frontiers in Education

ORIGINAL RESEARCH
published: 08 October 2020
doi: 10.3389/feduc.2020.582873

Social Acceptance in Inclusive Classrooms: The Role of Teacher Attitudes Toward Inclusion and Classroom Management

Ariana Garrote[1,2], Franziska Felder[2], Helena Krähenmann[1,2], Susanne Schnepel[2], Rachel Sermier Dessemontet[3] and Elisabeth Moser Opitz[2]*

[1] School of Education, University of Applied Sciences and Arts Northwestern Switzerland, Brugg, Switzerland, [2] Institute of Education, University of Zurich, Zurich, Switzerland, [3] Department of Special Educational Needs, University of Teacher Education of the State of Vaud, Lausanne, Switzerland

Social acceptance is vital to students' development. Being rejected by classmates can result in negative socio-emotional and academic outcomes. Finding relevant factors to be able to effectively support student social acceptance is especially challenging in inclusive classrooms because of the high heterogeneity of the student group. There is evidence that social acceptance is determined by the social behavior of students. In addition, current research suggests that affect-motivation dispositions, such as teacher attitudes, are related to teaching practices, which in turn are associated with student outcomes. This longitudinal study examines, on an individual level, the relationship between social behavior and the social acceptance of students. On a classroom level, the extent to which a teacher's attitudes toward the inclusion of students with special educational needs affects their classroom management (i.e., implementation of clear rules and successful time management) is analyzed. In addition, the effect of teacher attitudes toward inclusion and classroom management on social acceptance in the classroom is investigated. The social acceptance of a sample of 580 students in 34 inclusive classrooms was assessed at the beginning and the end of the school year. In addition, student social behavior was rated by peers at the beginning of the school year. Teachers (n = 34) were asked about their attitudes toward inclusion at the beginning of the school year. One mathematics lesson in each classroom was videotaped to assess the teachers' classroom management practices. Multilevel structural equation models revealed a positive relationship between student social behavior and their social acceptance in the peer group. Contrary to expectations, teachers' attitudes toward inclusion did not predict their classroom management practices (i.e., implementation of clear rules and successful time management). As hypothesized, teachers' classroom management predicted the level of social acceptance in the classroom, whereas teachers' attitudes toward the inclusion of students with special educational needs did not. The study results are discussed in light of previous findings and implications for teacher education are described.

Keywords: classroom management, teacher attitudes, social acceptance, primary school, special educational needs, inclusive classrooms

OPEN ACCESS

Edited by:
Antonius H. N. Cillessen, Radboud University, Netherlands

Reviewed by:
Francesca Giovanna Maria Gastaldi, University of Turin, Italy
Teresa Pozo-Rico, University of Alicante, Spain

****Correspondence:***
Ariana Garrote
ariana.garrote@fhnw.ch

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *13 July 2020*
Accepted: *18 September 2020*
Published: *08 October 2020*

Citation:
Garrote A, Felder F, Krähenmann H, Schnepel S, Sermier Dessemontet R and Moser Opitz E (2020) Social Acceptance in Inclusive Classrooms: The Role of Teacher Attitudes Toward Inclusion and Classroom Management. Front. Educ. 5:582873. doi: 10.3389/feduc.2020.582873

INTRODUCTION

Providing an optimal learning environment for the academic and socio-emotional development of students is a major task for teachers. There is a large body of evidence focusing on the effect of the teacher on academic development, such as student learning processes and cognitive outcomes (e.g., Hattie, 2009). In recent years, researchers have also examined the extent to which teaching practices contribute to the social experiences of students within their peer group and hence to their socio-emotional development (e.g., Farmer et al., 2011; Juvonen et al., 2019). More specifically, Farmer et al. (2011) introduced the concept of the "invisible hand" into the research discourse. This refers to the potential teachers have to influence peer dynamics and student social behavior in classrooms. Teachers can intentionally improve student social acceptance by implementing peer assisted learning strategies (e.g., Fuchs et al., 2002), or by changing seating arrangements in their classrooms (e.g., Van Den Berg et al., 2012). Teachers also unintentionally affect the social dynamics of the classroom by interacting with students and implementing their teaching routines (Farmer et al., 2011). For example, how teachers give feedback does not only have an impact on students' learning processes (e.g., Hattie, 2009), but also affects their social acceptance (e.g., Hendrickx et al., 2017; Wullschleger et al., 2020). However, most empirical studies on the impact of teachers on student social outcomes have been carried out in regular classrooms. Little is known about the extent to which teachers influence student social acceptance in inclusive classrooms. In these classrooms, it is particularly challenging for teachers to support student social acceptance because they are highly heterogeneous in terms of student characteristics and broad range of educational needs (i.e., typically developing students, special educational needs students, and second language learners). Therefore, it could be that the impact of teacher related variables on student social outcomes differs from that in regular classrooms. This study contributes to the understanding of the role of teachers in student social acceptance in inclusive classrooms.

Developmental studies have shown that supporting student social acceptance in the peer group is vital to their social and academic development, as negative outcomes can be prevented. Students who are rejected by their classmates show higher rates of stress and school avoidance and display lower academic engagement (Ladd et al., 2008; Peters et al., 2011). In the longer term, the lack of peer acceptance can cause behavioral problems (Sturaro et al., 2011) and result in students dropping out of school (Ollendick et al., 1992). Research has shown that some students are more vulnerable and are more likely to experience social rejection and negative academic outcomes. In inclusive classrooms, students with special educational needs are sometimes at greater risk of being less accepted by their peers than their classmates without special educational needs (Koster et al., 2010; Pijl and Frostad, 2010; Grütter et al., 2015). Students showing a lack of socially competent behavior are also less likely to be accepted by their peers (de Monchy et al., 2004; Mand, 2007; Bacete et al., 2017). For instance, Bacete et al. (2017) asked first and second grade students about their reasons for rejecting a peer. Most students associated the rejection of peers with behaviors that threatened social expectations and norms (e.g., pushing around, bossing about, interrupting, hitting). This indicates that student social behavior determines their level of social acceptance within the peer group. On a classroom level, however, expected and "normal" social behavior is dependent on the classroom norm. This means that a student's social acceptance is also determined by the acceptance of their behavior by the group (Chang, 2004; Hitti et al., 2011). Whether behaviors such as aggression and prosocial actions are perceived as "normal" in a classroom is, in turn, dependent on teacher practices (Mikami et al., 2012). Therefore, both peer group dynamics and the teachers' role in creating it are relevant when analyzing how to foster the social acceptance of all students (Farmer et al., 2019).

Currently, the impact of teachers on students is conceptualized with models of teacher competence. Blömeke et al. (2015) and Krauss et al. (2020) describe the process of teacher influence on the students as dispositions (cognitive and affect-motivation) of the teacher that affect his or her teaching practices, which in turn have an impact on the students. These models and the associated studies mostly focus on cognitive and non-cognitive student outcomes related to mathematical learning (e.g., mathematical achievement, motivation). However, the models are also useful as heuristics for social outcomes like the social acceptance of students. Krauss et al. (2020) distinguish the affect-motivation dispositions self-regulation, motivational orientations as well as beliefs, values, and goals, to which attitudes can be included. These dispositions affect teaching practices in the dimensions of classroom management, student support, and cognitive activation. Focusing on inclusive classrooms, the affect-motivation variable "teacher attitude toward inclusive education" and its relationship to other teacher related variables has been analyzed in several studies.

Current research shows a relationship between attitudes toward inclusion–or attitudes toward students with disabilities–and inclusive teaching practices. Avramidis et al. (2019) found that teachers' attitudes toward inclusion and their self-efficacy for inclusive practices predicted their willingness to implement a peer-tutoring program. Further, research by Wilson et al. (2019) indicated that teachers with more positive attitudes toward children with disabilities had higher self-efficacy and a higher inclination to use inclusive teaching practices. According to Hellmich et al. (2019), primary school teachers' everyday practices in heterogeneous classrooms were related to their intentions regarding the implementation of inclusive education and to their attitudes toward inclusive education. Moreover, a longitudinal study from Bosse et al. (2016) showed that teachers with more positive attitudes toward inclusion were less anxious. Less anxiety might in turn positively affect the teaching quality. Finally, Monsen et al. (2014) showed that teachers with highly positive attitudes toward inclusion made a greater effort to adapt their learning, social, and emotional classroom environments to reflect an atmosphere suitable for included students with special educational needs. To conclude, many studies suggest a relationship between teacher attitudes toward inclusion and teaching practices in inclusive classrooms. However, this relationship has not been extensively investigated

in longitudinal studies. In addition, teaching practices were assessed with self-reported data from the teachers. Studies with concrete behavior observations are lacking.

Classroom management is a core component of effective teaching practice (Hattie, 2009) and researchers have highlighted its particular importance in inclusive classrooms (Jordan and McGhie-Richmond, 2014; Farmer et al., 2019). Farmer et al. (2019) point out that classroom management is designed to foster student development and the maintenance of new competencies. In an observational study, Jordan and McGhie-Richmond (2014) identified classroom management as an effective teaching practice that correlated with the amount of instructional time. Helmke (2014) emphasized three factors for effective classroom management: (1) clear rules and the early establishment and consistent realization of social and academic norms, (2) successful time management which facilitates the smooth transition from one activity to the next and prevents tardiness and unnecessary waiting, and (3) the effective prevention and handling of classroom disruptions. Jordan and McGhie-Richmond (2014) report, focusing on inclusive classrooms, that well-established classroom routines for beginning and ending a lesson, handing out and collecting materials and transitions between tasks, expecting students to help each other before asking for help from the teacher, and taking some responsibility for managing their behavior and engagement in learning activities, are crucial.

Most of the research on the effects of classroom management has focused on the academic progress of students as an outcome variable. Only in recent years has there been an increasing interest in investigating the impact of teacher classroom management practices on student social outcomes (e.g., Farmer et al., 2019). As a classroom leader, the teacher plays a crucial role in the management of behavior (e.g., with the implementation of rules) as well as the acceptance of students' behavior (Pianta and Hamre, 2009; Mikami et al., 2010; Farmer et al., 2011). Karakaya and Tufan (2018) examined the relationship between teachers' classroom management and students' social behavior in a sample with preschoolers aged 4–7. No relationship between these variables could be found. However, data were collected using teacher questionnaires and concrete teaching practices were not examined. This might have affected the results. Based on research on the relationship between teachers' classroom practices and the occurrence of disruptive behavior (e.g., Stronge et al., 2011) it can be hypothesized, that a high level of effective classroom management practices, like the implementation of effective rules, can prevent disruptive behavior (Kostewicz et al., 2008). This in turn can positively affect the social acceptance of students who are at risk of being rejected because of their disruptive behavior. A meta-analysis of Korpershoek et al. (2016) showed that classroom management facilitates both academic and socio-emotional learning. In their research summary, Soodak and McCarthy (2006) stress that certain teaching practices (i.e., using hands-on activities, peer tutoring) are associated with social acceptance in the peer group. However, this positive effect needs to be supported by more evidence, as studies on the impact of classroom management on social acceptance are very scarce.

In conclusion, students' social acceptance is determined by individual characteristics such as student social behavior. In addition, some evidence is available indicating that a teacher's attitude toward inclusive education–as an affect-motivation disposition–affects their teaching practices. However, the findings are based on self-reported teacher behavior. Studies that investigate the relationship between attitudes toward inclusion and the concrete teaching practices in class are lacking. Finally, there is a growing body of research suggesting that social acceptance in the peer group is influenced by how teachers manage the classroom. Yet, there are not many empirical studies that have examined the extent to which classroom management affects students' social acceptance in inclusive classrooms.

In light of the current state of research, this study will answer the following research questions on an individual and on a classroom level (see **Figure 1**).

(1) Does student social behavior predict student social acceptance in the peer group (individual level)? In accordance to previous findings (e.g., de Monchy et al., 2004; Mand, 2007; Bacete et al., 2017), it is hypothesized that students with higher levels of social behavior are more likely accepted by their peers.
(2) Do teacher attitudes toward inclusion predict classroom management (classroom level)? Based on previous study results (e.g., Hellmich et al., 2019; Wilson et al., 2019), a significant relationship between attitudes toward inclusion and classroom management is assumed.
(3) Does effective classroom management predict student social acceptance in the peer group (classroom level)? According to the research supporting the impact of classroom management on student social experiences (e.g., Farmer et al., 2019), a positive relationship is assumed, which suggests that more effective classroom management leads to a higher level of social acceptance in the classroom.
(4) Do teacher attitudes toward inclusion predict student social acceptance in the peer group (classroom level)? Considering the expected relationship of affect-motivation dispositions and teaching practices (Blömeke et al., 2015; Krauss et al., 2020), no direct relationship between attitudes toward inclusion and social acceptance is expected. Only an indirect effect via classroom management is assumed.

MATERIALS AND METHODS

Participants and Procedure

The sample of the present study consists of 34 inclusive classes from grade 1 to grade 3 (6-to-9-year old students; $n = 580$) from 9 cantons in two linguistic regions of Switzerland. Eight classes were combination classes (i.e., grade 1 to 3 or grades 1 and 2). In Switzerland, the 26 cantons are individually responsible for education and each have their own regulations. All cantons embrace inclusive education, but implementation differs. In some cantons all students with learning disabilities and 50% of the students with intellectual disabilities attend mainstream classes while in other cantons, the level of inclusion is much

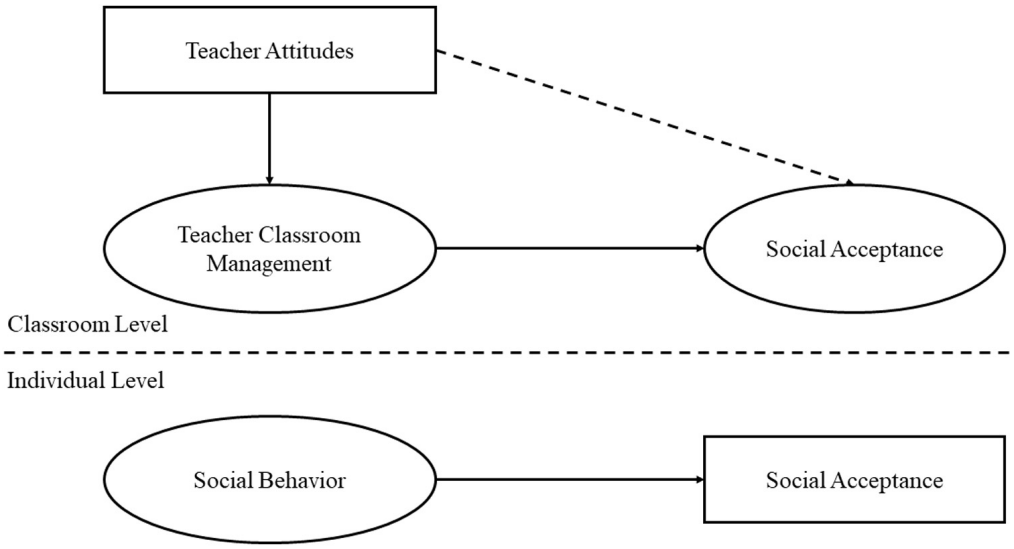

FIGURE 1 | Hypothesized Model. Solid arrows represent hypothesized effects. Dashed arrows depict paths that are expected to be 0. On the individual level, student social behavior is assumed to predict student social acceptance. On the classroom level, teacher attitudes are hypothesized to predict teacher classroom management, but to have no direct effect on student social acceptance. Teacher classroom management, however, is expected to be a significant predictor of student social acceptance on the classroom level. Teacher attitudes are assumed to only affect students' social acceptance indirectly (mediated by teacher classroom management).

lower. Invitation letters were sent to several schools via school authorities. Teachers decided voluntarily whether or not they wished to participate (n = 34). The parents gave written consent for the participation of their children in the study. Classes were included in the study if they included at least one student who had been diagnosed, prior to the study, with an intellectual disability or a severe learning disability (cut off criteria IQ < 75) by a school psychologist (n = 43). Students with milder learning disabilities and behavioral problems were also enrolled in these classes. However, according to the common practice in Switzerland these students were not officially diagnosed as having special educational needs. Due to the small number of students diagnosed with an intellectual disability or severe learning disability in each class, this variable (with special educational needs vs. without special educational needs) could not be included in the study analyses. Nevertheless, these students were part of the study sample.

In the study sample, a special education teacher was present in the classes, with a range of 3–17 h per week (M = 9.1, SD = 3.73). In 17 classrooms, the special education teacher was present in the classrooms in all of his or her lessons of support, and the general education and the special education teacher were both present in the classroom. In 12 classes, a mixed setting was chosen (in-class support and one-to-one support outside the classroom, or in-class-support combined with small group support of students with and without an intellectual disability). In the remaining 5 classes, the support of the special education teacher was provided exclusively for the student(s) with an intellectual disability in a resource room. This so-called "nested-instruction" structure where there are occasionally two teachers present in the classroom, makes it challenging to examine the influence of the teachers (Jones and Brownell, 2014; Pfister et al., 2015). Strategies that were implemented to deal with this challenge will be described in the measures section.

The study was conducted over one school year. Student social behavior and social acceptance at t_1 were assessed at the beginning of the school year, social acceptance at t_2 at the end. The teacher questionnaire on attitudes toward inclusion was administered at the beginning of the school year. Teacher classroom management in class was observed 3–4 months after the beginning of the school year by videotaping one mathematics lesson.

Measures

Teacher Attitudes Toward Inclusion

Teacher attitudes toward inclusion were assessed using the Opinions Relative to the Integration of Students with Disabilities questionnaire (ORI; n = 34, Min = 73, Max = 130, M = 102.21, SD = 13.1, 25 items, Cronbach's alpha = 0.85). The questionnaire was translated and the terminology and the labels of the factors were adapted (i.e., integration, disability) to make it more suitable in the contemporary Swiss context (Ewing et al., 2018) and the specific setting of regular classes attended by students with an intellectual disability. The ORI questionnaire consists of four factors (Antonak and Larrivee, 1995). Factor I is comprised of eight items (Cronbach's alpha = 0.85) on the benefits of inclusive education (e.g., "The challenge of being in a regular classroom promotes the academic growth of students with ID."). Factor II includes 10 items (Cronbach's alpha = 0.70) on the behavior of students with an intellectual

disability and classroom management (e.g., "It is not more difficult to maintain order in a regular classroom that contains a student with an intellectual disability than in one that does not contain students with an intellectual disability."). Factor III includes three items (Cronbach's alpha = 0.69) on the perceived ability to teach students with an intellectual disability (e.g., "Regular classroom teachers have the ability necessary to work with students with an intellectual disability."). Factor IV comprises four items (Cronbach's alpha = 0.51) on the topic "special versus inclusive education" (e.g., "Students with an intellectual disability can best be served in regular classrooms"). In the present study, the analyses are carried out both with the total score of the ORI as a manifest variable and, separately, with the scores of factors I (benefits of inclusion), II (behavior management), and III (ability to teach) as manifest variables. Factor IV is excluded because of its low reliability in the study sample.

Teacher Classroom Management

Video data were used to assess classroom management. Between November and December, approximately 3–4 months after the start of the school year, one mathematics lesson per class (duration M = 48.88 min, SD = 10.33) was videotaped using two cameras (3329 min in total). Teachers were given two fixed conditions for the video-recorded lesson: (a) the content had to be arithmetic and (b) the study aimed to record *business as usual*. That meant, for example, that both the general education teacher and the special education teacher had to be teaching during the lesson. As the general education teacher lead the classroom activities during most of the lesson, only his or her classroom management practices were considered for further analyses.

After the video session, the teachers were interviewed to determine if the recorded lesson had been typical for a mathematics lesson and the setting of the collaboration. Based on the interviews, the video-recorded lessons were assessed to be "mostly typical" or "rather typical." Only video data from typical situations were included in the analyses (n = 33). Two items were defined and rated by indicators: time management and consistent implementation of clear rules. The ratings describe an overall evaluation of a whole lesson unit that is based on the intensity or degree of the shown behavior (Rakoczy and Pauli, 2006) using a Likert-like scale, ranging from 4 = full compliance with the ideal performance to 1 = no compliance with the ideal performance. Indicators for time management were, for instance, "the teacher uses the time for instructional and content-based activities" or "the transition of one lesson phase to the next proceeds smoothly." Indicators for the item implementation of rules were, for instance, "the teacher ensures that the students obey the rules" or "the teacher draws the attention of the students to rule violations." Each video was rated independently by two trained rater. Interrater reliability $g_{relativ}$ (Clausen et al., 2003) was 0.88 for time management and 0.86 for implementation of rules. G-Coefficients are interpreted according to the same criteria as reliability coefficients (ibid.), therefore the interrater reliability was good. Each class had a score for time management (M = 2.45, SD = 0.75) and a score for the implementation of rules (M = 3.12, SD = 0.8).

Student Social Behavior

To assess the social behavior of students, their peers were asked two questions about cooperative and prosocial behavior (n = 579, Cronbach's alpha = 0.84). Participants rated four randomly selected classmates on a five-point-scale with smileys (1 = ☹ = "I do not agree at all" to 5 = ☺ = "I totally agree") with respect to how well they could work with them and how helpful they were. For each student, an average cooperative behavior score (n = 579, M = 3.71, SD = 0.84) and an average prosocial behavior score (n = 579, M = 3.62, SD = 0.86) at t_1 was calculated.

Student Social Acceptance

The social acceptance of students was determined by asking their peers at the beginning (t_1) and end of the school year (t_2) questions about playing together. The sociometric instrument was developed based on the recommendations in Hymel et al. (2004). Participants rated how much they liked to play with every single classmate on a five-point-scale with smileys (1 = ☹ = "I do not like to play with X at all" to 5 = ☺ = "I like to play with X a lot"). For each student, an average acceptance score was calculated with the ratings received from all classmates at t_1 (n = 580, M = 3.49, SD = 0.61) and t_2 (n = 565, M = 3.47, SD = 0.61).

Analysis Strategy

The data from this study is hierarchically structured, with students nested within classes. Multilevel modeling offers an appropriate framework to examine this complex data structure (Hox et al., 2017). In a first step, in order to verify the multilevel structure of the data, the classroom differences for all variables at the individual level were verified with analysis of variance and by calculating the intraclass correlation coefficients ICC(1) and ICC(2) with R package multilevel 2.6 (Bliese, 2016). While the ICC(1) represents the proportion of the total variance explained by the grouping structure, the ICC(2) shows the reliability of aggregated variables. Further, correlations between the study variables at the classroom level (e.g., teacher attitudes toward inclusion) and the individual level (e.g., student social behavior) were computed.

In a second step, multilevel structural equation modeling was performed using the R package lavaan 0.6–5 (Rosseel, 2012; Rosseel et al., 2019). Multilevel modeling enables the investigation of the extent to which the classroom differences (between-classroom variation) in social acceptance at t_2 were predicted by teacher attitudes toward inclusion and teacher classroom management. At the individual level (within-classroom variation), the extent to which student social behavior and social acceptance at t_1 were predictors of student social acceptance at t_2 was examined. In accordance with previous findings on sex-differences in social behavior, sex was added as a control variable at the individual level. Full information maximum likelihood estimation was employed to make use of all available data. The goodness of fit of the estimated models was evaluated using four indicators: chi-square test, comparative fit

index (CFI), root mean square error of approximation (RMSEA), and standardized root-mean-square residual (SRMR).

RESULTS

Intraclass Correlations

The analysis of variance showed significant differences between the classes for the variables at the individual level: cooperative behavior, prosocial behavior, and social acceptance (t_1 and t_2). The differences between the classes were significant for student social acceptance at t_1 ($F[33, 546] = 3.27$, $p < 0.001$) and at t_2 ($F[33, 531] = 4.55$, $p < 0.001$), as well as for student cooperative behavior ($F[33, 545] = 1.64$, $p < 0.05$) and prosocial behavior ($F[33, 545] = 1.99$, $p < 0.001$). The intraclass correlation coefficient ICC(1) values showed that 17.6% of total variance in social acceptance at t_2 and 11.7% of total variance in social acceptance at t_1 were explained by the classroom level. In contrast, only 3.6% of total variance of student cooperative behavior and 6% of total variance of student prosocial behavior were explained by the grouping structure, which is lower than the usual range (ICC[1] > 0.10–0.25) in educational studies (Hedges and Hedberg, 2007). Thus, in the multilevel structural equation modeling, only the student variables of social acceptance at t_1 and t_2 where aggregated at the classroom level. The ICC(2) values for social acceptance at t_1 (0.69) and t_2 (0.78) revealed a moderately good reliability of the group mean (Trevethan, 2017).

Further, the correlations between the variables on the individual level revealed a significant but small (Cohen, 1988) negative relationship between student sex and their social behavior (**Table 1**), which means girls were perceived as showing higher levels of social behavior than boys. In addition, student social behavior was moderately to strongly positively correlated with student social acceptance at t_1 and t_2. On the classroom level, teachers' attitudes toward inclusion were positively but weakly correlated with teachers' time management and implementation of rules. Looking separately at each teacher attitude factor, only behavior management and perceived ability to teach were positively, but weakly, correlated with teacher time management and with teacher implementation of rules.

The Role of Teacher Attitudes Toward Inclusion and Classroom Management in Student Social Acceptance

The hypothesized model with teacher attitudes toward inclusion as a manifest variable fitted the data well, $\chi^2(6) = 6.36$, $p = 0.384$, CFI = 1, RMSEA = 0.01 [90% CI: 0,0.06], SRMR = 0.02, $SRMR_{between} = 0.05$. The results are presented in **Figure 2**. On the individual level, student social behavior was correlated with student social acceptance at t_1 and was a predictor of student social acceptance at t_2. Student sex was correlated with student social behavior. More specifically, girls were rated as having significantly higher levels of social behavior than boys. On the class level, classroom management was a significant predictor of student social acceptance at t_2. As hypothesized, teacher attitudes toward inclusion did not predict student social acceptance at t_2. In addition, teacher attitudes toward inclusion were not related to teacher classroom management, which was unexpected. On both levels, social acceptance at t_1 strongly predicted social acceptance at t_2, which indicates a high stability of social acceptance over time.

An alternative model was tested with the three factors of teacher attitudes toward inclusion added separately as manifest variables. The adapted model also fitted the data well, $\chi^2(11) = 23.29$, $p < 0.05$, CFI = 0.99, RMSEA = 0.05 [90% CI:0.02,0.07], SRMR = 0.02, $SRMR_{between} = 0.17$. As expected, teacher attitudes about benefits of inclusion, about behavior management in inclusive classrooms, and about the ability to teach in inclusive classrooms had no effect on student social acceptance t_2 at the classroom level. In addition, none of the three factors of teacher attitudes toward inclusion predicted classroom management.

DISCUSSION

In this study, the impact of student social behavior, teachers' attitudes toward inclusion, and classroom management on student social acceptance in inclusive classrooms was examined. Also, the extent to which teachers' attitudes toward inclusion

TABLE 1 | Correlations of student variables on individual level (n = 580) and teacher variables on classroom level (n = 34).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Sex (male = 1)										
2. Social Acceptance t_1	−0.07									
3. Social Acceptance t_2	−0.05	0.74***								
4. Cooperative Behavior	−0.16***	0.58***	0.51***							
5. Prosocial Behavior	−0.15***	0.53***	0.47***	0.72***						
6. Attitudes	−0.01	0.08*	0.03	−0.03	0.004					
7. Benefits of Inclusion	−0.03	0.12**	0.07	−0.02	−0.03	0.81***				
8. Behavior Management	−0.03	0.08	0.02	0.01	0.06	0.84***	0.49***			
9. Ability to Teach	−0.01	−0.004	0.01	−0.04	−0.07	0.5***	0.18***	0.36***		
10. Time Management	0.04	0.09*	0.18***	−0.08	0.05	0.28***	0.06	0.36***	0.15**	
11. Implementation of Rules	−0.02	0.02	0.1*	−0.08	0.11*	0.28***	0.08	0.32***	0.1*	0.7***

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.
Two-tailed. Variables 1–5 are student variables (individual level). Variables 6–11 are teacher attitudes and classroom management variables (classroom level).

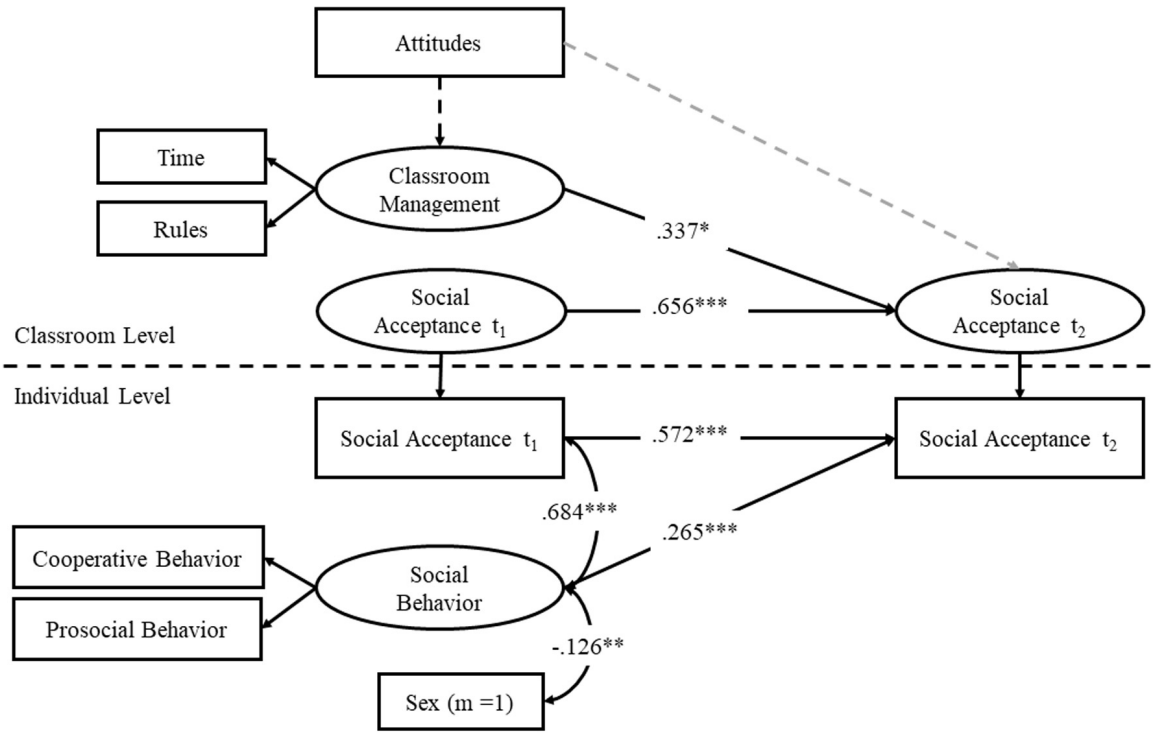

FIGURE 2 | Path diagram of the final model, containing all hypothesized paths and covariances. The dashed black arrow represents the hypothesized significant path between attitudes and classroom management that was not confirmed. The dashed gray arrow depicts the path between attitudes and social acceptance at t_2 that was hypothesized to be 0. Standardized estimates are provided with their respective level of significance (two-tailed). $*p < 0.05$. $**p < 0.01$. $***p < 0.001$.

as affect-motivation dispositions predict teachers' classroom management was investigated. This study contributes to a better understanding of the impact of teachers' attitudes toward inclusion and teachers' practices on student social experiences in the peer group. In addition, it includes both student and teacher predictors that contribute to the social acceptance of students on an individual and on a classroom level. Further, it adds value to earlier research by assessing classroom management with behavior observations in class.

Social acceptance in the peer group is an important aspect of social participation (Koster et al., 2009; Bossaert et al., 2013). Being accepted by peers can be crucial for the academic and socio-emotional development of students (Eriksson and Granlund, 2004). In inclusive classrooms however, some students are more at risk of having difficulties with their social participation than others. For instance, students with special educational needs are less accepted by peers than their classmates without special educational needs (Krull et al., 2014; Nepi et al., 2015). In order to be able to foster the social participation of all students in inclusive classrooms, the relevant factors on an individual and classroom level need to be identified.

In this study, the findings indicate that in inclusive classrooms students are more accepted by peers if they are perceived as displaying cooperative and prosocial behavior. Students with low levels of social behavior were less accepted by the peer group. This is in line with previous research showing that children reject their peers because of their problematic social behavior (Bacete et al., 2017) and that a lack of socially competent behavior predicts peer rejection (Pedersen et al., 2007). Although students with special educational needs who show a lack of socially competent behavior are more likely to be rejected by their peers (Frederickson and Furnham, 2004; Odom et al., 2006), the results of this study suggest that students without special educational needs are also affected by the association between social behavior and social acceptance. Thus, creating opportunities for all students to acquire and practice cooperative and prosocial behaviors in the peer group (e.g., with peer assisted learning settings) is an important element in the facilitation of student social acceptance in inclusive classrooms (Garrote et al., 2017).

At the classroom level, effective teacher classroom management had, as predicted, a positive impact on the level of social acceptance in the classroom. While many studies have revealed the effect of classroom management on student academic outcomes (e.g., Hattie, 2009), this result supports the finding that student social outcomes are influenced by teachers' classroom management practices as well (e.g., Soodak and McCarthy, 2006). Further, it provides empirical evidence for the concept of the "invisible hand" that refers to the potential teachers have to unobtrusively influence the classroom social dynamics (Farmer et al., 2018). Whether intentionally or not, first to third grade teachers had an impact on the social acceptance level of the peer group through

their classroom management practices. Implementing clear and consistent rules, as well as successfully managing time, to avoid tardiness and unnecessary waiting, resulted in a higher level of social acceptance in the classroom by the end of the school year. It can be assumed that these classroom management routines prevented disruptive behavior (Kostewicz et al., 2008) and thus prevented a negative perception of students with disruptive behavior, which in turn affected the social acceptance level in the classroom. Finally, the results also highlight the importance of teachers' awareness of social dynamics in the classroom and of their unique position to support social experiences of students in the peer group with adequate classroom management practices (Farmer et al., 2019; Juvonen et al., 2019).

Teacher attitudes toward inclusion, as an affect-motivation disposition aspect of teacher competence, played no significant role in the social acceptance level in the classroom. This was expected as current research from regular classrooms shows that affect-motivation dispositions influence teaching practices and only indirectly affect student outcomes via teaching practices (Blömeke et al., 2015; Krauss et al., 2020). However, in this study, teachers' attitudes toward inclusion also did not predict teachers' classroom management practices. Therefore, teachers' attitudes toward inclusion had also no indirect effect–via teachers' classroom management–on student social acceptance. These study findings indicate that the attitudes of teachers toward inclusion might be less important than has been suggested by many cross-sectional studies (e.g., de Boer et al., 2012; Desombre et al., 2019; Hellmich et al., 2019) and that its impact on teaching practices is overestimated. Studies have found that teachers with more teaching experience in inclusive classrooms hold more positive attitudes toward inclusion (De Boer et al., 2011). This could indicate a stronger effect of teaching practices on teacher attitudes than vice versa. It could also be that teachers' attitudes toward inclusion are more important in preventing the exclusion of students with special educational needs from mainstream education and affect the willingness of teachers to include students with special educational needs in their mainstream classes (Malki and Einat, 2018). Further, as suggested by Savolainen et al. (2020), teachers' self-efficacy could be a more relevant predictor of teaching practices. However, looking at the factors of teacher attitudes separately, neither teachers' perception of their behavior management nor their perception of their ability to teach in inclusive classrooms, which should to some extent represent the behavioral dispositions of teachers, predicted their classroom management practices. These results support the finding of Hellmich et al. (2019) indicating no significant relationship between self-efficacy beliefs and self-reported teaching practices. However, the lack of significant effect in the present study could be due to the unidimensional assessment of attitudes toward inclusion with the ORI questionnaire (Ewing et al., 2018). Whereas the cognitive component of teachers' attitudes toward inclusion might not be represented in teachers' behavior, behavioral and affective components of teachers' attitudes toward inclusion are probably more strongly related to teacher behavior. In conclusion, the state of the research and the results show that attitudes toward inclusion, and especially the assumptions on its effects, remain a "fuzzy concept." In the end, positive attitudes toward inclusion might be, as reported by Bosse et al. (2016), a result of teachers' experiences of stress. In order to be able to draw any conclusions on the impact of teacher attitudes toward inclusion on teacher practices in class, further longitudinal studies using multidimensional assessment scales are clearly needed.

This study provides supporting evidence for the role teachers play in promoting social acceptance in inclusive classrooms. However, its findings need to be interpreted in light of its limitations. First, video-data were available from only one lesson. According to Praetorius et al. (2014), one videotaped lesson per class should be enough to analyze classroom management reliably. Nevertheless, teachers and students might have been influenced by being videotaped. In particular, the students might have displayed less disruptive behavior than in a setting without a video camera (Hawthorn-effect; Coombs and Smith, 2003). Second, classroom management of the teacher might be affected by the presence of the special education teacher in some of the classrooms as well as by the nested instruction (Jones and Brownell, 2014; Pfister et al., 2015). Third, the missing significant relationship between teachers' attitudes toward inclusion and their classroom management practices could be caused by the unidimensional assessment of teachers' attitudes. Recent studies strongly recommend considering not only the cognitive component, but also the affective and the behavioral (de Boer et al., 2012; Ewing et al., 2018). Fourth, the sequential assessment of the student social acceptance and the teachers' classroom management is only one element in favor of a causal relationship between these variables. Longitudinal studies using cross-lagged panel analyses with several measurement points are needed to support this causal claim (Selig and Little, 2012). Finally, the impact of the teacher related variables was studied for the whole class. The link between social behavior and social acceptance was not examined for students with special educational needs vs. students without special educational needs. The results may have differed if students with special educational needs were compared to their classmates. The small number of students with special educational needs per class made it difficult to examine this question. In addition, teachers' attitudes and behavior were assessed on a classroom level and not as they related to each individual student. Further studies investigating the effects of teacher related variables on an individual level and comparing their effects on students with and without special educational needs are needed to disentangle the impact of teacher attitudes and behavior on student social acceptance in inclusive classrooms.

To conclude, this longitudinal study confirms the significance of effective classroom management for student social acceptance (Soodak and McCarthy, 2006; Farmer et al., 2019). Teachers influence the social dynamics in the classroom by implementing their classroom routines. In order to use this influence to support student social acceptance, it is of utmost importance that teachers are aware of the positive or negative impact they have on social experiences of students

in the peer group (Farmer et al., 2019). Therefore, future studies should examine the impact of specific classroom management practices on student social experiences and learning about the effects of classroom management practices on student academic and social outcomes should be a mandatory component of teacher education. Further, considering the limitations of the present study, the impact of teachers' attitudes toward inclusion remains unclear. Interestingly, although the empirical evidence on the impact of teachers' attitudes toward inclusion is lacking, supporting student teachers in developing positive attitudes toward inclusion is still a major aim in the pre-service formation in some countries (e.g., Hellmich et al., 2016; Junker et al., 2020). This shows that more research is urgently needed to disentangle the relationship between the specific affect-motivation dispositions in terms of inclusion and the concrete teaching practices in inclusive classrooms.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Zurich Ethics Commission. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

AG, EMO, FF, and RSD conceptualized the research. AG performed the statistical analyses, wrote the first draft, and finalized the manuscript. EMO contributed to the first draft, supervised the analyses, revised and substantially helped to finalize the manuscript. All authors organized and conducted the data collection and approved the submitted version.

FUNDING

This work was supported by the Swiss National Science Foundation (grant number 146086).

REFERENCES

Antonak, R. F., and Larrivee, B. (1995). Psychometric analysis and revision of the opinions relative to mainstreaming scale. *Except. Child.* 62, 139–149. doi: 10.1177/001440299506200204

Avramidis, E., Toulia, A., Tsihouridis, C., and Stroglios, V. (2019). Teachers' attitudes towards inclusion and their self-efficacy for inclusive practices as predictors of willingness to implement peer tutoring. *J. Res. Spec. Educ. Needs* 19, 49–59. doi: 10.1111/1471-3802.12477

Bacete, F. J. G., Planes, V. E. C., Perrin, G. M., and Ochoa, G. M. (2017). Understanding rejection between first-and-second-grade elementary students through reasons expressed by rejecters. *Front. Psychol.* 8:462. doi: 10.3389/fpsyg.2017.00462

Bliese, P. (2016). *Multilevel Modeling in R: A Brief Introduction to R, the Multilevel Package, and the Nlme Package*. Available online at: https://cran.r-project.org/doc/contrib/Bliese_Multilevel.pdf (accessed March 19, 2019).

Blömeke, S., Gustafsson, J. E., and Shavelson, R. (2015). Beyond dichotomies: competence viewed as a continuum. *Z. Psychol.* 223, 3–13. doi: 10.1027/2151-2604/a000194

Bossaert, G., Colpin, H., Pijl, S. J., and Petry, K. (2013). Truly included? A literature study focusing on the social dimension of inclusion in education. *Int. J. Inclusive Educ.* 17, 60–79. doi: 10.1080/13603116.2011.580464

Bosse, S., Henke, T., Jäntsch, C., Lambrecht, J., Vock, M., and Spörer, N. (2016). Die entwicklung der einstellung zum inklusiven lernen und der selbstwirksamkeit von grundschullehrkräften. [The development of inclusive attitudes and self-efficacy of primary schoolteachers.] *Empirische Sonderpädagogik* 1, 103–116.

Chang, L. (2004). The role of classroom norms in contextualizing the relations of children's social behaviors to peer acceptance. *Dev. Psychol.* 40, 691–702. doi: 10.1037/0012-1649.40.5.691

Clausen, M., Reusser, K., and Klieme, E. (2003). Unterrichtsqualität auf der basis hoch-inferenter unterrichtsbeurteilungen [Teaching quality based on high-inferent assessments]. *Unterrichtswissenschaft* 31, 122–141.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. London: Routledge.

Coombs, S. J., and Smith, I. D. (2003). The Hawthorne effect: is it a help or a hindrance in social science research? *Change* 6, 97–111.

De Boer, A., Pijl, S. J., and Minnaert, A. E. M. G. (2011). Regular primary schoolteachers' attitudes towards inclusive education: a review of the literature. *Int. J. Inclusive Educ.* 15, 331–353. doi: 10.1080/13603110903030089

de Boer, A., Timmerman, M., Pijl, S. J., and Minnaert, A. (2012). The psychometric evaluation of a questionnaire to measure attitudes towards inclusive education. *Eur. J. Psychol. Educ.* 27, 573–589. doi: 10.1007/s10212-011-0096-z

de Monchy, M., Pijl, S. J., and Zandberg, T. (2004). Discrepancies in judging social inclusion and bullying of pupils with behaviour problems. *Eur. J. Spec. Needs Educ.* 19, 317–330. doi: 10.1080/0885625042000262488

Desombre, C., Lamotte, M., and Jury, M. (2019). French teachers' general attitude toward inclusion: the indirect effect of teacher efficacy. *Educ. Psychol.* 39, 38–50. doi: 10.1080/01443410.2018.1472219

Eriksson, L., and Granlund, M. (2004). Conceptions of participation in students with disabilities and persons in their close environment. *J. Dev. Phys. Disabil.* 16, 229–245. doi: 10.1023/B:JODD.0000032299.31588.fd

Ewing, D. L., Monsen, J. J., and Kielblock, S. (2018). Teachers' attitudes towards inclusive education: a critical review of published questionnaires. *Educ. Psychol. Pract.* 34, 150–165. doi: 10.1080/02667363.2017.1417822

Farmer, T. W., Dawes, M., Hamm, J. V., Lee, D., Mehtaji, M., Hoffman, A. S., et al. (2018). Classroom social dynamics management: why the invisible hand of the teacher matters for special education. *Remedial Spec. Educ.* 39, 177–192. doi: 10.1177/0741932517718359

Farmer, T. W., Hamm, J. V., Dawes, M., Barko-Alva, K., and Cross, J. R. (2019). Promoting inclusive communities in diverse classrooms: teacher attunement and social dynamics management. *Educ. Psychol.* 54, 286–305. doi: 10.1080/00461520.2019.1635020

Farmer, T. W., McAuliffe Lines, M., and Hamm, J. V. (2011). Revealing the invisible hand: the role of teachers in children's peer experiences. *J. Appl. Dev. Psychol.* 32, 247–256. doi: 10.1016/j.appdev.2011.04.006

Frederickson, N. L., and Furnham, A. F. (2004). Peer-assessed behavioural characteristics and sociometric rejection: differences between pupils who have moderate learning difficulties and their mainstream peers. *Br. J. Educ. Psychol.* 74, 391–410. doi: 10.1348/0007099041552305

Fuchs, D., Fuchs, L. S., Mathes, P. G., and Martinez, E. A. (2002). Preliminary evidence on the social standing of students with learning disabilities in PALS and no-PALS classrooms. *Learn. Disabil. Res. Pract.* 17, 205–215. doi: 10.1111/1540-5826.00046

Garrote, A., Sermier Dessemontet, R., and Moser Opitz, E. (2017). Facilitating the social participation of pupils with special educational needs in mainstream schools: a review of school-based interventions. *Educ. Res. Rev.* 20, 12–23. doi: 10.1016/j.edurev.2016.11.001

Grütter, J., Meyer, B., and Glenz, A. (2015). Sozialer ausschluss in integrationsklassen: ansichtssache? *Psychol. Erzieh. Unterr.* 63, 65–82. doi: 10.2378/peu2015.art05d

Hattie, J. (2009). *Visible Learning. A Synthesis of Over 800 Meta-Analysis Relating to Achievement*. Oxon: Routledge.

Hedges, L. V., and Hedberg, E. C. (2007). Intraclass correlation values for planning group-randomized trials in education. *Educ. Eval. Policy Anal.* 29, 60–87. doi: 10.3102/0162373707299706

Hellmich, F., Görel, G., and Schwab, S. (2016). Einstellungen und motivation von lehramtsstudentinnen und -studenten in bezug auf den inklusiven unterricht in der grundschule: ein vergleich zwischen deutschland und Österreich [Pre-service teachers' attitudes and motivation in relation to inclusive education in primary school – A comparison between Germany and Austria]. *Empirische Sonderpädagogik* 8, 67–85.

Hellmich, F., Löper, M. F., and Görel, G. (2019). The role of primary school teachers' attitudes and self-efficacy beliefs for everyday practices in inclusive classrooms – a study on the verification of the 'Theory of Planned Behaviour'. *J. Res. Spec. Educ. Needs* 19, 36–48. doi: 10.1111/1471-3802.12476

Helmke, A. (2014). *Unterrichtsqualität und Lehrerprofessionalität: Diagnose, Evaluation und Verbesserung des Unterrichts [Teaching Quality and Professionalism of Teachers: Diagnose, Evaluation, and Improvement of Instruction]*, 5th Edn. Seelze: Klett-Kallmeyer.

Hendrickx, M. M. H. G., Mainhard, M. T., Oudman, S., Boor-Klip, H. J., and Brekelmans, M. (2017). Teacher behavior and peer liking and disliking: the teacher as a social referent for peer status. *J. Educ. Psychol.* 109, 546–558. doi: 10.1037/edu0000157

Hitti, A., Mulvey, K. L., and Killen, M. (2011). Social exclusion and culture: the role of group norms, group identity and fairness. *An. Psicol.* 27, 587–599.

Hox, J. J., Moerbeek, M., and van de Schoot, R. (2017). *Multilevel Analysis*. New York, NY: Routledge. doi: 10.4324/9781315650982

Hymel, S., Vaillancourt, T., McDougall, P., and Renshaw, P. D. (2004). "Peer acceptance and rejection in childhood," in *Blackwell Handbook of Childhood Social Development*, eds P. K. Smith and C. H. Hart (Oxford: Blackwell Publishing), 265–284.

Jones, N. D., and Brownell, M. T. (2014). Examining the use of classroom observations in the evaluation of special education teachers. *Assess. Eff. Interv.* 39, 112–124. doi: 10.1177/1534508413514103

Jordan, A., and McGhie-Richmond, D. (2014). Identifying effective teaching practices in inclusive classrooms. *Int. Perspect. Inclusive Educ.* 3, 133–162. doi: 10.1108/S1479-363620140000003027

Junker, R., Zeuch, N., Rott, D., Henke, I., Bartsch, C., and Kürten, R. (2020). Zur veränderbarkeit von heterogenitäts-einstellungen und selbstwirksamkeitsüberzeugungen von lehramtsstudierenden durch diversitätssensible hochschuldidaktische lehrmodule [Changing heterogeneity-related attitudes and perceived self-efficacy of pre-service teachers through diversity-sensitive courses in higher education.]. *Empirische Sonderpädagogik* 1, 45–63.

Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H. L., and Smith, D. S. (2019). Promoting social inclusion in educational settings: challenges and opportunities. *Educ. Psychol.* 54, 250–270. doi: 10.1080/00461520.2019.1655645

Karakaya, E. G., and Tufan, M. (2018). Social skills, problem behaviors and classroom management in inclusive preschool settings. *J. Educ. Train. Stud.* 6, 123–134. doi: 10.11114/jets.v6i5.3076

Korpershoek, H., Harms, T., de Boer, H., van Kuijk, M., and Doolaard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programs on students' academic, behavioral, emotional, and motivational outcomes. *Rev. Educ. Res.* 86, 643–680. doi: 10.3102/0034654315626799

Koster, M., Nakken, H., Pijl, S. J., and Van Houten, E. J. (2009). Being part of the peer group: a literature study focusing on the social dimension of inclusion in education. *Int. J. Inclusive Educ.* 13, 117–140. doi: 10.1080/13603110701284680

Koster, M., Pijl, S. J., Nakken, H., and Van Houten, E. J. (2010). Social participation of students with special needs in regular primary education in the Netherlands. *Int. J. Disabil. Dev. Educ.* 57, 59–75. doi: 10.1080/10349120903537905

Kostewicz, D. E., Ruhl, K. L., and Kubina, R. M. (2008). Creating classroom rules for students with emotional and behavioral disorders: a decision-making guide. *Beyond Behav.* 17, 61–66.

Krauss, S., Bruckmaier, G., Lindl, A., Hilbert, S., Binder, K., Steib, N., et al. (2020). Competence as a continuum in the COACTIV study: the "cascade model". *ZDM Math. Educ.* 52, 311–327. doi: 10.1007/s11858-020-01151-z

Krull, J., Wilbert, J., and Hennemann, T. (2014). Soziale ausgrenzung von erstklässlerinnen und erstklässlern mit sonderpädagogischem förderbedarf im gemeinsamen unterricht. *Empirische Sonderpädagogik* 6, 59–75.

Ladd, G. W., Herald-Brown, S. L., and Reiser, M. (2008). Does chronic classroom peer rejection predict the development of children's classroom participation during the grade school years? *Child Dev.* 79, 1001–1015. doi: 10.1111/j.1467-8624.2008.01172.x

Malki, S., and Einat, T. (2018). To include or not to include – this is the question: attitudes of inclusive teachers toward the inclusion of pupils with intellectual disabilities in elementary schools. *Educ. Citizensh. Soc. Justice* 13, 65–80. doi: 10.1177/1746197917705138

Mand, J. (2007). Social position of special needs pupils in the classroom: a comparison between German special schools for pupils with learning difficulties and integrated primary school classes. *Eur. J. Spec. Needs Educ.* 22, 7–14. doi: 10.1080/08856250601082182

Mikami, A. Y., Griggs, M. S., Reuland, M. M., and Gregory, A. (2012). Teacher practices as predictors of children's classroom social preference. *J. Sch. Psychol.* 50, 95–111. doi: 10.1016/j.jsp.2011.08.002

Mikami, A. Y., Lerner, M. D., and Lun, J. (2010). Social context influences on children's rejection by their peers. *Child Dev. Perspect.* 4, 123–130. doi: 10.1111/j.1750-8606.2010.00130.x

Monsen, J. J., Ewing, D. L., and Kwoka, M. (2014). Teachers' attitudes towards inclusion, perceived adequacy of support and classroom learning environment. *Learn. Environ. Res.* 17, 113–126. doi: 10.1007/s10984-013-9144-8

Nepi, L. D., Fioravanti, J., Nannini, P., and Peru, A. (2015). Social acceptance and the choosing of favourite classmates: a comparison between students with special educational needs and typically developing students in a context of full inclusion. *Br. J. Spec. Educ.* 42, 319–337. doi: 10.1111/1467-8578.12096

Odom, S. L., Zercher, C., Li, S., Marquart, J. M., Sandall, S., and Brown, W. H. (2006). Social acceptance and rejection of preschool children with disabilities: a mixed-method analysis. *J. Educ. Psychol.* 98, 807–823. doi: 10.1037/0022-0663.98.4.807

Ollendick, T. H., Weist, M. D., Borden, M. C., and Greene, R. W. (1992). Sociometric status and academic, behavioral, and psychological adjustment: a five-year longitudinal study. *J. Consult. Clin. Psychol.* 60, 80–87. doi: 10.1037/0022-006x.60.1.80

Pedersen, S., Vitaro, F., Barker, E. D., and Borge, A. I. H. (2007). The timing of middle-childhood peer rejection and friendship: linking early behavior to early-adolescent adjustment. *Child Dev.* 78, 1037–1051. doi: 10.1111/j.1467-8624.2007.01051.x

Peters, E., Riksen-Walraven, J. M. A., Cillessen, A. H. N., and de Weerth, C. (2011). Peer rejection and HPA activity in middle childhood: friendship makes a difference. *Child Dev.* 82, 1906–1920. doi: 10.1111/j.1467-8624.2011.01647.x

Pfister, M., Moser Opitz, E., and Pauli, C. (2015). Scaffolding for mathematics teaching in inclusive primary classrooms: a video study. *ZDM Math. Educ.* 47, 1079–1092. doi: 10.1007/s11858-015-0713-4

Pianta, R. C., and Hamre, B. K. (2009). Conceptualization, measurement, and improvement of classroom processes: standardized observation can leverage capacity. *Educ. Res.* 38, 109–119. doi: 10.3102/0013189X09332374

Pijl, S. J., and Frostad, P. (2010). Peer acceptance and self-concept of students with disabilities in regular education. *Eur. J. Spec. Needs Educ.* 25, 93–105. doi: 10.1080/08856250903450947

Praetorius, A.-K., Pauli, C., Reusser, K., Rakoczy, K., and Klieme, E. (2014). One lesson is all you need? Stability of instructional quality across lessons. *Learn. Instruct.* 31, 2–12. doi: 10.1016/j.learninstruc.2013.12.002

Rakoczy, K., and Pauli, C. (2006). "Hoch inferentes rating: beurteilung der qualität unterrichtlicher prozesse [High-Inference rating: evaluating the quality of teaching processes]," in *Dokumentation der Erhebungs- und Auswertungsinstrumente zur Schweizerisch-Deutschen Videostudie "Unterrichtsqualität, Lernverhalten und Mathematisches Verständnis". 3. Videoanalysen*, eds I. Hugener, C. Pauli, and K. Reusser (Frankfurt am Main: DIPF), 206–233.

Rosseel, Y. (2012). lavaan: an R package for structural equation modeling. *J. Stat. Softw.* 48, 1–36. doi: 10.18637/jss.v048.i02

Rosseel, Y., Jorgensen, T. D., Oberski, D., Bymes, J., Vanbrabant, L., Savalei, V., et al. (2019). *Package "Lavaan". Latent Variable Analysis (Version 0.6-5; p. 102)*. Available online at: https://lavaan.ugent.be/tutorial/tutorial.pdf (accessed April 3, 2020).

Savolainen, H., Malinen, O. P., and Schwab, S. (2020). Teacher efficacy predicts teachers' attitudes towards inclusion: a longitudinal cross-lagged analysis. *Int. J. Inclusive Educ.* 1–15. doi: 10.1080/13603116.2020.1752826

Selig, J. P., and Little, T. D. (2012). "Autoregressive and cross-lagged panel analysis for longitudinal data," in *Handbook of Developmental Research Methods*, eds B. Laursen, T. D. Little, and N. A. Card (New York, NY: The Guilford Press), 265–278.

Soodak, L. C., and McCarthy, M. C. (2006). "Classroom management in inclusive settings," in *Handbook of Classroom Management*, eds C. M. Evertson and C. S. Weinstein (New York, NY: Routledge), 461–489.

Stronge, J. H., Ward, T. J., and Grant, L. W. (2011). What makes good teachers good? A cross-case analysis of the connection between teacher effectiveness and student achievement. *J. Teach. Educ.* 6, 339–355. doi: 10.1177/0022487111404241

Sturaro, C., van Lier, P. A. C., Cuijpers, P., and Koot, H. M. (2011). The role of peer relationships in the development of early school-age externalizing problems. *Child Dev.* 82, 758–765. doi: 10.1111/j.1467-8624.2010.01532.x

Trevethan, R. (2017). Intraclass correlation coefficients: clearing the air, extending some cautions, and making some requests. *Health Serv. Outcomes Res. Methodol.* 17, 127–143. doi: 10.1007/s10742-016-0156-6

Van Den Berg, Y. H. M., Segers, E., and Cillessen, A. H. N. (2012). Changing peer perceptions and victimization through classroom arrangements: a field experiment. *J. Abnorm. Child Psychol.* 40, 403–412. doi: 10.1007/s10802-011-9567-6

Wilson, C., Marks Woolfson, L., and Durkin, K. (2019). The impact of explicit and implicit teacher beliefs on reports of inclusive teaching practices in Scotland. *Int. J. Inclusive Educ.* doi: 10.1080/13603116.2019.1658813 [Epub ahead of print].

Wullschleger, A., Garrote, A., Schnepel, S., Jaquiéry, L., and Moser Opitz, E. (2020). Effects of teacher feedback behavior on social acceptance in inclusive elementary classrooms: exploring social referencing processes in a natural setting. *Contemp. Educ. Psychol.* 60:101841. doi: 10.1016/j.cedpsych.2020.101841

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

CORRECTION
published: 20 April 2021
doi: 10.3389/feduc.2021.677881

Corrigendum: Social Acceptance in Inclusive Classrooms: The Role of Teacher Attitudes Toward Inclusion and Classroom Management

Ariana Garrote[1,2]*, *Franziska Felder*[2], *Helena Krähenmann*[1,2], *Susanne Schnepel*[2], *Rachel Sermier Dessemontet*[3] *and Elisabeth Moser Opitz*[2]

[1] School of Education, University of Applied Sciences and Arts Northwestern Switzerland, Brugg, Switzerland, [2] Institute of Education, University of Zurich, Zurich, Switzerland, [3] Department of Special Educational Needs, University of Teacher Education of the State of Vaud, Lausanne, Switzerland

Keywords: classroom management, teacher attitudes, social acceptance, primary school, special educational needs, inclusive classrooms

A Corrigendum on

Social Acceptance in Inclusive Classrooms: The Role of Teacher Attitudes Toward Inclusion and Classroom Management

by Garrote, A., Felder, F., Krähenmann, H., Schnepel, S., Sermier Dessemontet, R., and Moser Opitz, E. (2020). Front. Educ. 5:582873. doi: 10.3389/feduc.2020.582873

OPEN ACCESS

Edited and reviewed by:
Antonius H. N. Cillessen, Radboud University Nijmegen, Netherlands

***Correspondence:**
Ariana Garrote
ariana.garrote@fhnw.ch

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *08 March 2021*
Accepted: *26 March 2021*
Published: *20 April 2021*

Citation:
Garrote A, Felder F, Krähenmann H, Schnepel S, Sermier Dessemontet R and Moser Opitz E (2021) Corrigendum: Social Acceptance in Inclusive Classrooms: The Role of Teacher Attitudes Toward Inclusion and Classroom Management. Front. Educ. 6:677881. doi: 10.3389/feduc.2021.677881

In the published article, there was an error in affiliation 3. Instead of "Canton of Vaud," it should be "State of Vaud."

In the original article, there was an error. The SRMR-Value on level 2 is missing.

A correction should be made to **Results, The Role of Teacher Attitudes Toward Inclusion and Classroom Management in Student Social Acceptance**, paragraph one:

"The hypothesized model with teacher attitudes toward inclusion as a manifest variable fitted the data well, $\chi^2(6) = 6.36$, $p = 0.384$, CFI = 1, RMSEA = 0.01 [90% CI: 0,0.06], SRMR = 0.02, $SRMR_{between} = 0.05$. The results are presented in Figure 2. On the individual level, student social behavior was correlated with student social acceptance at t_1 and was a predictor of student social acceptance at t_2. Student sex was correlated with student social behavior. More specifically, girls were rated as having significantly higher levels of social behavior than boys. On the class level, classroom management was a significant predictor of student social acceptance at t_2. As hypothesized, teacher attitudes toward inclusion did not predict student social acceptance at t_2. In addition, teacher attitudes toward inclusion were not related to teacher classroom management, which was unexpected. On both levels, social acceptance at t_1 strongly predicted social acceptance at t_2, which indicates a high stability of social acceptance over time."

An additional correction should be made to **Results, The Role of Teacher Attitudes Toward Inclusion and Classroom Management in Student Social Acceptance**, paragraph two:

"An alternative model was tested with the three factors of teacher attitudes toward inclusion added separately as manifest variables. The adapted model also fitted the data well, $\chi^2(11) = 23.29$, $p < 0.05$, CFI = 0.99, RMSEA = 0.05 [90% CI:0.02,0.07], SRMR = 0.02, $SRMR_{between} = 0.17$. As expected, teacher attitudes about benefits of inclusion, about behavior management in inclusive classrooms, and about the ability to teach in inclusive classrooms had no effect on student social

acceptance t_2 at the classroom level. In addition, none of the three factors of teacher attitudes toward inclusion predicted classroom management."

The authors apologize for these errors and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

frontiers in Psychology

ORIGINAL RESEARCH
published: 15 October 2020
doi: 10.3389/fpsyg.2020.586991

Influences of Teacher–Child Relationships and Classroom Social Management on Child-Perceived Peer Social Experiences During Early School Years

Jing Chen[1], Hui Jiang[1], Laura M. Justice[1,2], Tzu-Jung Lin[1,2], Kelly M. Purtell[1,3] and Arya Ansari[1,3]*

[1] Crane Center for Early Childhood Research and Policy, The Ohio State University, Columbus, OH, United States, [2] Department of Educational Studies, The Ohio State University, Columbus, OH, United States, [3] Department of Human Sciences, The Ohio State University, Columbus, OH, United States

Interactions with teachers and peers are critical for children's social, behavioral, and academic development in the classroom context. However, these two types of interpersonal interactions in the classroom are usually pursued via separate lines of inquiries. The current study bridges these two areas of research to examine the way in which teachers influence child-perceived peer social support and peer victimization for 2,678 children within 183 classrooms in preschool through grade three. Two levels of teacher influence are considered, namely teacher–child closeness and conflict relationships at the child-level, and teacher management of interpersonal interactions at the classroom-level. Results of multilevel regression models showed that teacher–child closeness was associated with the growth of child-perceived peer social support from fall to spring, whereas teacher–child conflict and teachers' behavior management practices were associated with the change in child-perceived peer victimization across the academic year. These associations were unique and above and beyond the influence of children's actual peer social interactions, including reciprocal friendships and the collective classroom reputation of peer victimization. Collectively, findings highlight the multi-faceted teacher roles in shaping children's perceptions of their peer social experiences during the earliest years of schooling.

Keywords: child-perception of peer social experiences, peer social support, peer victimization, teacher–child relationships, classroom social management

OPEN ACCESS

Edited by:
Carmen L. A. Zurbriggen, University of Luxembourg, Luxembourg

Reviewed by:
Fabián Román, Universidad de la Costa, Colombia
Marie Catherine White, Gordon College, United States

****Correspondence:***
Jing Chen
chenj.chenjing@outlook.com

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Psychology

Received: *24 July 2020*
Accepted: *22 September 2020*
Published: *15 October 2020*

Citation:
Chen J, Jiang H, Justice LM, Lin T-J, Purtell KM and Ansari A (2020) Influences of Teacher–Child Relationships and Classroom Social Management on Child-Perceived Peer Social Experiences During Early School Years. Front. Psychol. 11:586991. doi: 10.3389/fpsyg.2020.586991

INTRODUCTION

Children's interactions with their teachers and peers are both salient features of the classroom environment and figure prominently in theories concerning children's development and learning (Bronfenbrenner and Morris, 2006). Studies find that positive interactions with teachers and with peers and the way in which teachers manage interpersonal interactions in the classroom influence children's concurrent and long-term social, emotional, and academic development (e.g., Kochenderfer and Ladd, 1996; Jerome et al., 2009; Hosan and Hoglund, 2017; Ladd et al., 2017). However, much of the extant literature has considered the influence of teachers and peers separately (Hughes and Im, 2016; Wang et al., 2016). Consequently, we know little about the roles of teachers in optimizing children's perceptions of their peer social experiences and whether teacher influences

are above and beyond children's actual peer social interactions. This an important gap in knowledge because researchers have argued that children's *perceptions* of their peer social experiences might be more predictive of their social and psychological well-being and school success than their *actual* peer interactions (Betts et al., 2013; Troop-Gordon et al., 2019; Önder et al., 2019). Thus, the current study examines multiple levels of teacher influences, including teacher–child relationships (i.e., closeness and conflict) at the child-level and teachers' classroom management of interpersonal interactions at the classroom-level, on two aspects of peer social experiences from children's perspective: peer social support and peer victimization.

Significance of Child-Perceived Peer Social Experiences

Peer social support and peer victimization are two important aspects of children's classroom experiences. Peer social support refers to supportive behaviors from peers that can enhance children's functioning and resilience to difficulties (Bakalım and Taşdelen-Karçkay, 2016). Bakalım and Taşdelen-Karçkay argued that peer social support provides children with emotional comfort that protects children against anxiety and stress, helps them cope with difficulties via guidance and feedback. Indeed, peer social support is associated with a range of positive outcomes, including children's motivation, attention, academic attitudes, and achievement (Coolahan et al., 2000; Bursal, 2017). Thus, peer social support is considered as a primary indicator of school adaptiveness and academic success from preschool through elementary school and above (Coolahan et al., 2000; Blandon et al., 2010).

Peer victimization, on the other hand, has been linked with school maladjustment, which refers to physical and emotional harms children receive from peers, such as being hit and teased. Studies find that peer victimization is a precursor of loneliness and school avoidance (Kochenderfer and Ladd, 1996; Buhs and Ladd, 2001) and is associated with low self-esteem, depression, external behavioral problems, and academic failure (Olweus, 1992; Alsaker, 1993; Blandon et al., 2010; Ladd et al., 2017). Researchers report that children who experience peer victimization tend to be less engaged classroom activities, which, in turn, is associated with their emotional adjustment difficulties and limits their access to opportunities and resources that are essential for social and academic development (Buhs and Ladd, 2001; Blandon et al., 2010).

Although children's perceptions of their peer social experiences are related to their actual peer social interactions (Kochenderfer and Ladd, 1996), only a few studies have conceptually differentiated children's perceived peer experiences from their actual peer experiences. This differentiation is important because some researchers suggest that perceptions of being supported by peers reflect children's competency in peer interactions, which is associated with their learning behaviors and school success (Coolahan et al., 2000; Blandon et al., 2010). Specifically, in the literature of peer isolation, the distinction between objective isolation and perceived isolation has been established, with the former representing the actual quantity of peer interactions and the latter capturing loneliness or the feeling of being isolated by peers (Cacioppo and Hawkley, 2009; Danese et al., 2009).

Differentiating perceived from actual peer social experience is also meaningful because children's perceptions might be more strongly associated with their social and emotional well-being. On the one hand, children's perceptions of their peer social experiences can shape their self-perceptions or self-worth, which can then influence children's social behaviors (Ogelman et al., 2019) and their levels of being liked by peers (Önder et al., 2019). Önder et al. explained that self-perception reflects one's own competence and personality, which is established when children perceive their strengths and weaknesses when interacting with others and that children with low self-perception are likely to be passive and timid in peer interactions, which would contribute to their being less liked by peers. On the other hand, Troop-Gordon et al. (2019) discussed that support and victimization experiences in peer groups build children's beliefs about peers, which, according to social information processing theories, would shape their behavioral and emotional responses to future interpersonal events. Some suggest that perceived isolation tends to result in more severe and enduring consequences than objective isolation, because the perceptions of being isolated can alter individuals' social reasoning and information processing (Cacioppo and Hawkley, 2009; Danese et al., 2009). Specifically, Cacioppo and Hawkley explained that the perception of being isolated by peers may trigger children's confirmatory and memorial bias and can lead to their negative interpretations of peers' social moves, which in turn may contribute to children's misbehaviors and emotional maladaptiveness. Hence, although perceived and actual peer social experiences are rarely distinguished in the broader sense of peer social experience, it stands to reason that perceived peer social support and perceived peer victimization would shape children's understandings about themselves and about others. Therefore, there is a need to examine factors that may influence children's perceptions of their peer social experiences.

Teacher Influences on Peer Social Experiences

Besides peers, teachers represent another key dimension of classroom ecology (Hamre and Pianta, 2001; Jerome et al., 2009). As noted earlier, however, interactions with teachers and interactions with peers tend to be discussed separately (Hughes and Im, 2016; Wang et al., 2016), except for only a few studies as elaborated below; such work has suggested that teachers' relationships with individual children and their classroom social management can shape children's peer social experiences in the classroom.

For individual children, their interactions with teachers matter to their social experiences with peers. This is because teacher–child interactions can be observed by all classmates, which helps classmates draw inferences about children's attributes and likeability and form a classroom consensus about children's reputations (Hughes and Im, 2016). Further, teacher–child closeness is grounded in positive interactions, such as warm and

open communications, between a teacher and a child (Birch and Ladd, 1997), which forms a secure base for children to feel being cared and connected to the classroom environment. Teacher–child closeness is associated with children's engagement in classroom activities and their social competences and peer acceptance (e.g., Birch and Ladd, 1997; Pianta and Stuhlman, 2004; Hall-Lande et al., 2007; Gest and Rodkin, 2011). Children with close relationships with teachers may also receive greater support from teachers, which contributes to their social and academic development (Hamre and Pianta, 2001). On the contrary, teacher–child conflicts contribute to peer disliking as well as school avoidance, externalizing behaviors, and decreased prosocial behaviors and cooperation (Hamre and Pianta, 2001; Hughes and Im, 2016).

At the classroom-level, teachers' classroom management of interpersonal interactions (i.e., classroom social management) serves to shape children's peer social experience. Classroom social management is a challenge and critical task for teachers, which requires them to be aware of children's social needs and to afford developmental opportunities for children to positively interact with peers from diverse backgrounds (Farmer et al., 2019). A commonly used tool to capture classroom social management is the *Classroom Assessment Scoring System* (CLASS; Hamre and Pianta, 2007; Pianta et al., 2008; Downer et al., 2012), which features three domains of classroom management based on social and instructional interpersonal interactions (i.e., emotional support, classroom organization, and instructional support). These three domains are further categorized into nine dimensions. The current study includes four dimensions that mainly focus on the social aspect of interactional interactions, naming *positive climate*, which refers to interactions between teachers and children and among children that feature enthusiasm, enjoyment, and respect; *negative climate*, which refers to classroom interpersonal interactions that involve anger, aggression, or harshness; *teacher sensitivity*, which represent the extent to which teachers provide comfort, reassurance, and encouragement based on individual children's needs; and *behavior management*, which refers to teachers' effectiveness in preventing and redirecting children's misbehaviors. Warm and sensitive interactions with teachers and well-managed classrooms promote classroom inclusiveness and facilitate social connections among children, through which children develop social and emotional competences, reduce problematic behaviors, and become less vulnerable to peer victimizations (Hamre and Pianta, 2001; Cappella and Neal, 2012; Downer et al., 2012).

Although teachers can influence children's peer social experiences via multiple avenues as reviewed above, few studies have taken into account different levels of teacher influences simultaneously. Farmer et al. (2019) discussed that teachers are not only members in the classroom society interacting directly with individual children, but, at the same time, they also are leaders who act as an authority and a facilitator to manage classroom dynamics and to ensure children following the rules. Hence, the current study aims to capture teachers' multi-faceted roles to have a more comprehensive understanding of teacher influence on children's peer social experiences in the classroom.

The Current Study

The current study focuses on children from preschool through grade three; during these grades, positive peer experiences provide essential support to children's development and learning, whereas peer victimization occurs relatively more often than that in the later grades (Kochenderfer and Ladd, 1996; Ladd et al., 2017). Thus, there is a need to investigate teacher roles in managing classroom social dynamics during children's primary years of schooling.

Although there has been some research examining certain teacher influence on children's peer social experiences, it is not clear whether teacher influences operate above and beyond the influence of children's actual peer social interactions. For the purpose of this study, children's actual peer interactions were operationalized as the number of reciprocal friendships and their classroom reputation of peer victimization. Friendship is considered as the most important source of peer support, which provides children with a context for skill acquisition and development and helps children to validate their shared beliefs and identifies (Ladd et al., 1996; Gifford-Smith and Brownell, 2003). Further, compared to unilateral friendships (i.e., one child identifies the other as a friend but not vice versa), reciprocal friendships (i.e., children mutually identify each other as friends) tend to have higher quality, are more stable, and, therefore provide greater peer support (e.g., Quinn and Hennessy, 2010). Classroom reputation of peer victimization reflects the consensus among all classmates about the extent of harassment one experiences from peers. Hughes and Im (2016) discussed that children's disliking of a child tends to go beyond dyadic antipathy and would be contributed greater by group-based reputation based on shared observations. Both reciprocal friendship and classroom reputation of peer victimization triangulate the perceptions from both children and peers, which, therefore, would be less biased by individuals' opinions.

In all, the current study aims to examine multiple levels of teacher influence on child-perceived peer social support and peer victimization in the spring of the academic year when controlling for those in the fall. Teacher influences include teachers' closeness and conflict with individual children and their classroom social management at the classroom-level as represented by observations of positive climate, negative climate, teacher sensitivity, and behavior management. A sub-aim is to determine whether the above teacher influences on children-perceived social experiences are unique and operate beyond the influence of their actual peer interactions manifested as the number of reciprocal friendships and classroom reputation of peer victimization.

MATERIALS AND METHODS

Participants

This study is part of a large federally funded project focused on advancing understanding of early childhood learning experiences from preschool (pre-kindergarten) to third grade. The study sample consisted of two cohorts of participants, recruited from two large school districts in a Midwestern state. Recruitment

procedures were carried out in accordance with protocols to protect human subjects as approved by the Institutional Review Board (IRB) of the university.

Before the school year started, informational sessions were held in schools located within district borders to recruit teachers. All children in classrooms taught by participating teachers were eligible to enroll, and consent packets were sent home via backpack mail. Most participants were recruited in the fall, although additional preschool classrooms were added in winter and spring to meet recruitment goals. Consented teachers were asked to complete questionnaires about their classrooms, their children, their teaching practices, and their own background information. Consented children were administered direct assessments in fall and spring of the school year.

The sample included 43 schools, 183 classrooms, and 2,678 consented children. As summarized in **Table 1**, 50% of the participating children were girls, 66% were White, and 13% were Hispanic/Latino(a). Twelve percent of the children came from households that primarily spoke a language other than English and 10% of children had identified disabilities. Annual family income was distributed bimodally with 27% of the participating families falling in the lowest income bracket ($30,000 or lower) and 31% in the highest income bracket ($120,001 or higher). Forty-five percent of the children's mothers completed 4-year college education or higher. At the classroom level, an average classroom had 22 children (range = 12–29). Teachers were mostly female (97%), White (96%), and non-Hispanic (99%). On average, they were 38 years old with 13 years of teaching experience. Ninety-four percent of the teachers had a bachelor's degree or higher, and 82% had a teaching certificate.

Measures

To address the aims of the current study, we included measures of child-perceived peer social experiences, teacher–child relationships, classroom social management, and actual peer social interactions. Children's family background and demographic information were collected from caregiver and teacher questionnaires at the beginning of the school year.

Child-Perceived Peer Social Experiences

In fall and spring of the school year, one-on-one child interviews were conducted by trained research staff in quiet areas of the school hallway, and responses were recorded using a tablet in accordance with the approved study protocols. Based on previous studies of peer relationship and children's school adjustment (Asher et al., 1984; Ladd, 1990; Kochenderfer and Ladd, 1996; Waters et al., 2012), the research team developed measures of perceived peer social support comprising a total of 11 items (e.g., "How often would kids in your class help you if you are hurt?" and "How often would kids in your class tell you you're good at things?") and perceived peer victimization consisting of four items (e.g., "Does anyone in your class ever hit you?" and "Does anyone in your class ever say mean things to you?"). All items used a three-point frequency scale (0 = *Never*, 1 = *Sometimes*, 2 = *A lot*), and the internal consistency (Cronbach's alpha) ranged from 0.75 to 0.78 across scales and time points. The responses from items on the same scale were averaged to create composite scores for each child. In the analysis, spring scores were used as outcomes, and fall scores were included as covariates.

Teacher–Child Relationships

In the fall, teachers reported on their closeness and conflict with each child using the *Student–Teacher Relationship Scale* (Pianta, 2001). The closeness subscale included seven items (e.g., "I share an affectionate, warm relationship with this child" and "If upset, this child will seek comfort from me") and the conflict subscale contained eight items (e.g., "This child and I always seem to be struggling with each other" and "Dealing with this child drains my energy"). All items used a five-point Likert-type scale (0 = *Definitely does not apply*, 4 = *Definitely applies*) and the scales demonstrated strong internal consistency (alphas ranged from 0.88 to 0.94). For analysis, the mean score of each subscale of the teacher–child relationship was calculated for each child.

Classroom Social Management

Teacher's classroom social management was captured in the winter with the *Classroom Assessment Scoring System* (CLASS, Pianta et al., 2008). As noted earlier, although the original CLASS includes nine dimensions, the current study focuses on four dimensions mainly from the social domain, including (1) *positive climate*, which reflects the warmth, respect, and enjoyment communicated by verbal and non-verbal interactions, (2) *negative climate*, which assesses the overall level of expressed negativity among teachers and children in the classroom, (3) *teacher sensitivity*, which refers to the teacher's awareness and responsiveness to the various needs of individual children and the entire class, and (4) *behavior management*, which encompasses the teacher's use of clear behavioral expectations and effective methods to prevent and redirect misbehavior. In each classroom, trained and reliable research staff conducted two 30-min observation cycles, where observers live-coded the teacher's practice or behavior as it contributed to the overall classroom environment on scales of 1 to 7 (1 = *minimally characteristic*, 7 = *highly characteristic*). Composite scores for each dimension were created by averaging across the two cycles. To ensure reliability, research staff completed extensive training sessions before entering the field, and ongoing quality checks were conducted via biweekly drift meetings. In addition, 20% of all in-field observations were double-coded, and inter-rater agreement (i.e., two coders scored within one point of difference on the same dimension) ranged from 0.90 to 0.92.

Peer Social Interactions

Peer social interactions including *reciprocal friendships* and *classroom reputation of peer victimization* were collected in the spring based on a peer nomination approach (Parkhurst and Asher, 1992), which has been found valid for children as young as preschoolers (Daniel et al., 2016; Chen et al., 2020). We asked children to identify classmates "*who are your best friends*" and "*who gets picked on or teased?*" Preschoolers were presented with a photo roster of all children in their classrooms to facilitate the nomination, while older children were provided a list of names of their classmates. For each child, we counted the number of reciprocal friendships when the child and classmates mutually

TABLE 1 | Sample description.

Variable	Valid *N*	% missing	Mean, %	*SD*	Range
Child and family characteristics					
School district	2678	0.0			
District 1			62.1%		
District 2			37.9%		
Grade level	2678	0.0			
Preschool			21.7%		
Kindergarten			24.7%		
First grade			17.8%		
Second grade			18.9%		
Third grade			16.9%		
Child gender	2659	0.7			
Female			49.5%		
Male			50.5%		
Child race	2628	1.9			
White/Caucasian (non-multiracial)			66.1%		
Black/African American (non-multiracial)			8.0%		
Asian (non-multiracial)			6.3%		
Other (non-multiracial)			7.9%		
Multiracial			11.8%		
Child is Hispanic	2637	1.5	12.8%		
Child has an IEP in spring	2450	8.5	10.1%		
Primary language spoken at home is English	2649	1.1	87.9%		
Annual household income	2564	4.3			
<$30,001			27.2%		
$30,001–$60,000			16.8%		
$60,001–$90,000			12.9%		
$90,001–$120,000			12.0%		
>$120,000			31.1%		
Mother's highest level of education	2619	2.2			
Less than high school diploma			10.3%		
High school diploma or GED			31.8%		
Associate degree			12.8%		
Bachelor's degree			24.8%		
Graduate or professional degree			20.3%		
Child age in fall (in months)	2650	1.0	78.16	18.37	25–124
Number of people in household	2026	24.3	4.51	1.23	2–9+
Number of children (age < 18) in household	2026	24.3	2.47	1.12	1–9+
Classroom and teacher characteristics					
School district	183	0.0			
District 1			64.5%		
District 2			35.5%		
Grade level	183	0.0			
Preschool			25.7%		
Kindergarten			25.7%		
First grade			15.8%		
Second grade			16.9%		
Third grade			15.8%		
Teacher gender	178	2.7			
Female			97.2%		
Male			2.8%		
Teacher race	175	4.4			
White/Caucasian (non-multiracial)			96.0%		
Black/African American (non-multiracial)			2.3%		

(Continued)

TABLE 1 | Continued

Variable	Valid *N*	% missing	Mean, %	*SD*	Range
Other (non-multiracial) and multiracial			1.7%		
Teacher ethnicity [1 = Hispanic/Latino(a)]	174	4.9	1.1%		
Certification status (1 = Yes)	169	7.7	82.8%		
Teacher's highest level of education	174	4.9			
High school diploma or GED			1.1%		
Some college credit, no degree			2.3%		
Associate degree			2.3%		
Bachelor's degree			35.1%		
Master's degree			59.2%		
Teacher age (in years)	179	2.2	37.66	9.05	22–60
Teaching experience (in years)	173	5.5	13.39	8.15	2–36
Number of children in classroom	178	2.7	21.90	3.99	12–29

Means are reported for continuous variables and percentages reported for categorical variables.

nominated each other as best friends; classroom reputation of peer victimization was represented by the frequency at which the child was nominated by classmates as someone who gets picked on or teased. Children's raw scores were standardized by dividing classroom size minus one, the maximum possible value, to allow the indices to be compared across classrooms.

Analytical Approach

We employed multilevel regression models to investigate the effects of teacher influence on children's perception of peer social experiences, given that children (level-1) were nested within classrooms (level-2). Two outcomes were examined, namely the child-perceived peer social support and child-perceived peer victimization in the spring. For each outcome, we first ran unconditional multilevel models where child outcomes were clustered by classrooms, to determine the percentage of observed variance attributable to classroom differences. Second, we fitted conditional multilevel models (Model 1), examining the association between teacher–child relationships and teacher classroom management and child-perceived peer social experiences, controlling for the pretest scores (i.e., child-perceived peer social experiences in the fall). Other controlled variables included child gender, disability status reported by teachers in spring, child race reported by caregivers (dichotomized into White vs. non-White), grade level, and school district. Finally, we included actual peer social interactions (i.e., reciprocal friendship and classroom reputation of peer victimization) as covariates to test whether teacher influences contribute to children's perceptions above and beyond their actual peer social interactions (Model 2). All models were fit in R with the *lmer* package (Bates et al., 2015) with maximum likelihood estimation. Missing data were list-wise deleted. The proportion of missing for each variable is reported in **Table 1**.

RESULTS

As shown in **Table 2**, children generally perceived that they had some peer social support, both in fall and in spring (mean = 1.32 and 1.35) with 75–79% reporting scores between 1 (*Sometimes*) and 2 (*A lot*). The mean of child-perceived victimization was 0.44 and 0.53 in the fall and spring, respectively, with 32–34% of children reporting never experiencing peer victimization. A little over one-half of children (55% in fall and 51% in spring), however, perceived experiencing some victimization, with scores greater than 0 (*Never*) but less than 1 (*Sometimes*). In terms of teacher–child relationships, teachers reported moderate to high levels of closeness (M = 3.13 out of 4) and low levels of conflict (M = 0.63 out of 4). Additionally, the classrooms were rated as having moderate quality in terms of teacher sensitivity (M = 4.65 out of 7), behavior management (M = 5.42 out of 7), and positive climate (M = 5.52 out of 7), and were scored very high in the area of negative climate (suggesting the absence of negativity; M = 6.92 out of 7). Finally, in terms of actual peer social interactions, children had reciprocal friendships with 8% of their classmates (range = 0–38%) and were nominated as "being picked on or teased" by 4% of their classmates (range = 0–80%).

Pairwise correlations are presented in **Table 3**. There was a moderate correlation between child-perceived peer experiences in the fall and the spring (0.41–0.55). Child-perceived peer victimization was negatively correlated with teachers' behavior management scores (−0.25 to −0.20), and child-perceived peer victimization in the spring was also negatively correlated with teachers' ability to promote a positive climate (−0.16). In addition, teacher–child closeness and conflict were negatively correlated (−0.27), and the four CLASS indices were positively correlated (0.17–0.70).

Teacher Influences on Child-Perceived Peer Social Experiences

The primary aim of the current study was to examine the associations between teacher–child relationships and teachers' classroom social management and two aspects of child-perceived peer social experiences in the spring: peer social support and peer victimization. The unconditional model (Model 0, output not presented) showed that for perceived peer social support, 3% of the variance (<0.01) was attributable to differences between classrooms, and 97% (0.15) was due to individual differences. For perceived peer victimization, 14% of the variance (0.04)

TABLE 2 | Descriptives of key study variables.

Variable	*N*	% missing	Mean	*SD*	Range
Child-perceived peer social experiences					
Child-perceived peer support fall	2214	17.3	1.32	0.42	0.00–2.00
Child-perceived peer support spring	2443	8.8	1.35	0.39	0.00–2.00
Child-perceived peer victimization fall	2234	16.6	0.44	0.51	0.00–2.00
Child-perceived peer victimization spring	2457	8.3	0.53	0.54	0.00–2.00
Actual peer social interactions (standardized)					
Reciprocal friends	2461	8.1	0.08	0.07	0.00–0.38
Reputation of peer victimization	2662	0.6	0.04	0.06	0.00–0.80
Teacher–child relationships					
Teacher–child closeness	2293	14.4	3.13	0.69	0.00–4.00
Teacher–child conflict	2293	14.4	0.63	0.80	0.00–4.00
Classroom social management					
CLASS behavior management	179	2.2	5.42	0.78	3.00–7.00
CLASS teacher sensitivity	179	2.2	4.65	1.02	2.00–7.00
CLASS positive climate	179	2.2	5.52	0.84	2.50–7.00
CLASS negative climate	179	2.2	6.92	0.24	5.50–7.00

TABLE 3 | Pearson correlation coefficients among key study variables.

	1	2	3	4	5	6	7	8	9	10	11	12
Child-perceived peer social experiences												
1. Peer support fall	–											
2. Peer support spring	0.55*	–										
3. Peer victimization fall	0.18	0.06	–									
4. Peer victimization spring	−0.13	0.20*	0.41*	–								
Actual peer social interactions												
5. Reciprocal friends	0.07	0.10	−0.11	−0.12	–							
6. Reputation of peer victimization	−0.07	0.03	−0.02	0.11	−0.13	–						
Teacher–child relationship												
7. Teacher–child closeness	0.16	0.13	0.04	−0.09	0.05	−0.13	–					
8. Teacher–child conflict	−0.18	−0.12	0.14	0.16	−0.01	0.15	−0.27*	–				
Classroom social management												
9. CLASS behavior management	−0.07	−0.14	−0.25*	−0.20*	0.07	−0.12	−0.07	0.12	–			
10. CLASS teacher sensitivity	−0.07	0.01	−0.13	−0.06	−0.05	−0.04	−0.06	0.07	0.38*	–		
11. CLASS positive climate	−0.07	−0.06	−0.12	−0.16*	0.08	−0.08	−0.10	−0.07	0.70*	0.51*	–	
12. CLASS negative climate	0.03	0.07	−0.15	−0.11	0.06	−0.08	−0.02	0.05	0.42*	0.17*	0.40*	–

*$p < 0.05$.

was accountable by classroom-level differences, while 86% of the variation (0.25) was between children.

Next, our focal teacher predictors of interest were included in Model 1 (**Table 4**). Results showed that, after controlling for fall responses on child-perceived peer social experiences and other covariates, teacher–child closeness significantly predicted child-perceived peer social support ($b = 0.04$, $p < 0.01$) and teacher–child conflict predicted child-perceived peer victimization ($b = 0.10$, $p < 0.001$). Specifically, with one additional unit increase in teacher–child closeness (on a scale of 0 to 4), child-perceived peer social support was expected to increase by 0.04 units (on a scale of 0 to 2). With one unit increase in teacher–child conflict, child-perceived peer victimization was expected to increase by 0.10 units. At the classroom level, teachers' behavior management was negatively associated with child-perceived peer victimization ($b = -0.07$, $p < 0.05$). A unit increase in behavior management (on a scale of 1 to 7) was associated with 0.07 unit of *decrease* in child-perceived peer victimization. Collectively, Model 1 accounted for approximately 20% of the variance for both of the outcome variables at the child level, and over 70% of the variance at the classroom level for child-perceived peer victimization. Almost no extra classroom-level variance for child-perceived peer social support was accounted for by the above variables, which might be because there was originally little classroom-level variance (4%) in total as suggested by the unconditional model.

Finally, to determine whether the associations reported above were unique, we included children's actual peer social interactions in Model 2 (**Table 5**), which were operationalized as reciprocal friendships and classroom reputation of peer victimization. Results showed that even though reciprocal friendship was a strong predictor of child-perceived peer social support ($b = 0.74$,

TABLE 4 | Predicting child-perceived peer social support and peer victimization in spring: Model 1.

	Peer social support		Peer victimization	
	Coefficient	**SE**	**Coefficient**	**SE**
Pretest				
Child-perceived peer social support fall	0.34***	0.02		
Child-perceived peer victimization fall			0.37***	0.02
Demographics				
Preschool vs. K	−0.00	0.03	−0.04	0.05
Grade 1/2/3 vs. K	0.03	0.03	−0.03	0.04
District 1 vs. 2	−0.01	0.02	0.07*	0.03
Child is a girl	0.01	0.02	0.04	0.02
Child has a disability (spring)	−0.07*	0.03	0.02	0.03
Child is white	0.03	0.02	0.00	0.03
Teacher–child relationship and teacher practice				
Teacher–child closeness (cmc)	0.04**	0.01	0.04	0.02
Teacher–child conflict (cmc)	−0.02	0.01	0.10***	0.02
CLASS behavior management	0.00	0.02	−0.07*	0.03
CLASS teacher sensitivity	−0.00	0.01	0.01	0.02
CLASS positive climate	0.02	0.02	−0.00	0.03
CLASS negative climate	0.02	0.05	−0.07	0.07
Model information				
AIC	1493.19		2564.03	
BIC	1582.41		2653.41	
Log likelihood	−730.60		−1266.02	
Number of children	1951		1971	
Number of classrooms	163		163	
Level-2 variance (intercept)	0.00		0.01	
Level-1 variance (residual)	0.12		0.20	

*cmc, class-mean centered. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.*

$p < 0.001$) and classroom reputation of peer victimization was predictive of self-perceived peer victimization ($b = 0.94$, $p < 0.001$), the above-reported association associations were stable and remained significant.

DISCUSSION

The current study examined the interplay among teachers, children, and peers as actors in the classroom social ecology during early school years. Specifically, we focused on the influences of teacher–child closeness and conflict and teacher's classroom social management on child-perceived peer social support and peer victimization. The current study expands on the existing literature by, first, simultaneously taking into account teachers' roles as classroom members who form closeness and conflict with individual children and as leaders who shape classroom social dynamics, and, second, by further highlighting the critical roles of teachers in shaping children's perceptions of their peer social experiences, after controlling for children's actual peer social interactions. The major findings are discussed below.

First, it is evidenced that teacher influence at the individual-level and that at the classroom-level are unique, and that each contributes to child-perceived peer social experiences. In terms of the relationships between teacher and individual children, our findings showed that teacher-reported closeness and conflict with children in the fall contributed to peer social support and peer victimization perceived by children in the spring respectively, controlling for the fall scores. This finding indicates that children with close relationships with teachers tend to feel more socially supported by peers and that children who have conflicts with teachers tend to experience increased perceived peer victimization over the academic year. These findings are in line with the literature that teacher–child interactions broadcast children's attributes and likability to classmates who observe the interactions (Hughes and Im, 2016), which foster a classroom consensus regarding children's reputations and therefore influence classmates' interactions with the children. It is also likely that positive teacher–child relationships can promote children's cooperative engagement in classroom activities and improves their social competence, while with negative teacher–child relationships, children may avoid school and demonstrate more externalizing behavior problems and less prosocial behaviors during interpersonal interactions (Hamre and Pianta, 2001; Hughes and Im, 2016).

Second, regarding teachers' classroom social management, our findings showed that better behavior management in the fall was associated with less peer victimization as perceived by children in the spring controlling for the fall scores. This finding suggests that in classrooms where misbehaviors are better

TABLE 5 | Predicting child-perceived peer social support and peer victimization in spring: Model 2.

	Peer social support		Peer victimization	
	Coefficient	**SE**	**Coefficient**	**SE**
Pretest				
Child-perceived peer social support fall	0.33***	0.02		
Child-perceived peer victimization fall			0.37***	0.02
Demographics				
Preschool vs. K	−0.01	0.03	−0.06	0.05
Grade 1/2/3 vs. K	0.01	0.02	−0.03	0.04
District 1 vs. 2	0.00	0.02	0.06*	0.03
Child is a girl	0.02	0.02	0.04	0.02
Child has a disability (spring)	−0.06*	0.03	0.01	0.03
Child is white	0.02	0.02	0.00	0.03
Teacher–child relationship and teacher practice				
Teacher–child closeness (cmc)	0.04**	0.01	0.04	0.02
Teacher–child conflict (cmc)	−0.01	0.01	0.09***	0.02
CLASS behavior management	−0.00	0.02	−0.07*	0.03
CLASS teacher sensitivity	0.00	0.01	0.01	0.02
CLASS positive climate	0.02	0.02	0.01	0.03
CLASS negative climate	0.01	0.05	−0.07	0.07
Peer social interactions				
Reciprocal friends	0.74***	0.11	−0.09	0.15
Reputation of peer victimization	−0.17	0.12	0.94***	0.16
Model information				
AIC	1436.71		2508.44	
BIC	1536.86		2608.76	
Log likelihood	−700.36		−1236.22	
Number of children	1927		1946	
Number of classrooms	163		163	
Level-2 variance (intercept)	0.00		0.01	
Level-1 variance (residual)	0.11		0.19	

*cmc, class-mean centered. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.*

managed and redirected, child-perceived peer victimization decreases over time. This finding is aligned with literature showing that well-managed classrooms are associated with greater social and academic development and with reduction of behavior problems (Emmer and Stough, 2001; Downer et al., 2012). Kochenderfer-Ladd and Pelletier (2008) further discussed that, when teachers do not consider bullying as a normative behavior in the classroom, they would be more likely to intervene toward negative peer social interactions rather than expecting the victims to handle the incidences on their own, which has been found associated with lower levels of peer victimization in the classroom.

However, it is surprising that the other classroom social management indicators (i.e., teacher sensitivity, positive climate, and negative climate) were not found to be positively associated with child-perceived peer social experiences in the current study. It might be that the influence of teacher sensitivity and classroom climate on children's classroom social experiences might be more indirect than behavioral management and could take a longer time to alter children's peer social experiences. Another possibility from the measurement perspective is that, as reported in the result section, there was minimal variance at the classroom-level in the unconditional model when predicting children-perceived peer social support, which left little room for the classroom-level teacher influences to show predictive effect. Future research may apply a more refined tool to assess these aspects of the classroom ecology.

A third major finding is that teacher influences on children's perceptions of their social experiences operate in a manner that is unique and beyond children's actual peer social interactions. Specifically, for children who are similar in the number of reciprocal friendships and in the collective classroom reputation of peer victimization, those who have close relationships with their teachers perceived having greater peer social support, whereas those who had conflicted relationships with their teachers perceived greater peer victimization. Also, those in classrooms with better behavior management perceived less peer victimization.

Children's perceptions of their peer social experiences emerge based on their social interactions, which then may reflect their self-evaluation of social competence as well as beliefs about peers (Coolahan et al., 2000; Blandon et al., 2010). Our results indicate that as a member and an authoritative figure in the classroom, teachers play a critical role in shaping

children's beliefs about their own strengths and weakness in social interactions and about the classroom social environment, which operates uniquely beyond the influence of children's actual peer social interactions. It is possible that, independent from actual interactions with peers, positive relationships with teachers and well-managed classrooms can enhance children's sense of connectiveness with classmates, which improves their social competence in engaging in peer social interactions (Hughes and Im, 2016), and can promote the classroom inclusiveness; in turn, this may reduce problematic social behaviors and help children become less vulnerable to peer victimizations (Cappella and Neal, 2012). However, the current study does not draw causal inferences. Future study is needed to examine the mechanism and dynamic relations among teachers, peer social interactions, and children's perceptions of their peer social experiences.

Despite these contributions to the literature, there are a few limitations in the current study. First, teacher–child relationships were assessed at a single time point. However, these relationships may vary across the academic year, as suggested by Hughes and Im (2016) who showed that the average 1-year stability of teacher–child closeness and conflict were 0.38 and 0.57 in elementary classrooms. Similarly, although children's perceptions of peer social experiences were assessed in the fall and spring and classroom social management was observed multiple times in the winter, it is necessary for future studies to account for the change throughout an academic year in terms of children's perceived classroom social experiences and teachers' classroom social management. Second, at the classroom-level, teachers can shape classroom interpersonal interactions through many other ways besides classroom social management, such as seating arrangements, grouping strategies, types of activities, and responsibilities afforded to children (Farmer et al., 2019). While the current study has taken into account multiple levels of teacher influences, future research may take a more systematic and comprehensive view when examining teacher influences on classroom social dynamics. Third, when representing children's actual peer social interactions, although the current study tried to select the most representative indicators (e.g., reciprocal friendships and classroom reputation of peer victimization), other aspects of peer social interactions can contribute to perceived peer social support, such as peer acceptance, peer rejection, and peer isolation. Future research may consider applying a latent-variable approach to account for different aspects of peer social interactions when representing children's actual social experiences. Fourth, children's perceptions provide a unique perspective of their peer social experiences. However, their perceptions can be biased, and so can teacher reports of their relationships with children. Future studies may consider using more objective measures to capture peer social experience and teacher–child relationships. Finally, caution is warranted when generalizing findings from the current study. Although the study sample represented a wide range of families from diverse backgrounds, families were drawn from two school districts in a single Midwestern state in the United States. Additionally, teachers who were willing to participate in this study and to be observed by researchers might have demonstrated relatively higher classroom social management skills considering the majority of them had a bachelor's degree or higher. Accordingly, replication with different samples, measures, and methods is an important future direction.

In all, the current study demonstrated that teachers can influence children's perceptions of their peer social experiences simultaneously through their closeness and conflict with individual children and through their classroom social management. Additionally, such teacher influences on children's perceptions are unique from children's actual peer social interactions. Findings underscore the need for teachers to develop close relationships with individual children and to eliminate conflict with them. As Hughes and Im (2016) suggested, although it is understandable that teachers might report conflict with children who have problem behaviors, teachers are encouraged to provide support to these children so as to optimize their classroom experiences. Beyond interactions with individual children, as the leaders in the classrooms, managing and redirecting misbehaviors can improve the quality of interpersonal interactions and reduce negative peer social experiences perceived by children. In sum, the current study highlights the multi-faceted roles of teachers in shaping children's classroom experiences and the classroom social ecology during the earliest years of schooling.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Ohio State University. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

JC conceptualized this study, conducted the analysis, and drafted the manuscript. HJ wrote the method and results sections. LJ, T-JL, KP, and AA provided critical review of the manuscript. LJ, T-JL, and KP acquired the financial support for the project leading to this publication. All authors read and approved the submitted version of the manuscript.

FUNDING

The research reported here was supported by the Institute for Education Sciences, through Grant R305N160024

awarded to The Ohio State University (Justice). The opinions expressed are those of the authors and do not represent views of the Institute or National Center for Education Research.

ACKNOWLEDGMENTS

We would like to thank the research team, staff, and families without whom this research would not have been possible.

REFERENCES

Alsaker, F. (1993). Bully/victim problems in day-care centers, measurement issues and associations with children's psychological health. *Paper Presented at the Biennial Meeting of the Society for Research in Child Development*, New Prleans.

Asher, S. R., Hymel, S., and Renshaw, P. D. (1984). Loneliness in children. *Child Dev.* 55, 1456–1464. doi: 10.2307/1130015

Bakalım, O., and Taşdelen-Karçkay, A. (2016). Friendship quality and psychological well-being: the mediating role of perceived social support. *Int. Online J. Educ. Sci.* 8, 1–9. doi: 10.15345/iojes.2016.04.001

Bates, D., Mächler, M., Bolker, B., and Walker, S. (2015). Fitting linear mixed-effects models using lme4. *J. Stat. Softw.* 67, 1–48. doi: 10.18637/jss.v067.i01

Betts, L. R., Rotenberg, K. J., and Trueman, M. (2013). Young children's interpersonal trust consistency as a predictor of future school adjustment. *J. Appl. Dev. Psychol.* 34, 310–318. doi: 10.1016/j.appdev.2013.09.003

Birch, S. H., and Ladd, G. W. (1997). The teacher-child relationship and children's early school adjustment. *J. School Psychol.* 35, 61–79. doi: 10.1016/S0022-4405(96)00029-5

Blandon, A. Y., Calkins, S. D., Grimm, K. J., Keane, S. P., and O'Brien, M. (2010). Testing a developmental cascade model of emotional and social competence and early peer acceptance. *Dev. Psychopathol.* 22, 737–748. doi: 10.1017/S0954579410000428

Bronfenbrenner, U., and Morris, P. A. (2006). "The bioecological model of human development," in *Handbook of child development: Theoretical models of human development*, 6th Edn, ed. R. M. Lerner (Hoboken, NJ: Wiley), 793–828. doi: 10.1002/9780470147658.chpsy0114

Buhs, E. S., and Ladd, G. W. (2001). Peer rejection as antecedent of young children's school adjustment: an examination of mediating processes. *Dev. Psychol.* 37, 550–560. doi: 10.1037/0012-1649.37.4.550

Bursal, M. (2017). Academic achievement and perceived peer support among Turkish students: gender and preschool education impact. *Int. Electron. J. Elementary Educ.* 9, 599–612.

Cacioppo, J. T., and Hawkley, L. C. (2009). Perceived social isolation and cognition. *Trends Cogn. Sci.* 13, 447–454. doi: 10.1016/j.tics.2009.06.005

Cappella, E., and Neal, J. W. (2012). A classmate at your side: teacher practices, peer victimization, and network connections in urban schools. *School Mental Health* 4, 81–94. doi: 10.1007/s12310-012-9072-2

Chen, J., Lin, T.-J., Jiang, H., Justice, L., Purtell, K., and Logan, J. (2020). Triple alignment: congruency of perceived preschool classroom social networks among teachers. children, and researchers. *Front. Psychol.* 11:1341. doi: 10.3389/fpsyg.2020.01341

Coolahan, K., Fantuzzo, J., Mendez, J. L., and Mcdermott, P. (2000). Preschool peer interactions and readiness to learn: relationships between classroom peer play and learning behaviors and conduct. *J. Educ. Psychol.* 92, 458–465. doi: 10.1037/0022-0663.92.3.458

Danese, A., Moffitt, T. E., Harrington, H., Milne, B. J., Polanczyk, G., Pariante, C. M., et al. (2009). Adverse childhood experiences and adult risk factors for age-related disease: depression, inflammation, and clustering of metabolic risk markers. *Arch. Pediat. Adolescent Med.* 163, 1135–1143. doi: 10.1001/archpediatrics.2009.214

Daniel, J. R., Santos, A. J., Antunes, M., Fernandes, M., and Vaughn, B. E. (2016). Co-evolution of friendships and antipathies: a longitudinal study of preschool peer groups. *Front. Psychol.* 7:1509. doi: 10.3389/fpsyg.2016.01509

Downer, J. T., López, M. L., Grimm, K. J., Hamagami, A., Pianta, R. C., and Howes, C. (2012). Observations of teacher–child interactions in classrooms serving latinos and dual language learners: applicability of the classroom assessment scoring system in diverse settings. *Early Childhood Res. Q.* 27, 21–32. doi: 10.1016/j.ecresq.2011.07.005

Emmer, E. T., and Stough, L. M. (2001). Classroom management: a critical part of educational psychology, with implications for teacher education. *Educ. Psychol.* 36, 103–112. doi: 10.1207/S15326985EP3602_5

Farmer, T. W., Hamm, J. V., Dawes, M., Barko-Alva, K., and Cross, J. R. (2019). Promoting inclusive communities in diverse classrooms: teacher attunement and social dynamics management. *Educ. Psychol.* 54, 286–305. doi: 10.1080/00461520.2019.1635020

Gest, S. D., and Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *J. Appl. Dev. Psychol.* 32, 288–296. doi: 10.1016/j.appdev.2011.02.004

Gifford-Smith, M. E., and Brownell, C. A. (2003). Childhood peer relationships: social acceptance, friendships, and peer networks. *J. School Psychol.* 41, 235–284. doi: 10.1016/S0022-4405(03)00048-7

Hall-Lande, J. A., Eisenberg, M. E., Christenson, S. L., and Neumark-Sztainer, D. (2007). Social isolation, psychological health, and protective factors in adolescence. *Adolescence* 42, 265–287.

Hamre, B. K., and Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. *Child Dev.* 72, 625–638. doi: 10.1111/1467-8624.00301

Hamre, B. K., and Pianta, R. C. (2007). "Learning opportunities in preschool and early elementary classrooms," in *School readiness & the transition to kindergarten in the era of accountability*, eds R. Pianta, M. Cox, and K. Snow (Baltimore, MD: Brookes Publishing), 49–84.

Hosan, N. E., and Hoglund, W. (2017). Do teacher–child relationship and friendship quality matter for children's school engagement and academic skills? *School Psychol. Rev.* 46, 201–218. doi: 10.17105/SPR-2017-0043.V46-2

Hughes, J. N., and Im, M. H. (2016). Teacher-student relationship and peer disliking and liking across grades 1-4. *Child Dev.* 87, 593–611. doi: 10.1111/cdev.12477

Jerome, E. M., Hamre, B. K., and Pianta, R. C. (2009). Teacher–child relationships from kindergarten to sixth grade: early childhood predictors of teacher-perceived conflict and closeness. *Soc. Dev.* 18, 915–945. doi: 10.1111/j.1467-9507.2008.00508.x

Kochenderfer, B. J., and Ladd, G. W. (1996). Peer victimization: cause or consequence of school maladjustment? *Child Dev.* 67, 1305–1317. doi: 10.2307/1131701

Kochenderfer-Ladd, B., and Pelletier, M. E. (2008). Teachers' views and beliefs about bullying: influences on classroom management strategies and students' coping with peer victimization. *J. School Psychol.* 46, 431–453. doi: 10.1016/j.jsp.2007.07.005

Ladd, G. W. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classroom: predictors of children's early school adjustment? *Child Dev.* 61, 1081–1100. doi: 10.2307/1130877

Ladd, G. W., Ettekal, I., and Kochenderfer-ladd, B. (2017). Peer victimization trajectories from kindergarten through high school?: differential pathways for children ' s school engagement and achievement? *J. Educ. Psychol.* 109:826. doi: 10.1037/edu0000177

Ladd, G. W., Kochenderfer, B. J., and Coleman, C. C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Dev.* 67, 1103–1118. doi: 10.2307/1131882

Ogelman, H. G., Erol, A., Karaşahin, N., and Akyol, M. (2019). Fathers and their young children's self-perception. levels of being liked by their peers and prosocial behaviours. *Int. J. Acad. Res. Educ.* 5, 31–42.

Olweus, D. (1992). "Victimization by peers: antecedents and long-term outcomes," in *Social Withdrawal, Inhibition, and Shyness in Childhood*, eds K. H. Rubin and J. B. Asendorf (Hillsdale, NJ; Erlbaum), 315–341.

Önder, A., Gülay Ogelman, H., and Göktaş, Ý (2019). Examining the correlations between the self-perception of preschool children and their levels of being liked by their peers. *Early Child Dev. Care* 1–9. doi: 10.1080/03004430.2019.1700239

Parkhurst, J. T., and Asher, S. R. (1992). Peer rejection in middle school: subgroup differences in behavior, loneliness, and interpersonal concerns. *Dev. Psychol.* 28:231–241. doi: 10.1037/0012-1649.28.2.231

Pianta, R. C. (2001). *Student-Teacher Relationship Scale*. Odessa, FL: Psychological Assessment Resources.

Pianta, R. C., and Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychol. Rev.* 33, 444–458. doi: 10.1037/10314-000

Pianta, R. C., La Paro, K. M., and Hamre, B. K. (2008). *Classroom Assessment Scoring SystemTM: Manual K-3*. Baltimore: Paul H Brookes Publishing.

Quinn, M., and Hennessy, E. (2010). Peer relationships across the preschool to school transition. *Early Educ. Dev.* 21, 825–842. doi: 10.1080/10409280903329013

Troop-Gordon, W., MacDonald, A. P., and Corbitt-Hall, D. J. (2019). Children's peer beliefs, friendlessness, and friendship quality: reciprocal influences and contributions to internalizing symptoms. *Dev. Psychol.* 55, 2428–2439. doi: 10.1037/dev0000812

Wang, C., Hatzigianni, M., Shahaeian, A., Murray, E., and Harrison, L. J. (2016). The combined effects of teacher-child and peer relationships on children's social-emotional adjustment. *J. School Psychol.* 59, 1–11. doi: 10.1016/j.jsp.2016.09.003

Waters, S. K., Lester, L., Wenden, E., and Cross, D. (2012). A theoretically grounded exploration of the social and emotional outcomes of transition to secondary school. *J. Psychol. Counsellors Schools* 22, 190–205. doi: 10.1017/jgc.2012.26

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

ORIGINAL RESEARCH
published: 20 October 2020
doi: 10.3389/feduc.2020.568849

Teacher Behavior With Upper Elementary School Students in the Social Margins of Their Classroom Peer Group

Marloes M. H. G. Hendrickx[1,2], Tim Mainhard[1], Antonius H. N. Cillessen[3] and Mieke Brekelmans[1]*

[1] Department of Education, Utrecht University, Utrecht, Netherlands, [2] Eindhoven School of Education, Eindhoven University of Technology, Eindhoven, Netherlands, [3] Behavioural Science Institute, Radboud University, Nijmegen, Netherlands

Students in the social margins of their classroom peer group, in the current study operationalized as students who are often by themselves, do not belong to a group of friends, and are unpopular, are hampered in their social development. In line with social referencing, which states that teachers can affect peer perceptions through their interactions with students, we hypothesized that teachers may contribute to the social participation and integration of these students, by modeling frequent and positive interaction with them. We therefore explored teacher behavior with socially marginalized students, and how these interactions were related to changes in the severity of their social marginality over time. Multilevel analyses were performed with a sample of Dutch 824 fifth-grade students (M_{age} = 10.63) and their 32 teachers. Teachers had less frequent interactions with students in the social margins of the group, particularly when these students were unpopular. Nonetheless, we found some evidence for a social referencing mechanism: latent growth modeling showed that when teachers acted less negatively toward socially marginalized as well as rejected students, they became more socially integrated in their peer-group over time.

Keywords: peer relations, teacher behavior, teacher-student relationships, social referencing, teacher practices

OPEN ACCESS

Edited by:
Eva M. Romera, University of Cordoba, Spain

Reviewed by:
Daniel Falla, University of Cordoba, Spain
Erik A. Ruzek, NWEA, United States

****Correspondence:***
Marloes M. H. G. Hendrickx
m.m.h.g.hendrickx@tue.nl

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *02 June 2020*
Accepted: *14 September 2020*
Published: *20 October 2020*

Citation:
Hendrickx MMHG, Mainhard T, Cillessen AHN and Brekelmans M (2020) Teacher Behavior With Upper Elementary School Students in the Social Margins of Their Classroom Peer Group. Front. Educ. 5:568849. doi: 10.3389/feduc.2020.568849

INTRODUCTION

Students in the margins of their classroom's peer group are loosely connected to their classmates and rarely engage in peer interactions (Rubin et al., 2009; Spangler and Gazelle, 2009). However, being socially engaged with peers is important for students to develop social skills (Rubin et al., 2009), and provides opportunities for collaborative learning activities, boosting academic skills (Wentzel, 2005). Socially marginal students are at risk of developing internalizing and externalizing behavioral problems (Gazelle and Ladd, 2003; Laursen et al., 2007) and are often the target of teasing and bullying, which in turn is related to a limited sense of belonging (Wormington et al., 2016) and to academic difficulties (Lee and Cornell, 2009).

Research has shown how student characteristics (e.g., temperament, biology; Henderson et al., 2001; Hariri et al., 2002), peer group characteristics (e.g., group size, status hierarchy; Bukowski and Véronneau, 2014), and family characteristics (e.g., overprotective parenting; Coplan et al., 2008) contribute to social marginalization in classroom peer groups. In addition, teachers, as the single

professionals close to the classroom peer society yet just not part of it, have the unique opportunity to manage classroom peer interactions and relationships (Farmer et al., 2011). Through their interactions with students, teachers affect students' peer relatedness, as shown by several studies focusing on acceptance, rejection, or popularity (Hughes et al., 2001; McAuliffe et al., 2009; De Laet et al., 2014; Hendrickx et al., 2017b). Teachers thus seem to have the potential to positively affect the social integration of socially marginal students. Because of the potentially detrimental effects on developmental outcomes, it is essential for teachers to understand how they can increase the social participation of marginal students, as part of their professional role. To increase the current knowledge regarding teacher effects, the current study explored how teachers interact with students in the social margins of their classroom peer group and examined how these interactions are related to changes in this disadvantageous position over time.

The Social Margins of the Classroom Peer Group

The concept of social marginalization has received substantial attention in developmental psychology (e.g., Rubin et al., 2009), social psychology (e.g., Ellemers and Jetten, 2013), and social network studies (e.g., Borgatti et al., 2013) and has multiple definitions and conceptualizations. In developmental psychology, being marginal in the peer group is often seen from an individual perspective, with a focus on social isolation and its antecedents and consequences (Rubin et al., 2009). Students who are isolated are those who are often by themselves and rarely engage in interactions with peers (Spangler and Gazelle, 2009). In social psychology, marginalization tends to be approached from what it conceptually means to belong to a group and how individuals become group members. By definition, marginal group members behave less similar to others, are more disengaged, and have limited social impact in the group (Ellemers and Jetten, 2013). Social network theorists have a more technical approach and use the term "periphery" to indicate those regions of the social network were members are only loosely connected to others. Individuals who are peripheral have none or few ties to the more densely connected core of their social network (Borgatti et al., 2013).

In sum, occupying a socially marginal position in the classroom peer group is not a unidimensional phenomenon with a single manifestation, but a multifaceted construct (Coplan and Rubin, 2010; Ellemers and Jetten, 2013; Bukowski and Véronneau, 2014). Therefore, we focused on three facets of social marginalization: often being by oneself (solitude), not belonging to friendship groups, and being unpopular. Popularity as a construct can be distinguished from likeability to indicate a student's social status in their peer group (Van den Berg et al., 2020). Unpopular students can be considered to have limited social impact [see Ellemers and Jetten (2013)].

In peer nomination research, social marginality is often operationalized as not being selected on a certain item, for instance for friendship or popularity. However, not being selected for a characteristic does not carry information about the relationship between the classmate and the target student (Cillessen and Marks, 2017). Operationalizing social marginalization as not being selected makes it difficult to examine the degree to which a student does not belong to the peer group. Therefore, in this study we used active nominations for students as being alone often, not belonging to a group of friends, and being unpopular.

Mechanisms Underlying Social Marginalization

Both in social and developmental psychology, multiple pathways of social marginalization have been identified. Rubin (1982) was one of the first to distinguish being excluded (i.e., being ignored or neglected by peers) from social withdrawal (i.e., choosing not to engage with peers). Similarly, Ellemers and Jetten (2013) described how social marginalization can result from low inclusion goals by the group (the group does not wish to include the individual) or the individual (the individual does not wish to be part of the group). Students who want to be included but are faced with a group that moves away from them are considered excluded (Coplan and Rubin, 2010) or rejected marginal students (Ellemers and Jetten, 2013). When peers exclude a student, this is considered a behavioral manifestation of peers' negative affective reaction to the student (Rubin et al., 2015). In the current study this mechanism is tapped by including peer rejection. Peer rejection refers to the degree to which students are disliked by their peers, and is associated with aggressive behavior (Asher and McDonald, 2009). Peer rejection and social marginalization are two different constructs, as some students who are rejected by many peers may have a tightly connected group of close friends. Students who have low personal inclusion goals and choose not to participate in peer interaction can be considered withdrawn (Spangler and Gazelle, 2009) or independent marginal (Ellemers and Jetten, 2013). Although these students are comfortable in their social position, they too are at risk of sub-optimal adjustment and development, because their limited engagement with peers prevents them from expanding their skills (Coplan and Armer, 2007; Nelson, 2013).

The Role of the Teacher

A growing research base is focusing on teachers' invisible hand (Farmer et al., 2011), that is, teachers' potentially large impact on classroom peer relationships. Teacher practices are related to many peer experiences, including, at the individual level, peer acceptance (Kiuru et al., 2015; Hughes and Im, 2016; Hendrickx et al., 2017b) and popularity (Moore et al., 2012; De Laet et al., 2014), and at the classroom level relationship hierarchy and behavioral norms (Gest and Rodkin, 2011; Hendrickx et al., 2016). In this section we address how research findings on the teacher as a social referent may help us understand their possible impact on students in the social margins of the classroom peer group.

The Teacher as a Social Referent

Hughes et al. (2001) argued that teachers' interactions with their students provide classmates with cues that can be used as a model for their own interactions with each other [see also Hughes et al. (2014)]. Thus, teachers are a social referent, modeling

perceptions of and interactions with students (Hughes et al., 2001, 2014). Indeed, teacher behavior with a student is associated with students' peer acceptance or rejection in the classroom (White and Kistner, 1992; McAuliffe et al., 2009; Hendrickx et al., 2017b). In this line of reasoning, teacher behavior impacts students' peer status through classmates' perceptions of teacher behavior [see Hughes et al. (2014)]. Accordingly, peers' perceptions of positive versus negative teacher behavior have been associated with peer acceptance as well (Hughes et al., 2001, 2014; Hendrickx et al., 2017b).

Social Referencing and Social Marginality

Translating this social referencing mechanism to social marginalization, teachers may improve social participation by interacting frequently with a student (modeling interaction in itself) and by having positive instead of negative interactions (modeling positive interaction). Modeling positive behavior with a student may be especially effective for students in the social margins of the group who are viewed negatively by their peers (i.e., rejected). However, existing research, albeit limited and mostly undertaken in preschool or first-grade settings, suggests that this is not typical teacher behavior with marginal students. Teachers have reported (Evans, 2001) and have been observed (Rudasill and Rimm-Kaufman, 2009) to have less rather than more frequent interactions with socially marginalized students. These studies have argued that because these students have limited social participation, they also infrequently trigger their teacher's attention. In contrast, other studies suggested that teachers do actively engage with socially marginalized students (Coplan and Prakash, 2003; Thijs et al., 2006). Regarding valence of interaction, teachers reported to have more negative and conflicted relationships with first-grade students whom they perceived to be relative outsiders (Rudasill and Rimm-Kaufman, 2009; Arbeau et al., 2010). Thus, there is some evidence that with young students, teachers generally behave in accordance with the relatively marginal social status of students.

Present Study

Students in the social margins of their classroom peer group are at risk of adjustment problems. It is important to understand how teacher behavior is associated with their social position in the classroom to ultimately be able to help teachers to support these students. We examined the socially marginal position of a child in two ways, first by creating a compound score combining solitude, not belonging to a group, and being unpopular, indicating a general socially marginal position, and second by assessing effects per facet of social marginality separately. The first strategy allows a more holistic view on the processes investigated in the current study. Moreover, combining multiple items has statistical advantages. Looking at the three facets of social marginality separately allows to investigate how teacher behavior might have differential effects on each of these facets.

The first goal of this study was to explore the frequency and valence of teacher behavior with socially marginalized students as compared to other students: *How frequently and with what valence do teachers behave in everyday interaction with socially marginalized students?* To answer this question, we first compared teacher behavior with socially marginalized students to teacher behavior with other students, based on *classroom observations*. To triangulate these observations and in line with social referencing theory (Hughes et al., 2001, 2014), we measured *peers' perceptions* of the frequency and valence of teacher behavior toward a student. Next, to do justice to the mechanisms of becoming socially marginalized [see Bukowski and Véronneau (2014), Ellemers and Jetten (2013)], we examined whether teacher behavior was different when students were more or less strongly rejected by peers, or when students themselves had a lower or higher social inclusion goal. Based on earlier studies with younger students (Evans, 2001; Rudasill and Rimm-Kaufman, 2009), we expected that, on average, teachers would interact less frequently with socially marginalized students than with other students. Moreover, we expected teachers to show less positive behavior with these students [see Arbeau et al. (2010)], especially if they were also rejected by their peers (De Laet et al., 2014).

The second goal was to examine social marginalization developmentally and see whether teacher behavior might help students in the social margins of their classroom peer group to become more socially engaged over time: *How does teacher behavior with socially marginalized students relate to change in these student' social position over time?* Based on studies that indicated the effectiveness of teacher social referencing for peer acceptance (Hughes et al., 2001, 2014; Hendrickx et al., 2017b), we expected that students with whom the teacher interacted *more frequently* would become more socially engaged (i.e., less alone, belonging to a peer group, and more popular) over time, because the teacher would model interacting with them to classroom peers. We expected similar effects for students with whom the teacher had relatively *more positive* interactions. Positive interaction was expected to be particularly effective for those socially marginal students who were also rejected by their peers, because of its contrasting nature compared to classmates' negative affective evaluations (Rubin et al., 2015).

METHOD

Participants

Students and their teachers from 32 fifth-grade classrooms[1] from 22 elementary schools in the Netherlands participated in three waves of data collection (T1–T3). All students who participated had parental consent to complete questionnaires and to be recorded on camera (824 out of 849; 97.1%). Due to absence on the day of data collection or not being part of the class yet/anymore, 797 students participated at T1, 787 at T2, and 789 at T3. Students' mean age at T1 was 10.63 years ($SD = 0.49$, range = 8.60–12.79); 48.5% were girls. Of the students, 85.7% were Dutch (both parents born in the Netherlands), 6.5% had

[1]In total, 59 classes participated in the research project, which involved a quasi-experimental study in which teachers were asked to adapt their behavior with certain students. The current results are based on the 33 control classes, because the aim was to examine naturally occurring teacher behavior. One classroom dropped out of the project after T1 and was therefore excluded from the current study.

other Western backgrounds (at least one parent born in another Western country), and 7.8% had a non-Western background (at least one parent born in a non-Western country). This distribution was representative for the areas in which the schools were located (Statistics Netherlands, 2012). Average class size was 26.34 students ($SD = 3.55$, range 18–32). As is common in the Netherlands, in 27 (84.4%) of the classrooms in our sample the composition of the group was largely the same as the year before, with only a few students who had moved in or out.

Dutch primary schools cover eight years, from kindergarten (age 4) to sixth grade (age 12). When moving on to the next grade, students generally stay together as a classroom group, but do have a new teacher Teachers' mean age was 43.23 years ($SD = 12.95$, range 25.75–62.47); their average experience was 17.03 years ($SD = 12.26$, range 3–39). All teachers were Dutch and 20 were female (62.5%). Due to a personal leave of the participating classroom teacher because of travel or maternity leave, one substitute teacher was present at T2 and one at T3. The teacher data of these classrooms at those measurement moments were discarded.

Measures

The majority of our measures were peer nomination items. For each item, primary participants (those present and consented) were asked to nominate which classmates best fitted the description (e.g., who are your friends?) from a list of classmates' first names. Both same- and cross-sex nominations were allowed, and nominations were unlimited. Nominations of non-consented students were excluded from the dataset, but students could nominate their absent classmates. To avoid sequence effects [see Poulin and Dishion (2008)], classmates' names were presented in a random order that was different for each participant.

Social Marginality in the Peer Group

The degree to which students were considered to be socially marginalized was measured using three peer nomination indicators: solitude ("which of your classmates are often by themselves during breaks?"), not belonging to a group ("which of your classmates do not belong to a group of friends?") and unpopularity ("which of your classmates are least popular?"). For each item, proportion scores were computed as the total number of nominations received divided by the maximum number of possible nominations. Proportion scores were group mean centered to account for class-level tendencies to nominate more or fewer students.

These indicators were analyzed as such, but also combined into a general social marginality score. Cronbach's alpha over the three proportion scores was 0.83, 0.81, and 0.80 at the three measurement waves. Proportion scores for unpopularity were larger than those for solitude and not belonging to a group. To achieve an equal scaling of the three indicator variables in the compound social marginality score, each of these group mean centered scores was within each occasion standardized over the sample and finally averaged to form the compound score for each occasion.

Socially marginal subsamples

As might be expected, the social marginality measure as well as the three indicators were strongly skewed. That is, 80% of the students were nominated by hardly any peer on each of the three indicators. Therefore, we created subsamples: socially marginal and non-marginal subsamples for the compound score as well as subsamples for each indicator.

The students with the 20% highest scores at T1 were considered (relatively) socially marginal, and the remaining 80% were considered non-marginal. The cut-off of 20% was chosen in accordance with the three-tier model based on Positive Behavioral Interventions and Supports (PBIS; Reinke et al., 2009). According to this model, 80% of students respond successfully to proactive universal (classroom) strategies, but the top 20% will experience social problems and will not respond to such universal school-wide interventions and will need more intensive interventions to help them succeed in school.

The subsample of socially marginal students in our sample at T1, based on the compound score, consisted of on average 5.11 students per class ($SD = 1.74$). We compared the demographics of non-marginal students with those who were considered to be in the social margins of their classroom peer group on at least one measurement occasion ($n = 212$). This group did not differ statistically from the other students in age, $t\ (817) = -0.17$, $p = .862$, gender distribution, $\chi^2\ (1) = 0.21$, $p = .650$, or parents' country of birth, $\chi^2\ (2) = 2.17$, $p = .337$.

Peer Rejection and Inclusion Goals

To do justice to the multiple ways in which students can become socially marginalized, we measured: (a) the extent to which students were rejected by peers, and (b) students' desire for (more) social interaction (i.e., high vs. low inclusion goals).

Peer rejection

Using the same peer nomination procedure as described above, students were asked to indicate which of their classmates they liked least. Peer rejection scores were calculated for each student as the proportion of the available classmates that had nominated them.

Inclusion goals

To measure students' inclusion goals, we included the negative aspect of the social self-concept scale as adapted from the Dutch version of the Harter scales (Veerman et al., 2004). Three self-report items were included (e.g., "I would like to have more friends"), which were answered on a scale ranging from 1 (*not true at all*) to 5 (*completely true*). Cronbach's alpha at T1–3 was 0.71, 0.72, and 0.74.

Teacher behavior

Teacher behavior with a student was measured from an outside observer's perspective and from the peer perspective.

Observed teacher behavior

Teacher behavior was coded from 2 h of video observation in each classroom at each wave. Event sampling was used to select teacher comments that were (a) expressed in connection with a single student (dyadic) or a small group, and (b) expressed

in public, that is, when at least half the students were present in a whole-class teaching setting [see McAuliffe et al. (2009)]. Teacher behavior was coded as positive, negative, or neutral in the cognitive and affective domain. Teacher behavior in the cognitive domain referred to how the teacher evaluated a student's academic contributions (e.g., stating that an answer was correct vs. incorrect). The affective domain referred to how the teacher evaluated a student as a person or a student's behavior (e.g., praising a student for being quiet vs. asking a student not to speak during instruction). Teacher behavior was coded as neutral when it did not contain a specific affective or cognitive valence. Each teacher comment was independently coded in both domains. Frequency of teacher behavior with each student was computed as the total number of teacher behaviors directed to the student. The valence of teacher behavior in each domain was computed as the difference between the proportions of positive and negative comments in that domain, scaled from −1 to +1. For more information on the coding system of teacher behavior, including further examples, see Author et al. (2016).

After developing the coding system for teacher behavior, the first author and two research assistants tested it for inter-observer reliability. First, agreement for event occurrence ranged from 81 to 87% for the pairs of observers. Second, a set of 1,624 occurrences (5.8% of the total body) of teacher behavior was coded with respect to content. For the pairs of observers, weighted Cohen's kappa ranged from 0.72 to 0.77 for the affective domain (substantial agreement; Landis and Koch, 1977) and from 0.83 to 0.86 for the cognitive domain (almost perfect agreement). After establishing the coding scheme as a reliable measure, three additional research assistants were trained to code the video data until they reached agreement with the first author of at least 80% for event occurrence and a weighted Cohen's kappa of at least 0.80 for both the affective and cognitive domains.

Peer-perceived teacher behavior

Three peer nomination items were used to measure peer-perceived teacher behavior. For the frequency of teacher-student interactions, students were asked to nominate classmates "who hardly receive any attention from Mrs./Mr. _____ (teacher name)." The proportion score of this item was subtracted from 1, so that a higher score indicated more frequent interaction with the teacher. For the valence of teacher-student interactions, students were asked to nominate classmates who "receive a lot of praise and compliments" (positive) and "at which the teacher gets angry often" (negative). Items again contained the name of the teacher. The valence score was created by computing the difference between the positive and negative proportion scores (range −1–+1).

Procedure

Randomly selected elementary schools in the middle, south, and east of the Netherlands were recruited by phone and letter. After the school's principal and fifth-grade teacher agreed to participate, parents were informed and asked for their consent for their child's participation. Data were collected from September to December (T1), January to March (T2), and April to June (T3) of the 2012–2013 school year. T1 started at least 1 month after the beginning of the school year. Measurement moments were 13–15 weeks (T1–T2) and 9–11 weeks (T2–T3) apart. At the 3 time points, students completed the questionnaires on netbook computers in the classroom. Standard instructions were given concerning voluntary participation and confidential data handling. In addition, 2 h of video were recorded on the same day the questionnaires were completed. During the observation, teachers followed their normal lesson plans, except for tests (because little interaction takes place during tests) and for individual student presentations (because classroom interactions then typically revolve around the presenting student which would result in unrepresentative high frequency of teacher behavior with the presenter). Teachers knew that the overall focus of the study was on the classroom climate, but were not informed regarding the specific behavior that was coded. Moreover, they were unaware of who, according to our approach, the socially marginal students were. A camera was located in the back of the classroom. To minimize intrusiveness, researchers were not in the classroom during the recordings. After T3, teachers received a summary of the findings for their classroom.

Analyses

Before performing the analyses to answer the research question, we examined the descriptive statistics, including correlations among the study variables. Spearman correlations were used, because the social marginality facets, peer disliking, and peer-perceived frequency of teacher-student interaction deviated from normality.

RQ1: Teacher Behavior With Students in the Social Margins of Their Classroom Group

First, to explore if teachers treated students in the social margins of their classroom group differently from non-marginal students, we conducted a set of multilevel analyses, first for the composite score and second per facet of social marginality separately. We predicted observed and peer-perceived teacher behavior from social marginality status (non-marginal or marginal) on the entire sample. These analyses were performed for the three measurement moments together, using the SPSS (version 24) mixed procedure. Data were hierarchically nested, with teacher behavior (frequency and valence) at a single occasion and toward a single student as the lowest level (L1). Occasions were nested within students at level 2 (L2), and students were nested within classes at level 3 (L3). However, next to the class, student, and occasion level variance, for the observed teacher behavior toward a single student at a certain occasion, we needed to take into account the level of the observed teacher behavior in the class at each occasion (class*occasion; here referred to as the observed lesson—although in practice multiple consecutive lessons by the same teacher were videotaped). That is, part of the variation in frequency of teacher behavior toward a single student at a single occasion (L1) was due to characteristics of the observed lessons during the period in which the camera was recording at a certain occasion (e.g., whether we mainly recorded a teacher-led classroom interaction vs. seat work). We accounted for this cross-classified nesting by modeling measurement occasions of teacher behavior with a student (L1) as being nested within

students (L2a) as well as within lessons (L2b), which were both nested within classes (L3). This cross-classified structure is illustrated in **Figure 1**.

The second step was to further understand variation in teacher behavior within the group of students in the social margins of their classroom group. For the composite score and per facet separately, we regressed frequency and valence in teacher behavior, as observed and as perceived by students, on students' severity of marginalization, their peer rejection, and inclusion goals. We used multilevel process analysis (with the same levels as indicated above, again using SPSS Mixed) to predict teacher behavior at the student level (L2a; averaged over time) and at the level of the time point [L1; students' momentary deviation from their average; see Papp (2004)].

RQ2: Change in Social Marginality Over Time

To answer the second research question, a latent growth curve model was estimated in which students' slope in social marginality was regressed on teacher behavior. This model was tested only for students who were in the socially marginal subsamples at T1. The growth models were estimated for the compound score and per facet of social marginality.

For the composite score of social marginality, we started by testing for measurement invariance before we conducted the growth curve models, to ensure that the same latent variable was assessed at each time point (Ferrer et al., 2008). We compared a freely estimated configural model to a constrained model in which first factor loadings and next also intercepts were fixed to be equal over time. Models were compared using the Satorra-Bentler scaled chi-square test for nested models (Satorra, 2000). The configural model showed good fit, $\chi^2(15) = 13.35$, $p = 0.576$; RMSEA = 0.00; CFI = 1.00; TLI = 1.00; SRMR = 0.02. Imposing constraints on the factor loadings and intercepts did not decrease model fit: factor loadings $\Delta SBS\chi^2(4) = 5.70$, $p = 0.223$; intercept $\Delta SBS\chi^2(6) = 7.48$, $p = 0.279$; factor loadings and intercept $\Delta SBS\chi^2(10) = 13.28$, $p = 0.208$.

In the first model, we tested initial growth models that only included an intercept and slope (M0). Time scores for the growth slope factor were corrected for unequal distances between T1 and T2 and between T2 and T3. Next, we regressed the slope of social marginality on the teacher behavior variables at T1 (M1). Then, we tested the interactions of the teacher behavior variables with rejection and inclusion goals at T1, to examine whether teacher behavior differentially affected changes in marginality depending on these variables (M2). The Complex function in Mplus was used to account for the nesting of the data (students within classes). Student-level predictor variables were group-mean centered before selecting the socially marginal sub-samples [see Hox (2010)].

The analyses for the compound score were set up as second-order models [see Ferrer et al. (2008)] in Mplus version 7.4 (Muthén and Muthén, 1998–2015). **Figure 2** shows the model that was fitted for M1. In second-order models, the observed variables (here: the peer nomination items of each facet) are used as indicators of a latent variable (first-order factor, here: social marginality) at each measurement occasion. Then, intercept and slope are introduced as second-order factors in M0. Finally, predictors can be added to explain variance in slope across students (M1 and M2).

RESULTS

Descriptive Statistics

Table 1 shows the means, standard deviations, range, and correlations for the variables, for the total sample (below the diagonal) and for the students in the social margins of their classroom group (based on the compound score; above the diagonal). Values represent the data prior to centering, and the nesting was not taken into account here. As expected, general social marginality correlated positively but moderately with rejection ($r_s = 0.29$, $p < 0.001$; for the three facets range in r_s from 0.27 to 0.32), confirming that the two reflect different aspects of low peer status. Within the group of students in the social margins of their classrooms, these correlation was stronger (compound $r_s = 0.43$, $p < 0.001$; for the three indicators range in r_s from 0.27 to 0.38), showing that students who were more strongly socially marginalized were also more likely to be rejected. The correlations of peer perceptions of frequency with observed frequency ($r_s = 0.04/0.15$) and peer perceptions of valence with observed teacher behavior (r_s 0.25/0.22 and −0.02/−0.01) for affective and cognitive valence) were at best weak.

RQ1: Teacher Behavior With Students in the Social Margins of Their Classroom Group

First, we compared the frequency and valence of observed and peer-perceived teacher behavior between socially marginal and non-marginal students (see **Table 2**). Teachers interacted less frequently with socially marginal students than with other students, $F(1, 815.69) = 5.58$, $p = 0.018$, particularly in the case of unpopular students, $F(1, 812.80) = 9.56$, $p = 0.002$. Peers thought that students in the social margins received less teacher attention than their other classmates, $F(1, 814.54) = 176.11$, $p < 0.001$, which was the case for all facets of social marginalization. There was no difference for the valence of observed teacher behavior in the affective domain, $F(1, 767.54) = 0.36$, $p = 0.552$, or the cognitive domain, $F(1, 758.71) = 0.30$, $p = 0.586$. Also peers generally did not see a difference in the valence of teacher behavior, $F(1, 809.68) = 1.00$, $p = 0.318$. However, for students whom they thought did not belong to a group they saw less positive teacher interaction than for their other classmates, $F(1, 813.49) = 10.17$, $p = 0.001$.

Variability in Teacher Behavior Within Socially Marginal Students

Next, we delved deeper into teacher behavior with socially marginalized students. To this end we examined, within the several subsamples of students in the social margins of their classroom group and across the three time points, whether observed teacher behavior was associated with students' severity of social marginality, their peer rejection and their reported inclusion goals.

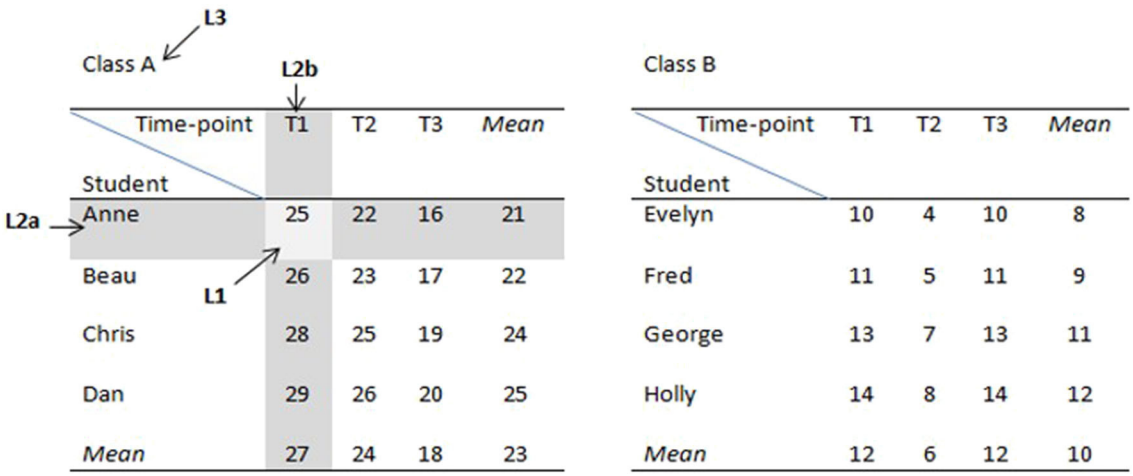

FIGURE 1 | Illustration of the cross-classified data structure. Numbers represent frequency of teacher behavior with each student at each time point. Anne's score of 25 at T1 has four sources of variation: class-level variation (this is a class with a relatively high frequency; L3), student-level variation (within her class, Anne receives relatively limited teacher attention; L2a), lesson-level variation (at T1 we videotaped a lesson with a particularly high frequency of teacher behavior; L2b), and finally residual variance at L1, which is Anne's own deviation from the class' mean score, her own mean score over time, and the lesson's mean score.

A null model for teacher behavior was run first that contained only random intercepts at the within-student (L1), between-student (L2a), between-lesson (L2b), and between-class (L3) levels, to see how variance in teacher behavior with socially marginal students was partitioned across these levels (see **Table 3**). Generally, most of the variance was located at the residual level of the measurement occasion. Frequency was most clearly different across students (29.8% of the variance located at the student-level). For affective and cognitive valence, hardly any variance was located at the student level (3.3 and 2.6%, respectively).

Next, to understand how teacher behavior could be explained by student characteristics, we regressed teacher behavior on students' severity of social marginality, peer rejection, and inclusion goals (see **Table 4** for analyses with the composite score and **Appendix A** for results for each facet separately). The more severely students were marginalized across the three time points together, the less frequent interaction teachers had with them. This was particularly the case for unpopular students. For socially marginalized students who did not belong to a group of friends, being even more severely marginalized at a certain moment in time was associated with higher frequency of teacher interaction. When students were more severely marginalized at a specific occasion compared to their overall average, concurrent teacher behavior with them was more positive in cognitive valence, although this result was not shown in the analyses per facet and the predictors explained little variance in momentary deviations in teacher behavior.

The more students were rejected by their peers, the more frequently the teacher interacted with them, but this behavior was more negative in affective valence (between-student part of the model; all facets of social marginalization). For unpopular students, being rejected by peers was also associated with lower cognitive valence at both the between-student and the within-student level; for students who were often alone this was the case at the within-student level.

Students' inclusion goals were not associated with any of the teacher behavior variables. As was indicated above, relatively little within-student variation in teacher behavior was explained by the predictors. Student characteristics, and most importantly peer rejection, did explain 13 and 16% of the between-student variability in frequency and cognitive valence between students, and even 88% of the between-student variability in affective valence.

RQ2: Change in Social Marginality Over Time

To answer the second research question, we tested whether, within the socially marginal subsamples, observed and peer-perceived teacher behavior predicted changes in the severity of students' social marginalization over time.

After the factor structure was established for the compound score, we proceeded to build the intercept and slope on this factor structure (M0, see **Figure 2**). This model showed a small negative slope in the overall severity of students' social marginalization, $b = -0.05$, $SE = 0.02$, $p = 0.006$, so on average these students became slightly less socially marginal over time. Significant slope variance, $s = 0.08$, $SE = 0.02$, $p = 0.001$, indicated that students differed in their change in social marginality over time. This change was not associated with their initial level of social marginalization, $r = -0.01$, $SE = 0.03$, $p = 0.852$. Results per indicator of social marginalization showed similar patterns across all facets, with the only exception that unpopularity stayed stable instead of having a negative slope, $b = 0.01$, $SE = 0.01$, $p = 0.339$.

In the next model (M1) we predicted the slope in severity of social marginalization from observed and peer-perceived teacher behavior in general and per facet of social marginalization (see **Table 5** for the composite score and **Appendix B** for the

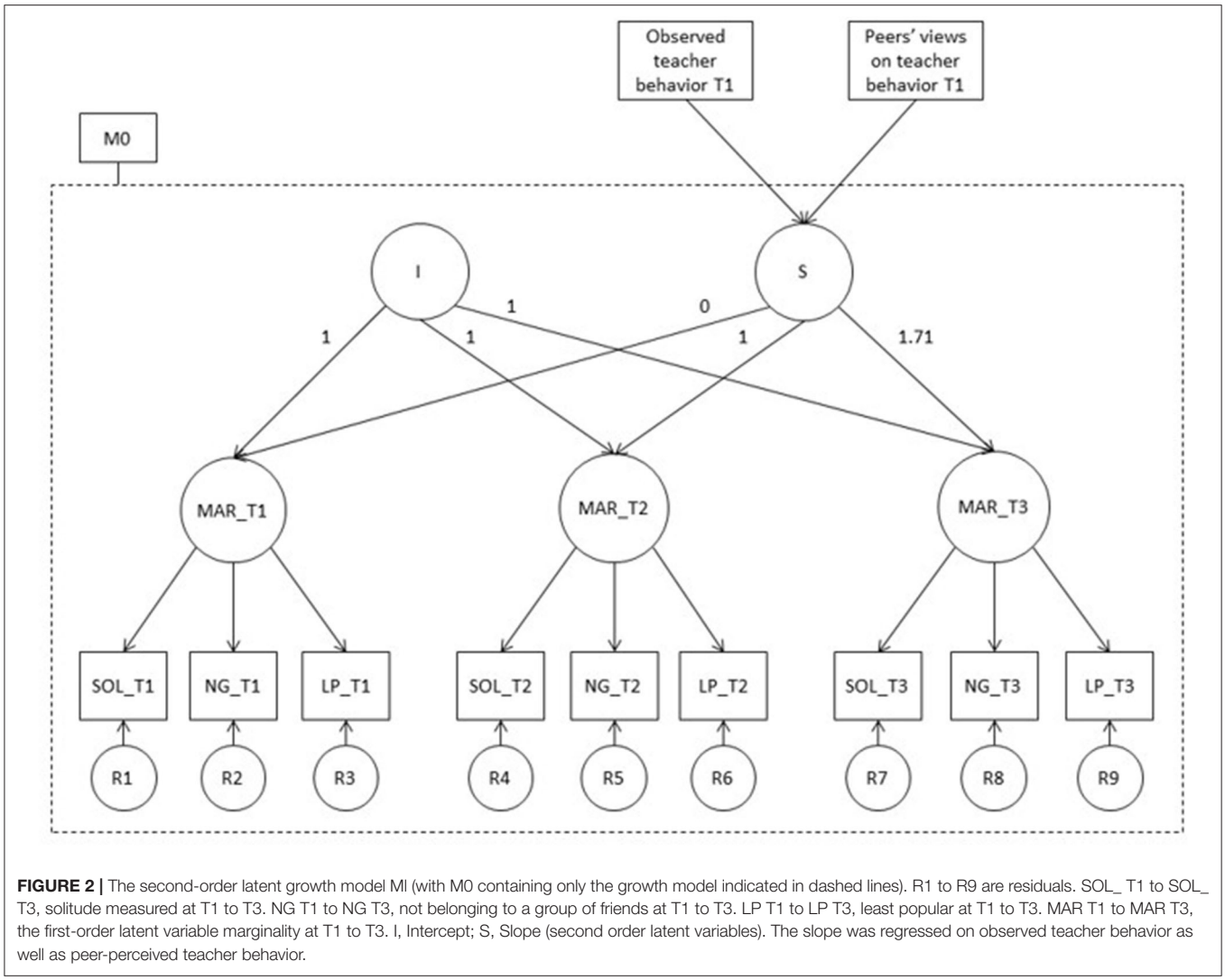

FIGURE 2 | The second-order latent growth model MI (with M0 containing only the growth model indicated in dashed lines). R1 to R9 are residuals. SOL_ T1 to SOL_ T3, solitude measured at T1 to T3. NG T1 to NG T3, not belonging to a group of friends at T1 to T3. LP T1 to LP T3, least popular at T1 to T3. MAR T1 to MAR T3, the first-order latent variable marginality at T1 to T3. I, Intercept; S, Slope (second order latent variables). The slope was regressed on observed teacher behavior as well as peer-perceived teacher behavior.

TABLE 1 | Means, standard deviations, range, and spearman correlations of study variables for the entire sample and the marginal sub-sample.

	M	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11
1 Solitude	0.06	0.12	0.00	1.00	–	0.46**	0.51**	0.83**	0.27**	0.22**	−0.04	−0.07	−0.04	−0.20**	−0.01
2 Not belonging to group	0.08	0.10	0.00	0.70	0.44**	–	0.38**	0.72**	0.38**	0.27**	0.13**	−0.10*	−0.01	−0.15**	−0.20**
3 Unpopularity	0.17	0.20	0.00	0.93	0.52**	0.52**	–	0.74**	0.38**	0.16**	−0.07	−0.07	−0.02	−0.32**	0.03
4 Social marginality	0.00	0.90	−1.24	5.39	0.63**	0.64**	0.81**	–	0.43**	0.25**	−0.01	−0.10*	−0.04	−0.24**	−0.11**
5 Rejection	0.11	0.14	0.00	0.86	0.27**	0.30**	0.32**	−0.29**	–	0.26**	0.08	−0.17**	−0.05	−0.06	−0.50**
6 Inclusion goals	2.50	0.97	1.00	5.00	0.25**	0.31**	0.31**	−0.29**	−0.22**	–	0.05	−0.04	0.01	0.02	−0.12**
7 *T* frequency	12.11	11.55	0.00	103.00	−0.02	0.03	−0.08**	−0.10**	−0.13**	0.00**	–	0.07	0.25**	0.15**	−0.19**
8 *T* valence aff.	−0.03	0.28	−1.00	1.00	−0.03	−0.02	0.00	−0.01**	−0.14**	−0.05*	−0.05**	–	0.12**	0.02	0.22**
9 *T* valence cogn.	0.12	0.19	−1.00	1.00	0.02	−0.00	−0.03	−0.03**	−0.01**	−0.04**	−0.25**	−0.08**	–	0.03	−0.01
10 *P* frequency	0.90	0.09	0.38	1.00	−0.26**	−0.28**	−0.32**	−0.30**	−0.18**	−0.11**	−0.04*	−0.07**	0.01**	–	−0.02
11 *P* valence	0.23	0.31	−0.90	0.94	−0.02	−0.07**	0.11**	−0.02**	−0.42**	−0.07**	−0.24**	−0.25**	−0.02*	0.10**	–

*T, teacher; Aff, affective; Cogn, cognitive; P, peer. Correlations below the diagonal represent correlations for the entire sample; correlations above the diagonal represent those for the socially marginal sub-sample (based on the compound score). *p < 0.05, ** p < 0.01.*

separate facets). Unexpectedly, none of the teacher behavior variables was associated with students' slope of the severity of social marginalization.

Finally, we examined whether change in social position of students occupying a socially marginal position in the classroom peer group was differently associated with teacher behavior, when

TABLE 2 | Observed and peer-perceived teacher behavior with socially marginal students and others.

	Compound score		Facets of social marginality					
	Social marginality		Solitude		Not belonging to a group		Unpopularity	
	Not socially marginal	Socially marginal	Not alone	Often alone	Does belong	Does not belong	Not unpopular	Unpopular
	M (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)	*M* (*SE*)
Observed teacher behavior								
Frequency	12.75 (0.82)	11.26 (0.93)*	12.68 (0.82)	11.67 (0.90)	12.62 (0.82)	11.79 (0.90)	12.89 (0.82)	10.99 (0.92)**
Affective valence	−0.03 (0.02)	−0.04 (0.02)	−0.03 (0.02)	−0.03 (0.02)	−0.03 (0.02)	−0.05 (0.02)	−0.03 (0.02)	−0.04 (0.02)
Cognitive valence	0.12 (0.01)	0.12 (0.01)	0.12 (0.01)	0.12 (0.01)	0.12 (0.01)	0.11 (0.01)	0.12 (0.01)	0.11 (0.01)
Peer perceived teacher behavior								
Frequency	0.92 (0.00)	0.85 (0.01)**	0.92 (0.01)	0.86 (0.01)**	0.92 (0.01)	0.87 (0.01)**	0.92 (0.00)	0.85 (0.01)**
Valence	0.23 (0.02)	0.21 (0.03)	0.23 (0.02)	0.22 (0.02)	0.25 (0.02)	0.18 (0.02)**	0.22 (0.02)	0.24 (0.03)

Values are estimated means with standard errors over the 3 time points.
**Value significantly different from non-marginal students with p <0.05.*
***Value significantly different from non-marginal students with p <0.01.*

TABLE 3 | Variance decomposition of observed teacher behavior for socially marginal students.

	Frequency		Affective valence		Cognitive valence	
Level	**Variance**	**%**	**Variance**	**%**	**Variance**	**%**
1 Occasion	55.07	55.3	0.071	78.9	0.034	87.2
2a Student	29.67	29.8	0.003	3.3	0.001	2.6
2b Lesson	7.52	7.5	0.004	4.4	0.000	0.0
3 Class	7.36	7.4	0.012	13.3	0.003	7.7

This table is based on the socially marginal subsample only, using the compound score of social marginality.

TABLE 4 | Results of the multilevel analyses predicting frequency and valence in observed teacher behavior with socially marginal students.

	Frequency		Affective valence		Cognitive valence	
	B	***SE***	***B***	***SE***	***B***	***SE***
Between-student variation						
Social marginality	−1.03*	0.52	−0.01	0.01	0.01	0.01*
Peer rejection	11.25**	3.42	−0.24**	0.08	−0.11	0.06*
Inclusion goals	0.47	0.61	−0.01	0.01	0.00	0.01*
R^2	0.13		0.88		0.16	
Within-student momentary variation						
Social marginality	0.81	0.87	0.01	0.03	0.04	0.02*
Peer rejection	−1.70	5.39	−0.25	0.18	−0.26	0.13*
Inclusion goals	0.12	0.71	−0.00	0.02	0.01	0.02*
R^2	0.02		0.00		0.02	

This table is based on the social marginality composite score. Results for each facet separately can be found in ***Appendix A****.*
**p <.05, **p <.01.*

they were (a) more rejected or (b) had stronger inclusion goals (M2). Only the interaction of observed valence in the cognitive domain with peer rejection was significant. **Figure 3** shows how teacher cognitive valence was related to the slope in marginality for students high and low (+/−1 *SD*) in peer rejection. It appeared that for more strongly rejected students, more positive teacher behavior affected social integration, as it predicted a more negative slope in the severity of social marginalization. This was the case for both solitude (particularly cognitive valence) and not belonging to a group (affective valence), but not for unpopularity.

TABLE 5 | Results of the growth curve model predicting the slope of social marginality.

	M1		M2	
	***B* (*SE*)**	β	***B* (*SE*)**	β
Main effects				
Observed frequency	−0.00 (0.00)	−0.08	−0.00 (0.01)	−0.08
Observed affective valence	−0.05 (0.09)	−0.06	0.05 (0.31)	0.07
Observed cognitive valence	0.01 (0.00)	0.01	−0.15 (0.37)	−0.11
Peer-perceived frequency	0.13 (0.29)	0.05	−0.17 (1.01)	−0.07
Peer-perceived valence	−0.11 (0.10)	−0.12	−0.06 (0.43)	−0.07
Peer rejection			0.35 (0.27)	0.22
Inclusion goals			0.03 (0.02)	0.12
Interaction with rejection				
Observed frequency			−0.00 (0.02)	−0.00
Observed affective valence			−0.88 (0.55)	−0.15
Observed cognitive valence			−2.55 (1.04)*	−0.29
Peer-perceived frequency			0.77 (2.34)	0.06
Peer-perceived valence			0.00 (0.02)	0.09
Interaction with inclusion goals				
Observed frequency			0.00 (0.00)	0.04
Observed affective valence			−0.01 (0.09)	−0.03
Observed cognitive valence			0.11 (0.14)	0.27
Peer-perceived frequency			0.08 (0.34)	0.11
Peer-perceived valence			0.03 (0.12)	0.11
R^2 slope	0.02		0.14	

This table is based on the social marginality composite score. Results for each facet separately can be found in ***Appendix B****.*
$^*p < 0.05$.

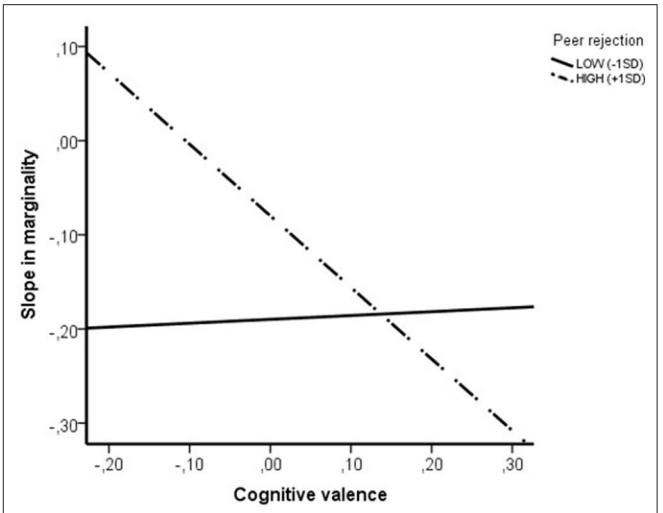

FIGURE 3 | Interaction effect of peer rejection with cognitive valence on marginal students' slope in social marginality. For highly rejected students, more positive cognitive valence was related to a more negative slope, indicating a decrease in marginality over time. For students who were not rejected by their peers, positive valence in teacher behavior was not associated with the slope in marginality.

DISCUSSION

As socially marginalized students are at risk for adjustment problems, it is important for teachers to find ways to foster their social participation. In the present study, we examined if a teacher social referencing mechanism applies to students' social marginality. Based on research testing social referencing theory (Hughes et al., 2001, 2014; McAuliffe et al., 2009; Hendrickx et al., 2017b), we expected a modeling effect of frequency and valence in teacher behavior, so that students would become less severely socially marginalized over time. On average, teachers however interacted less frequently with these students, thereby potentially perpetuating students' socially marginal position rather than alleviating it. This was particularly true for students who were considered unpopular by their peers. Further, frequency of teacher interaction as such was not associated with a change in the severity of social marginalization over time. Overall the link between the nature of teacher behavior and the severity of students' social marginalization was weak. However, differential effects were found for students who were also rejected by their peers. Positive valence in observed teacher behavior was associated with becoming less severely socially marginalized over time, only when students were also peer rejected. Thus, specifically socially marginal students that were also rejected seemed to benefit from positive teacher behavior. Overall, there was no clear pattern in the effects of interactions within the cognitive and the affective domains. Socially marginal students that were also rejected had more negative interactions in the affective domain, but more positive interactions in the cognitive domain predicted less severe social marginalization over time.

Teacher Behavior With Socially Marginalized Students

In line with findings in preschool groups (Evans, 2001; Rudasill and Rimm-Kaufman, 2009), teachers interacted less frequently with students in the social margins of their classroom group than with their classmates, particularly if these students were considered unpopular. Thus, in terms of frequency, teachers acted in accordance with students' limited social participation. These students' social marginality and limited social impact may have resulted in them not standing out much in the group and therefore not attracting much teacher attention and this effect was even stronger as students were considered less popular. Classmates also more often indicated the socially marginalized students as those who received less teacher attention, which was the case for all three facets of social marginalization. Overall, although interaction frequency was lower, there was no marked difference in the valence of interactions in the cognitive and affective domains with socially marginalized students.

These findings indicate that although we assumed teacher behavior to affect social marginality, the direction of this association might also be the other way around: students' social position affects teacher behavior. This conclusion is worrisome, as by structurally having less frequent interaction with students in the margins of the classroom peer group, teachers might send the message to the rest of the classroom that it is normal to

ignore them and leave them out of social interaction. Thereby, teachers may unintentionally maintain the socially marginal position of these students. Only for socially marginalized students who did not belong to a group of friends, being even more severely marginalized at a certain moment in time was associated with higher frequency of teacher interaction. This finding might indicate the teachers' effort to include these students in the classroom peer group.

Rejection was an important factor in the dynamic of social marginalization and teacher behavior. When socially marginalized students were more rejected by their peers, the frequency of teacher interaction was higher but also more negative, specifically in the affective domain. The tendency to have more conflicted interactions with more rejected students is again in line with the socially marginal position of students, rather than counteracting this tendency. Students who are rejected by their peers often show behaviors that can be considered undesirable, such as aggression (Asher and McDonald, 2009). Although some negativity may be necessary to tackle students' undesirable behavior for classroom management purposes, investing in positive interaction with a rejected student, and according to our results specifically in the cognitive domain, may in the long run positively affect classmates' social inclusion of this student. This, in turn, could decrease this student's undesirable behavior (Ladd, 2006). In this way, the teacher might be able to break the negative cycle of rejection negative responses.

The Teacher as a Social Referent for Social Marginalization

There were no overall effects of teacher behavior on changes in the severity of students' social marginality or any of its facets over the course of a school year. This may partly be explained by the non-adaptive behavior teachers generally displayed toward marginal students. Few examples of with regard to social marginalization non-congruous teacher behavior (i.e., frequent and positive interaction) were present in the data, confining the possibilities to find evidence for social referencing processes that support social integration.

The small role of the teacher in changes in social marginalization is possibly also rooted in the relational history most classes had as a group. In Dutch primary schools, students generally have a new teacher every year, whereas the peer group stays mostly the same. Thus, in order for the teacher to affect the social integration of socially marginalized students, counterbalancing typical peer interactions might not be enough to eliminate years of peer experiences and reputations. Accordingly, teacher behavior may need to be much more pronounced than the naturally occurring behavior observed in the current sample.

Social Referencing and Social Marginality of Rejected Students

For socially marginalized students who were more strongly rejected by their peers, positive teacher behavior was related to more social integration over time. Rejected students in particular seemed to benefit from being treated more positively, reflecting the earlier findings from the perspective of social referencing theory (Hughes et al., 2001, 2014; Hendrickx et al., 2017b), that more positive valence in teacher behavior is associated with lower levels of peer rejection. These effects were found for students who were often alone and students who did not belong to a group of friends, and both for cognitive valence (compound score and solitude) and affective valence (not belonging to a group of friends). Why should in particular peer rejection be related to teacher behavior? This may be because feelings of (active) dislike peers have for a student may be relatively salient, and any positive teacher behavior with a disliked student may therefore be more salient or contrasting than positive behavior with a classmate they do not engage with much. That is, students may generally have less strong feelings about a classmate who does not belong to the group but is not rejected. Because of the limited visibility of students in the social margins of their classroom group, there may be no sharp contrasts between feelings toward such a student and teachers' behavior. This would reflect a "double catch" for those students, as it implies that teachers' behavior with marginal students has limited power to grasp peers' attention and to subsequently function as a model.

Different Facets of Social Marginalization

The present study has focused on three facets of social marginalization, thereby providing both a general view on the concept and distinguishing facets of social marginalization specifically. In our results, unpopularity seemed to relate slightly differently to teacher behavior as compared to solitude and not belonging to a group of friends. Conceptually, (un-)popularity differs from the other two facets. That is, whereas both solitude and not belonging to a group refer to not being surrounded by many others, unpopularity is associated with not having a very high status or social impact in a group. One can be unpopular in the peer group, but still have one or two close friends (e.g., two or three neglected students who connect well to each other). This underlines the notion that social marginality is a multidimensional construct and that to understand it well, different facets need to be taken into consideration. However, not so much the different facets of social marginalization but being rejected was important regarding the dynamics of marginalization and teacher behavior. Only in connection with rejection, differential effects of the cognitive and affective domains of teacher interaction became visible.

Limitations and Suggestions for Future Research

The results of this study must be interpreted in the light of some limitations. First, our classroom observations were limited in multiple ways. That is, we only recorded 2 h per wave, which may have limited predictive power. As is shown in the relatively high occasion-level variance, teacher behavior was rather dependent on the observed moment. An extended observation that covered a longer period of time might be essential to find effects of teacher behavior. Moreover, we limited our measure of observed teacher behavior to verbal expressions. Non-verbal teacher behaviors, such as giving a student a thumbs-up or high five may also be important for classmates' perceptions of how the teacher interacts with and evaluates a student. Also, it may be relevant to examine

teacher behavior outside the classroom, for instance during breaks, in the hallway or on field trips. Finally, observations were limited in the sense of only one teacher being recorded. It is likely that in those cases where there were two teachers in the classroom it was not just the teacher who participated who could have an impact on the classroom social system in general and the social position of marginal students in particular, so observations could be extended to the second teacher as well. In sum, for future research observations could be extended to a longer time period, a wider range of teacher behavior, a wider range of settings, and to both teachers when available. However, our approach already included 6 h of observation per class and many more hours of coding, so extending observations might be a big challenge.

A second limitation was that in the current study, we did not include student behavior, which is a potentially important factor in both students' social marginalization and teacher behavior. For instance, acting aggressively is known to hinder both positive relations with peers and positive interactions with teachers. For future research it would be interesting to incorporate student behavior as a predictor of students' marginality as well as teacher behavior. Possibly, teacher behavior has differential effects for students' social position in the classroom peer group (Hendrickx et al., 2017a).

A possible explanation for our findings might be that naturally occurring teacher behavior was not salient or frequent enough to improve marginal students' social integration. Future research might benefit from systematically manipulating teacher behavior, in order to increase this variability and thereby expand the range of observed teacher behaviors. Also, in the Dutch context students stay in the same group for several years. This stability may make it hard for teachers to induce changes, particularly because the difficulty of changing a reputation once it is built. Moreover, it would be interesting to see if teacher behavior changes in correspondence with more social integration. Based on the idea that teacher behavior follows students' status, we would expect to find an effect from student marginalization on teacher behavior at a later time point. Finally, future research may benefit from examining teachers' accuracy in their judgment of students' peer relations (Hamm and Hoffman, 2016), which may facilitate teachers' adaptive behavior (Hoffman et al., 2015). If teachers are unaware of who the students in the social margins of the group are, they cannot be expected to purposefully intervene or change their practices accordingly. In general, however, teacher judgments of peer relationships seem to have limited overlap with peer reports [see Gest (2006), Hoffman et al. (2015), Neal et al. (2011)].

Practical Implications

The study findings provide some practical implications for teachers. Teachers seemed largely to behave in accordance with students' socially marginal position in the classroom group: they had infrequent interactions with them. As was stated in section 4.4, it is important for teachers to be attuned to their students' social status in general, and social marginalization in particular, so they can act upon this information to increase students' social integration. Students in the social margins of the group who also were rejected seemed to benefit from receiving positive teacher comments, particularly in the cognitive domain. Therefore, the clearest indication of this study for teachers is to avoid negativity and increase positivity in public interactions with students that are socially marginalized, particularly with students who are also peer rejected. Intervention studies aimed at increasing the valence of teacher behavior with students in general (Mikami et al., 2011) and with students with externalizing behaviors in particular (Spilt et al., 2012) have shown positive effects on teacher behavior and peer relations. Such findings are promising for the possible success of intervention programs aimed at social marginalization.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

MH, TM, AC, and MB designed the study. MH performed data collection. MH, TM, AC, and MB performed the statistical analyses. MH wrote the manuscript in close collaboration with TM, while AC and MB provided feedback. All authors contributed to the article and approved the submitted version.

FUNDING

This research was supported by a grant from the Netherlands Organization for Scientific Research (NWO; 411-10-915).

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2020.568849/full#supplementary-material

REFERENCES

Arbeau, K. A., Coplan, R. J., and Weeks, M. (2010). Shyness, teacher-child relationships, and socio-emotional adjustment in grade 1. *Int. J. Behav. Dev.* 34, 259–269. doi: 10.1177/0165025409350959

Asher, S. R., and McDonald, K. L. (2009). "The behavioral basis of acceptance, rejection, and perceived popularity," in *Handbook of Peer Interactions,*

Relationships, and Groups, eds. K. H. Rubin, W. M. Bukowski, and B. Laursen (New York, NY: Guilford), 232–248.

Author et al. (2016).

Borgatti, S. P., Everett, M. G., and Johnson, J. C. (2013). *Analyzing Social Networks*. London: SAGE Publications.

Bukowski, W. M., and Véronneau, M.-H. (2014). "Studying withdrawal and isolation in the peer group: historical advances in concepts and measures," in *The Handbook of Solitude: Psychological Perspectives on Social Isolation, Social Withdrawal, and Being Alone,* eds. R. J. Coplan and J. C. Bowker (Sussex: John Wiley and Sons, Ltd), 14–33.

Cillessen, A. H. N., and Marks, P. E. L. (2017). Methodological choices in peer nomination research. *New Dir. Child Adolesc. Dev.* 2017, 21–44. doi: 10.1002/cad.20206

Coplan, R. J., Arbeau, K. A., and Armer, M. (2008). Don't fret, be supportive! *Maternal characteristics linking child shyness to psychosocial and school adjustment in kindergarten. J. Abnorm. Child Psychol.* 36, 359–371. doi: 10.1007/s10802-007-9183-7

Coplan, R. J., and Armer, M. (2007). A "multitude of solitude:" a closer look at social withdrawal and nonsocial play in early childhood. *Child Dev. Perspect.* 1, 26–32. doi: 10.1111/j.1750-8606.2007.00006.x

Coplan, R. J., and Prakash, K. (2003). Spending time with teacher: characteristics of preschoolers who frequently elicit versus initiate interactions with teachers. *Early Child. Res. Q.* 18, 143–158. doi: 10.1016/S0885-2006(03)00009-7

Coplan, R. J., and Rubin, K. H. (2010). "Social withdrawal and shyness in childhood: history, theories, definitions and assessment," in *The Development of Shyness and Social Withdrawal in Childhood and Adolescence,* eds. K. H. Rubin and R. J. Coplan (New York, NY: Guilford), 3–22.

De Laet, S., Doumen, S., Vervoort, E., Colpin, H., Van Leeuwen, K., Goossens, L., et al. (2014). Transactional links between teacher-child relationship quality and perceived versus sociometric popularity: a three-wave longitudinal study. *Child Dev.* 85, 1647–1662. doi: 10.1111/cdev.12216

Ellemers, N., and Jetten, J. (2013). The many ways to be marginal in a group. *Pers. Soc. Psychol. Rev.* 17, 3–21. doi: 10.1177/1088868312453086

Evans, M. A. (2001). "Shyness in the classroom and home," in *International Handbook of Social Anxiety: Concepts, Research and Interventions Relating to the Self and Shyness,* eds. W. R. Crozier and L. E. Alden (Westport, CT: Wiley), 159–183.

Farmer, T. W., McAuliffe Lines, M., and Hamm, J. V. (2011). Revealing the invisible hand: the role of teachers in children's peer experiences. *J. Appl. Dev. Psychol.* 32, 247–256. doi: 10.1016/j.appdev.2011.04.006

Ferrer, E., Balluerka, N., and Widaman, K. F. (2008). Factorial invariance and the specification of second-order latent growth models. *Methodology* 4, 22–36. doi: 10.1027/1614-2241.4.1.22

Gazelle, H., and Ladd, G. W. (2003). Anxious solitude and peer exclusion: a diathesis-stress model of internalizing trajectories in childhood. *Child Dev.* 74, 257–278. doi: 10.1111/1467-8624.00534

Gest, S. D. (2006). Teacher reports of children's friendships and social groups: agreement with peer reports and implications for studying peer similarity. *Soc. Dev.* 15, 248–259. doi: 10.1111/j.1467-9507.2006.00339.x

Gest, S. D., and Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *J. Appl. Dev. Psychol.* 32, 288–296. doi: 10.1016/j.appdev.2011.02.004

Hamm, J. V., and Hoffman, A. S. (2016). "Teachers' influence on students' peer relationships and peer ecologies," in *Handbook of Social Influences in School Contexts: Social-Emotional, Motivation, and Cognitive Outcomes,* eds. K. R. Wentzel and G. B. Ramani (New York, NY: Routledge), 208–229.

Hariri, A. R., Mattay, V., Tessitore, A., Kolachana, B., Fera, F., Goldman, D., et al. (2002). Serotonin transporter genetic variation and the response of the human amygdala. *Science* 297, 400–403. doi: 10.1126/science.1071829

Henderson, H. A., Fox, N. A., and Rubin, K. H. (2001). Temperamental contributions to social behavior: the moderating roles of frontal EEG asymmetry and gender. *J. Am. Acad. Child Adolesc. Psychiatry* 40, 68–74. doi: 10.1097/00004583-200101000-00018

Hendrickx, M. M. H. G., Mainhard, M. T., Boor-Klip, H. J., and Brekelmans, M. (2017a). Teacher liking as an affective filter for the association between student behavior and peer status. *Contemp. Educ. Psychol.* 49, 250–262. doi: 10.1016/j.cedpsych.2017.03.004

Hendrickx, M. M. H. G., Mainhard, M. T., Boor-Klip, H. J., Cillessen, A. H. N., and Brekelmans, M. (2016). Social dynamics in the classroom: teacher support and conflict and the peer ecology. *Teach. Teach. Educ.* 53, 30–40. doi: 10.1016/j.tate.2015.10.004

Hendrickx, M. M. H. G., Mainhard, M. T., Oudman, S., Boor-Klip, H. J., and Brekelmans, M. (2017b). Teacher behavior and peer liking and disliking: the teacher as a social referent for peer status. *J. Educ. Psychol.* 109, 546–558. doi: 10.1037/edu0000157

Hoffman, A. S., Hamm, J. V., and Farmer, T. W. (2015). Teacher attunement: supporting early elementary students' social integration and status. *J. Appl. Dev. Psychol.* 39, 14–23. doi: 10.1016/j.appdev.2015.04.007

Hox, J. J. (2010). *Multilevel Analysis: Techniques and Applications. New York*, NY: *Routledge*.

Hughes, J. N., Cavell, T. A., and Willson, V. (2001). Further support for the developmental significance of the quality of the teacher-student relationship. *J. Sch. Psychol.* 39, 289–301. doi: 10.1016/S0022-4405(01)00074-7

Hughes, J. N., and Im, M. H. (2016). Teacher-student relationship and peer disliking and liking across grades 1-4. *Child Dev.* 87, 593–611. doi: 10.1111/cdev.12477

Hughes, J. N., Im, M. H., and Wehrly, S. E. (2014). Effect of peer nominations of teacher–student support at individual and classroom levels on social and academic outcomes. *J. Sch. Psychol.* 52, 309–322. doi: 10.1016/j.jsp.2013.12.004

Kiuru, N., Aunola, K., Lerkkanen, M.-K., Pakarinen, E., Poskiparta, E., Ahonen, T., et al. (2015). Positive teacher and peer relations combine to predict primary school students' academic skill development. *Dev. Psychol.* 51, 434–446. doi: 10.1037/a0038911

Ladd, G. W. (2006). Peer rejction, aggressive or withdrawn behavior, and psychological maladjustment from ages 5 to 12: an examination of four predictive models. *Child Dev.* 77, 822–846. doi: 10.1111/j.1467-8624.2006.00905.x

Landis, J. R., and Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics* 33, 159–174. doi: 10.2307/2529310

Laursen, B., Bukowski, W. M., Aunola, K., and Nurmi, J.-E. (2007). Friendship moderates prospective associations between social isolation and adjustment problems in young children. *Child Dev.* 78, 1395–1404. doi: 10.1111/j.1467-8624.2007.01072.x

Lee, T., and Cornell, D. (2009). Concurrent validity of the olweus bully/victim questionnaire. *J. Sch. Violence.* 9, 56–73. doi: 10.1080/15388220903185613

McAuliffe, M. D., Hubbard, J. A., and Romano, L. J. (2009). The role of teacher cognition and behavior in children's peer relations. *J. Abnorm. Child Psychol.* 37, 665–677. doi: 10.1007/s10802-009-9305-5

Mikami, A. Y., Gregory, A., Allen, J. P., Pianta, R. C., and Lun, J. (2011). Effects of a teacher professional development intervention on peer relationships in secondary classrooms. *Sch. Psych. Rev.* 40, 367–385. doi: 10.1080/02796015.2011.12087704

Moore, C. C., Shoulberg, E. K., and Murray-Close, D. (2012). The protective role of teacher preference for at-risk children's social status. *Aggress. Behav.* 38, 481–493. doi: 10.1002/ab.21446

Muthén, B. O., and Muthén, L. K. (1998–2015). *Mplus (version 7.4) [computer software]*.

Neal, J. W., Cappella, E., Wagner, C., and Atkins, M. S. (2011). Seeing eye to eye: predicting teacher-student agreement on classroom social networks. *Soc. Dev.* 20, 376–393. doi: 10.1111/j.1467-9507.2010.00582.x

Nelson, L. J. (2013). Going it alone: comparing subtypes of withdrawal on indices of adjustment and maladjustment in emerging adulthood. *Soc. Dev.* 22, 522–538. doi: 10.1111/j.1467-9507.2012.00671.x

Papp, L. M. (2004). Capturing the interplay among within- and between-person processes using multilevel modeling techniques. *Appl. Prev. Psychol.* 11, 115–124. doi: 10.1016/j.appsy.2004.09.002

Poulin, F., and Dishion, T. J. (2008). Methodological issues in the use of peer sociometric nominations with middle child youth. *Soc. Dev.* 17, 908–922. doi: 10.1111/j.1467-9507.2008.00473.x

Reinke, W. M., Splett, J. D., Robeson, E. N., and Offutt, C. A. (2009). Combining school and family interventions for the prevention and early intervention of disruptive behavior problems in children: a public health perspective. *Psychol. Sch.* 46, 33–43. doi: 10.1002/pits.20352

Rubin, K. H. (1982). Nonsocial play in preschoolers: necessarily evil? *Child Dev.* 53, 651–657. doi: 10.2307/1129376

Rubin, K. H., Bukowski, W. M., and Bowker, J. C. (2015). "Children in peer groups," in *Handbook of Child Psychology and Developmental Science, 7th edn*. ed. R. M. Lerner (New York, NY: Wiley), 175–220. doi: 10.1002/9781118963418.childpsy405

Rubin, K. H., Coplan, R. J., and Bowker, J. C. (2009). Social withdrawal in childhood. *Annu. Rev. Psychol.* 60, 141–171. doi: 10.1146/annurev.psych.60.110707.163642

Rudasill, K. M., and Rimm-Kaufman, S. E. (2009). Teacher–child relationship quality: the roles of child temperament and teacher–child interactions. *Early Child. Res. Q.* 24, 107–120. doi: 10.1016/j.ecresq.2008.12.003

Satorra, A. (2000). "Scaled and adjusted restricted tests in multi-sample analysis of moment structures," in *Innovations in Multivariate Statistical Analysis,* eds. R. D. H. Heijmans, D. S. G. Pollock and A. Satorra (London: Kluwer Academic Publishers), 233–247.

Spangler, T., and Gazelle, H. (2009). Anxious solitude, unsociability, and peer exclusion in middle childhood: a multitrait-multimethod matrix. *Soc. Dev.* 18, 833–856. doi: 10.1111/j.1467-9507.2008.00517.x

Spilt, J. L., Koomen, H. M. Y., Thijs, J. T., and Van der Leij, A. (2012). Supporting teachers' relationships with disruptive children: the potential of relationship-focused reflection. *Attach. Hum. Dev.* 14, 305–318. doi: 10.1080/14616734.2012.672286

Statistics Netherlands (2012). *Aandeel Allochtonen Per Gemeente [Percentages Immigrants by Municipality]*. Retrieved from http://www.cbs.nl/nl-NL/menu/themas/dossiers/allochtonen/cijfers/extra/aandeel-allochtonen.htm (accessed February 17, 2017).

Thijs, J. T., Koomen, H. M. Y., and van der Leij, A. (2006). Teachers' self-reported pedagogical practices toward socially inhibited, hyperactive, and average children. *Psychol. Sch.* 43, 635–651. doi: 10.1002/pits.20171

Van den Berg, Y., Lansu, T. A. M., and Cillessen, A. H. N. (2020). Preference and popularity as distinct forms of status: a meta-analytic review of 20 years of research. *J. Adolesc.* 84, 78–95. doi: 10.1016/j.adolescence.2020.07.010

Veerman, J. W., Straathof, M. A. E., Treffers, P. H. D. A., van den Bergh, B. R. H., and ten Brink, L. T. (2004). *Competentiebelevingsschaal Voor Kinderen [Self-Perceived Competence for Children]*. Amsterdam: Harcourt Test Publishers.

Wentzel, K. R. (2005). "Peer relationships, motivation, and academic performance at school." in *Handbook of Competence and Motivation,* eds. A. Elliot and C. Dweck (New York, NY: Guilford), 279–296.

White, K. J., and Kistner, J. (1992). The influence of teacher feedback on young children's peer preferences and perceptions. *Dev. Psychol.* 28, 933–940. doi: 10.1037/0012-1649.28.5.933

Wormington, S. V., Anderson, K. G., Schneider, A., Tomlinson, K. L., and Brown, S. A. (2016). Peer victimization and adolescent adjustment: does school belonging matter? *J. Sch. Violence* 15, 1–21. doi: 10.1080/15388220.2014.922472

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

ORIGINAL RESEARCH
published: 23 October 2020
doi: 10.3389/feduc.2020.586960

The Role of Teaching Strategies in Social Acceptance and Interactions; Considering Students With Intellectual Disabilities in Inclusive Physical Education

Vitus Furrer[1], Stefan Valkanover[1,2], Michael Eckhart[1] and Siegfried Nagel[2]*

[1] PHBern, University of Teacher Education, Bern, Switzerland, [2] Institute of Sport Science, University of Bern, Bern, Switzerland

Including students with intellectual disabilities (ID) in primary school-based physical education (PE) is common practice. However, little is known about students' social participation in this environment and how it is related to PE teaching strategies. This multilevel study explored the relations between the teaching strategies *teaching cooperative skills* and *using individual reference norm orientation (IRNO)*, taking into consideration students' social acceptance and interactions in inclusive PE. The results showed that IRNO is positively related to social acceptance and positive interactions in inclusive PE, and the special educational need (SEN) status of children with ID moderated both relationships. Hence, IRNO helps to decrease the gap in social participation between students with and without ID. Teaching cooperative skills were also positively related to social acceptance of all children in PE, but there was no cross-level interaction for SEN status, and no relationship with positive interactions in PE. Thus, teaching cooperative skills can be seen as an inclusive PE teaching strategy that fosters social participation and the well-being of all students. This study addresses an issue relevant in many countries where inclusive school settings are prioritized. In future research on social participation, teacher, student, and class characteristics should be acknowledged.

Keywords: inclusive education, social acceptance, social interactions, physical education, intellectual disabilities, teaching strategies, individual reference norm orientation, cooperative skills

OPEN ACCESS

Edited by:
Carmen L. A. Zurbriggen, University of Luxembourg, Luxembourg

Reviewed by:
Markus Gebhardt, University of Regensburg, Germany
Anke De Boer, University of Groningen, Netherlands

****Correspondence:***
Vitus Furrer
vitus.furrer@phbern.ch

Specialty section:
This article was submitted to Teacher Education, a section of the journal Frontiers in Education

Received: *24 July 2020*
Accepted: *18 September 2020*
Published: *23 October 2020*

Citation:
Furrer V, Valkanover S, Eckhart M and Nagel S (2020) The Role of Teaching Strategies in Social Acceptance and Interactions; Considering Students With Intellectual Disabilities in Inclusive Physical Education. Front. Educ. 5:586960. doi: 10.3389/feduc.2020.586960

INTRODUCTION

The main goal of the United Nations Convention on the Rights of Persons with Disabilities is "to promote, protect and ensure the full and equal enjoyment of all human rights [...] by all persons with disabilities" (United Nations, 2006, p. 4). As a result of this convention, most specifically referring to article 24, policies of many countries, including Switzerland, tend toward a more inclusive education (Koster et al., 2009; Achermann et al., 2017). In Switzerland, 2.5% of all the students in mainstream schools are provided with intensified special educational measures[1]

[1]I.e., they have SEN status.

(Bula et al., 2019). In the 2017/18 school year, this amounted to 22,266 pupils (Bula et al., 2019). In inclusive education, children with special educational needs (SEN) are educated alongside their typically developing (TD) peers. According to Farrell (2000), inclusion is described as "taking a full and active part in school-life, be[ing] a valued member of the school community and be[ing] seen as an integral member" (p. 154). Fundamentally, all students should get the best education according to their individual, academic, and social development. Therefore, promoting the social inclusion[2] of students with and without SEN is considered one of the central goals of inclusive education (Booth and Ainscow, 2002). However, studies show that SEN children in inclusive classrooms are at high risk of being socially excluded (Garrote et al., 2017). Compared to their peers, they have fewer interactions and friendships; children with intellectual disabilities (ID)[3] are particularly at risk of social exclusion (Ruijs and Peetsma, 2009; Garrote and Sermier Dessemontet, 2015). Bredahl (2013) reported that children with the least visible disabilities—including children with ID—were those most at risk of experiencing negative situations in inclusive education. Although it is widely assumed that social skill deficits and low conceptual skills can hinder students with ID from developing positive peer relationships (see review on special needs classrooms: Schoop-Kasteler and Müller, 2020), very little research has been conducted on children with ID in general education (Garrote, 2016). It becomes apparent that joint teaching alone does not guarantee that children with and without SEN are equally involved in social exchanges in their classes (King, 2013). Also, TD students do not like working with their low-achieving peers, including peers with SEN (Monchy et al., 2004). Consequently, teachers tend to avoid mixing TD and SEN students in group work, resulting in a lack of shared learning experiences (Garrote, 2017). There is a need to identify and investigate the factors involved in social inclusion and how it can be promoted.

Current research in the context of inclusive education shows that individual student variables are significant for the social inclusion of students. Findings presented in a study by Huber (2009) illustrate that the school performance of pupils has a considerable impact on the social inclusion of students with SEN. Other studies show that behavioral characteristics (Avramidis, 2010; Jones and Frederickson, 2010; Schwab et al., 2014; Garrote, 2017) and cognitive ability (Frederickson and Furnham, 1998) are necessary for social inclusion of students in inclusive classes. Gender (DeBoer et al., 2012) and psychomotor clumsiness (Ruiz-Pérez et al., 2018) also play an important role in social acceptance and interactions. Furthermore, research also suggests that class variables matter in social inclusion (e.g., class climate: Gasser et al., 2017; heterogeneity: Grütter et al., 2014; and class size: Park et al., 2014).

In addition to individual student and class variables, there is emerging evidence that teachers and their teaching strategies play a decisive role as facilitators of the integration of SEN students (Lindsay, 2007; Cooper, 2011; David and Kuyini, 2012; Klavina et al., 2014; Mitchell, 2014; Bertills et al., 2019). A review of the literature indicates that the teacher's positive attitude toward individuals with disabilities and inclusive schooling is decisive in the successful implementation of inclusion (Schwab, 2018). However, inclusive teaching strategies still pose a major challenge to teachers and their classroom practice (Bossaert et al., 2012). Especially when it comes to facilitating the social inclusion of students, few studies have addressed teacher strategies (DeLeeuw et al., 2019). Because of the broad range of disabilities, the complexity of successful implementation and the variety of different subjects' teaching strategies often remain overlooked in European policy and curriculum guidelines. Teaching strategies include suggestions on how to design inclusive teaching. In Switzerland, there are no mandatory guidelines on how teachers should act in inclusive classes. Also, in German-speaking countries, there is a little in the way of a subject-specific perspective on teaching strategies, and a general didactic focus has been applied in different school settings such as physical education (PE; Klein et al., 2016).

Inclusive education equally affects PE. PE is defined as the planned and progressive learning that takes place in the school curriculum. It involves both learning to move and moving to learn. In inclusive PE, all people (e.g., students with and without disability) are playing sport together and the diversity amongst learnings is welcomed. PE is inherently different from other subjects. Unlike other subjects, the body and sportiness are the focus of PE as a subject. Psychomotor skills and sportiness of students are very important aspects to experience successful PE. Furthermore, it takes place in a different environment, which is often not as structured as the one in the classroom. Above all, these specific characteristics of PE—compared to other subjects—make for frequent social interactions for all participants (Ruin et al., 2016a,b). "The appeal of PE often [lays] in being different and a break from 'normal' school lessons and, at the same time, an opportunity for informal social interaction and strengthening social bonds" (Røset et al., 2020, p. 1). Therefore, PE, along with all other curriculum areas, faces new kinds of challenges and opportunities with inclusive education. Generally, PE is considered to have a high potential for fostering social inclusion (Block et al., 2016). Talbot (2001) claims that PE helps children to develop respect for others and enhances social development.

In the last two decades, an increasing number of international studies examined the inclusion of students with SEN in inclusive PE (for reviews, see Qi and Ha, 2012; Wilhelmsen and Sørensen, 2017). O'Brien et al. (2009) and Reuker et al. (2016) focus on European perspectives, respectively, German-speaking literature. The main findings indicate that PE teaching staff were skeptical of the practical implementation. They also reported insufficient preparation for this during training (Rybová and Kudláček, 2013; Tant and Watelain, 2016), lacking appropriate resources to make inclusive PE work in practice (Jerlinder et al., 2010). Results

[2]There is an international discourse about the concept of the social dimension of inclusive education and many different definitions have been used. Following Koster et al. (2009), the term social inclusion is used in this study as a synonym for social integration or social participation.

[3]Current approaches view ID from a developmental perspective and rely on both intellectual abilities and adaptive functioning (World Health Organization [WHO], 2016). According to ICD 10, the diagnosis of an intellectual disability requires a state of delayed, or incomplete, development of mental abilities.

of the investigations into social inclusion in PE are strikingly ambivalent (Wilhelmsen and Sørensen, 2017). On the one hand, Seymour et al. (2009) indicated that most SEN students enjoy inclusive PE, and how PE is seen as a possible field for social interaction. In another study, a boy with social, emotional, and behavioral difficulties highlighted the special role of PE in the curriculum and the possibility to interact and socialize with peers (Medcalf et al., 2011). On the other hand, students with SEN reported negative peer interactions (e.g., bullying), exclusion from activities, and problems with physical ability in inclusive PE (Healy et al., 2013). Similarly, Fitzgerald and Stride (2012) report on three students with disabilities experiencing feelings of exclusion in PE and being marginally involved in the lessons. Healy et al. (2013) draw attention to the fact that exclusion experiences often arise because of PE teachers. In this context, Lieberman et al. (2006) also underline the importance of how teachers deal with students in inclusive PE. Discrimination in PE—as a factor inhibiting inclusion—is often based on physical differences (Meier and Ruin, 2015). It becomes clear that PE can both support and foster but also restrict or even impede the social inclusion of students with SEN. Detailed knowledge of relevant factors for fostering social inclusion is necessary. Notably, the question arises as to what teaching strategies can promote social inclusion in the context of inclusive PE.

Looking at national curriculum standards for PE in English- and German-speaking countries, it becomes evident that PE should enable students in a multi-perspective way (Elliott et al., 2016; Vickerman and Maher, 2019). In this context, multi-perspective means that there is not only one sense of doing sport, but that sport can be experienced as meaningful, giving meaning in many ways. Thereby, value orientation and the ability to act, among other elements, are at the center of PE goals. In this context, the "Doppelauftrag des Schulsports" is a common concept in German-speaking countries (Stibbe, 2013). On the one hand, individuals should be able to demonstrate competencies in a variety of motor skills, inspiring them to succeed in competitive sport and activities. On the other hand, students should also exhibit responsible personal and social behavior that helps to embed values such as fairness and respect. Therefore, social skills seem to be just as important as motor skills in today's PE. It is important to look at teaching strategies and their effect on social integration in order to achieve these two goals in inclusive PE. Therefore, theoretical considerations and empirical research on inclusive general education are reviewed as follows.

On the one hand, according to Hattie (2008), teacher feedback is one of the most effective approaches to successful learning development in classrooms. In order to evaluate a specific result of a student's performance, teachers need reference norms as feedback standards. In the literature, three reference norms have been discussed (Rheinberg, 1983): criterial (comparisons with an absolute standard), social (comparisons with the results of other students), and individual reference norms (comparisons with a student's past results). If a teacher is using the latter form, it is known as using an individual reference norm orientation (IRNO). Particularly in inclusive education, all learners with their different requirements are valued and an effective, precisely fitting, and individual promotion of every single child should be achieved. Therefore, teacher feedback should be individually given, using an IRNO. Furthermore, the teacher's feedback to an individual could play a decisive role in the formation of social hierarchies within the classroom (Garrote and Sermier Dessemontet, 2015). It can be assumed that teachers who use more individual feedback give more positive feedback to children with lower performance than teachers who base their feedback on comparisons between individuals. And when a student decides to initiate social interaction with another student, the teacher's behavior toward the other student is always considered as a social reference (Webster and Foschi, 1992).

On the other hand, ample empirical evidence from mainstream classrooms has shown that classroom norms set by teachers affect their students' social school experiences (Heyder et al., 2020). The general assumption that teaching cooperative skills is a suitable strategy to develop social behavior is well recognized (Putnam, 1993). Studies on social interdependence theory have validated that co-operation, as opposed to competitive and individualistic efforts, tends to result in more positive relationships (Johnson and Johnson, 2008). When a teacher teaches cooperative skills, it can be assumed that students develop social interaction skills, which in turn place students with SEN at a lower risk of being socially isolated (Jacques et al., 1998; Garrote, 2017). In this context, the research literature often uses the term cooperative learning (CL)[4]. "Cooperative Learning is a feasible pedagogical model, particularly for students with disabilities who may be excluded from whole-class activities that typically involve a command-style approach to teaching. It is equally effective for students lacking social skill competencies who do not always pick up on environmental or physical cues that direct learning" (Grenier and Yeaton, 2014, p. 122). Through positive interdependence and shared responsibility, CL is effective in promoting equitable peer relationships (Dyson et al., 2010). CL seems to reinforce the contact theory by Allport (1954). The socio-psychological contact theory of Allport (1954) is based on the assumption that increased and high-quality contact between members of different groups can reduce mutual prejudices. Empathy is strengthened during this contact, therefore qualitative social interactions between students are supported as an important goal of inclusive education.

The question arises of whether these considerations from general inclusive education are applicable in inclusive PE. Whilst inclusive PE with existing concepts is long established in some countries (e.g., the United States), the discourse about inclusive PE in German-speaking countries only recently gained momentum (Block et al., 2017). The school system in Switzerland is still lacking international inclusive trends, having had a long tradition of segregation. Giese et al. (2016) make a case for keeping up with international discourse around adapted physical activity and adapted PE. However, research on the relationship between social inclusion and PE teaching strategies is rare. There

[4]In CL, students work together to accomplish shared goals. In sociological studies, CL is associated with group structures, such as social acceptance or interactions among peers (Baines et al., 2008).

is still a lack of clear evidence to support the rhetoric about how PE can positively contribute to social inclusion.

To our knowledge, no prior study has investigated the relevance of using IRNO and teaching cooperative skills for the social inclusion of students with ID in inclusive PE in Switzerland. Our study tries to address this research gap by providing detailed knowledge about the role of teaching strategies in inclusive PE. The study clearly focuses on a specific target group, namely students with ID. The following section presents the conceptual framework of this study and the review of literature on the relationship between the teaching strategies (using IRNO and teaching cooperative skills) and the social inclusion of students.

CONCEPTUAL FRAMEWORK AND RESEARCH OVERVIEW

Student's Social Acceptance and Interactions in Inclusive Primary School PE

This study focuses on two of the four key aspects of social participation proposed by the heuristic of Koster et al. (2009): peer acceptance and social interactions. It is more true of PE than any other subject that the physicality of the learner is the center of attention, and the lessons take place in special learning environments (Meier and Ruin, 2015). Therefore, a subject-specific differentiation of social participation is believed to apply in PE, compared to the social participation in other school subjects. PE makes the diversity of students particularly visible and tangible. For this reason, it seems logical to look specifically at peer acceptance and positive interactions in PE lessons. Furthermore, peer-related assessment of social participation is of special interest in this study. Self-perception is acknowledged as another, and very important, key aspect by Koster et al. (2009), but this aspect is not of interest in this study[5]. Finally, friendships—the fourth key aspect identified by Koster et al. (2009)—is considered a relatively stable construct over time and is not primarily influenced by a single subject such as PE (Poulin and Chan, 2010).

The Role of Teaching Strategies

Garrote et al. (2017) conducted a review of general school-based interventions facilitating the social participation of students with SEN. However, limited research is available regarding effective PE teaching strategies in inclusive classes (O'Brien et al., 2009). Although Block (2016) and Vickerman and Maher (2019) published overviews of inclusive PE teaching strategies, they did not focus on the effects on student's social participation. However, for IRNO and cooperative skills, some important conditions for success can be identified from general inclusive education, which can also have important implications for PE. Since literature on ID is scarce, it is important to note that these are study results results that do not only focus on children with ID, but rather address different types of disabilities.

Effects of Using IRNO on Student's Social Acceptance and Interactions

Empirical evidence from research on IRNO and the social participation of students is very scarce. Krawinkel et al. (2017) showed that students with SEN benefit from individual feedback. In an inclusive classroom setting, they were less rejected and felt better integrated than other students with SEN in classes with a lower level of individual feedback. The authors discuss the buffering effect of IRNO, but admit, however, that the relationships are correlative and do not indicate any direction of action. This relationship could not be found in studies of children without SEN.

It can be assumed that, especially for children with ID whose motor and physical fitness measures are below their TD peers (Stanton-Nichols and Block, 2016), individual feedback is more positive than feedback based on social comparison. In inclusive classroom education, it has been shown that positive teacher feedback may enhance the social participation of students with SEN. In an intervention study, Schwab et al. (2016) investigated the influence of teacher feedback on the social acceptance of peers with ID and peers without disabilities. The findings confirm the critical influence of teacher feedback on the social acceptance of students. They seem to indicate that positive feedback could lead to more acceptance of students by their peers. In a similar study, Huber et al. (2018) produced some important guidelines for the promotion of social acceptance of students. Their main findings indicate that teachers can provide support for the social acceptance of students and prevent students from being rejected in their classes by using positive feedback. In another study by White and Jones (2000), of 128 first and second graders, the authors showed that, in particular, negative teacher feedback on student behavior has a significant and marked effect on the social attractiveness of these students. Likewise, the results of a study by McAuliffe et al. (2009) suggest that corrective and negative teacher feedback toward students mediated the relations between aggressive and prosocial child behavior and peer disliking. The results support the critical role of teachers in the link between student's behavior and being disliked by their peers.

A search of the research literature on the effect of teacher feedback, or IRNO, on the social acceptance or positive interactions of students in inclusive PE did not find any studies.

Effects of Teaching Cooperative Skills on Students' Social Acceptance and Interactions

The research literature on teaching cooperative skills is scarce. The role of teachers in creating classroom norms aimed at increasing positive peer interactions has been discussed in the study on mainstream classrooms by Audley-Piotrowski et al. (2015). The authors conclude that promoting positive classroom environments will improve peer relationships (for review, see Farmer et al., 2011).

However, there is ample evidence in the field of inclusive education in classrooms on the effect of CL on social acceptance

[5]The aim of this study is to provide an objectified perspective on the social participation to be adopted at the level of the PE class.

and positive interactions. A recent review article by Garrote et al. (2017) identified intervention studies resulting in positive social acceptance. They also found studies on the interaction effects of CL in inclusive classroom settings. In a mainstream education study in New Zealand, Jacques et al. (1998) examined the effects of a CL program on the social acceptance by their TD peers of classmates with mild ID. The TD students in the experimental classes showed significant increases in their social acceptance (as measured by sociometric ratings) of the students with mild ID, both immediately following the program and 5 weeks later. However, no such increases were evident in the students in the control classrooms. The results speak for the effectiveness of CL in enhancing the social acceptance of students with mild ID in general inclusive education. In another study, Piercy et al. (2002) also implemented a CL program to improve the social acceptance by TD students of students with moderate to severe ID. Significant effects over 10 weeks in the CL group indicated that TD children gave the special class children at the same school higher peer acceptance ratings, and that there were also more frequent interactions with the children without disabilities.

The literature review showed some results specifically for PE. Grenier and Yeaton (2014) proposed CL as a suitable inclusive practice in PE. The authors present CL as a viable strategy that can "provide an opportunity for students to engage in reciprocal relationships when instruction is provided in a manner that fosters positive social interactions" (p. 133). Results from a 5-week intervention period study show that CL positively influenced the acceptance by their TD peers of the students with SEN (André et al., 2011). Also, Casey and Quennerstedt (2020) argue that CL is a suitable way to learn "soft" factors such as prosocial behaviors rather than the "hard" particular sporting skills. Dowler (2014, 2017) found that the CL intervention in a single-subject-multiple-baseline study was responsible for the increase in the frequency of interaction and the improvement in some of the quality measures of interactions between students with mild ID and their TD peers. Similarly, in a case study on inclusive PE, Keh and Hsieh (2007) found that CL had the potential to increase the social status and peer relationships of a student with mild ID in the 5th grade.

Research Questions

Despite the knowledge available on general inclusive education and, specifically, on inclusive PE, there is still a lack of knowledge about effective PE teaching strategies relating to aspects of social participation of students with ID. The review of the literature on teaching strategies in mainstream classrooms revealed that using IRNO and teaching cooperative skills are promising ways of fostering the social participation of students, but that further knowledge is needed. The question remains if this is also the case in inclusive PE in primary school classes, particularly concerning IRNO. Our study aims to obtain comprehensive knowledge by analyzing the role of PE teaching strategies in the social participation of students in inclusive PE. Specifically, it is assumed that IRNO and teaching cooperative skills are positively related to the beneficial social participation in PE of children with ID. Our study contributes to this research gap and is one of the first studies to investigate the relationship between IRNO and teaching cooperative skills with elaborated and differentiated measures of the social participation of students in inclusive primary school PE. The assumptions are analyzed in a cross-sectional study in the Swiss context.

By addressing this research gap, we contribute to the current knowledge on how to support successful inclusive education in PE. The results may also be transferable to the classroom setting. The existing situation resulted in the following research questions for the current study:

(1) Generally, to what extent is IRNO by the teacher positively related to the social acceptance and positive interactions of students in inclusive PE? Specifically, to what extent does SEN status due to ID moderate the relationship between the social acceptance and positive interactions of students when teachers use IRNO?
(2) Generally, to what extent is teaching cooperative skills positively related to the social acceptance and positive interactions of students in inclusive PE? Specifically, to what extent does SEN status due to ID moderate the relationship between the social acceptance and positive interactions of students when cooperative skills are taught?

It is assumed that SEN status due to ID positively moderates the relationship between the teaching strategies outlined above (IRNO and teaching cooperative skills) and social acceptance and positive interactions in PE. This means that the examined aspects of social participation of students with ID are more positively related to the teaching strategies than those of the TD students.

MATERIALS AND METHODS

This study is embedded in the Swiss National Science Foundation project SoPariS (2018–2021), which focuses on the social participation of students with ID in inclusive PE in Switzerland's primary school classes (3rd to 6th grades, age 6 to 14 years). A cross-sectional study was conducted in 2019 using quantitative student and PE teacher questionnaires, gathering more data than was used for this study. It was reasonable to decrease the wide heterogeneity of the group of students with SEN by limiting the sample to students with ID. Firstly, this allows the derivation of valid knowledge on inclusive PE with students with ID. However, it is acknowledged that the range of abilities of students within the group of children with ID is very wide. Some children with ID will have no motor difficulties and can be very successful in an inclusive PE setting. In contrast, others lack an understanding of games, and PE class requires significant modifications to facilitate success (Stanton-Nichols and Block, 2016). Secondly, physical activity is especially important for children and adolescents with ID as it promotes body awareness and acceptance of their own body (Reuter, 2019). In this way, PE provides new action skills, promoting social behavior and independence of individuals with ID (Wegner, 2001).

Participants

A total of 112 inclusive Swiss PE classes participated in this study. Regarding the student sample, 1,961 individuals took part (51% girls, M_{age} = 11.3 year, SD_{age} = 1.1 year). The mean number of students in the 112 classes was 17.5 (SD = 3.8), with a range of 9–25 students. Of the students, 64.4% had Swiss nationality, and the other 35.6% had a migration background. Furthermore, 78 boys and 54 girls had a diagnosed SEN[6] due to ID[7] (see **Table 1**). The range of students with ID in each class was from 1 to 4, with a mean of 1.18 students with ID per class. In inclusive classes, the special needs teacher is mainly responsible for supporting the students with SEN.

The teacher sample consisted of 110 individuals (M_{age} = 37.6 year, SD_{age} = 11.7 year), with a higher proportion of women (62%) than men. This approximately matches the unequal gender distribution in primary school teachers in Switzerland. The teachers' professional experience ranged from 0 to 38 years, with a mean of M = 12.2 years (SD = 11.1 year). Of these 110 teachers, 104 also taught the same class for other subjects. Six teachers only taught PE to the participating class. Two teachers did not fill out the questionnaire.

There was some loss of data because of incomplete questionnaires from students or teachers. In the overall sample, the questionnaires from 217 children (11.1%) had missing values on at least one variable relevant for this study (partly due to missing values in the teacher questionnaire about the children). These were excluded from the calculations so that the sample was reduced to 1,744 children, of whom 124 students had SEN status due to ID, in a total of 104 classes (see **Table 1**).

[6]Assessment regulations and labeling practices of SEN in Switzerland vary from canton to canton. The decision on SEN measures is made jointly by the parents, teacher, SEN teacher, and principal. The cantons use clarification and allocation procedures and corresponding guidelines as well as considering the existing range of places of support (ranging from regular to separate schools) to make case-related decisions on where students with SEN are being educated (Luder, 2018). This results in regions where no special schools exist, whereas, in other regions, many students with disabilities learn in special classes.

[7]In this sample, inclusion criteria for a child with SEN due to ID was the attribution of the label according to the teacher and principal and confirmed by the parents and the SEN teacher. However, due to ethical reasons, no IQ-Scores are available. In Switzerland, children with an IQ of less than 75 are basically eligible for SEN measures. In other countries (e.g., Germany) the upper limit is an IQ of 70. However, it should be noted that it is particularly difficult to reliably determine the IQ of children with ID (Meyer, 2003).

TABLE 1 | Descriptive statistics of student sample characteristics (*N* = 1744 students in 104 classes, excluded cases: *N* = 217).

	Without SEN			With SEN			Excluded cases		
	Age[1]	*n*	%	Age[1]	*n*	%	Age[1]	*n*	%
Boys	11.3	774	47.8	11.8	72	58.1	11.3	114	53.3
Girls	11.2	846	52.2	12.0	52	41.9	11.0	100	46.7
3rd grade	9.4	55	3.4	9.8	4	3.2	9.1	20	9.2
4th grade	10.5	411	25.4	11.2	27	21.8	10.2	38	17.5
5th grade	11.5	391	24.1	11.9	33	26.6	11.3	30	13.8
6th grade	12.4	250	15.4	12.9	20	16.1	12.7	49	22.6
Mixed grades	11.4	513	31.7	11.4	40	32.3	11.1	80	36.9
Total	11.2	1620	100	11.9	124	100	11.1	217	100

Three gender values are missing in the excluded cases. [1]Age in years.

Procedure

The study was carried out in co-operation with schools from the German-speaking part of Switzerland. Schools from 13 different cantons[8] participated in this study. First, cantonal directorates of education were contacted to get their approval. Second, principals were contacted and asked to provide lists of potential primary school classes with at least one student with ID (3rd to 6th grade). Third, teachers were contacted by mail and phone for voluntary study enrolment. School directors and teachers, as well as parents, gave consent to this study. Of the children, 91.5% were given permission to participate in this study. In order for a class to take part, at least one student with ID had to be allowed to participate per class. Data collection was undertaken in the classroom by at least one project team member and one master's student, who was specifically prepared for the data collection. Each item was read aloud. The children did not move on to the next page of the questionnaire until all children had finished answering each page. Class teachers, SEN teachers and the master's student supported the students during the questionnaire. The researchers emphasized to the students that completing the questionnaire was voluntary, that they could discontinue at any time without any reason, and that all data would be treated confidentially. Because other variables than those used for this study were also assessed as part of the SoPariS project, data collection lasted 90 min, including several breaks during which students could play activity games. Children were asked to put their questionnaires in an envelope and hand it to the examiners when they were finished so that teachers could not see their responses. Also, children used individual desks, or barriers were put in place so that they could not see each other's responses. Children who did not participate were asked to work at their desks quietly.

Measures

Assessment of Social Acceptance in PE by Classmates

Peer acceptance, as dependent variable in this study, is usually assessed with sociometric techniques using peer ratings (Cillessen, 2009). In peer ratings, all classmates rate each of their peers on a Likert-type scale in terms of how much they like them or would like to play with them (Krüger, 1976). In this study, the sociometric rating questionnaire *Sozio* was used (Eckhart, 2012). This questionnaire does not ask about affective attitudes toward the other children but about perceived interactions. In their study on retest reliability, Eckhart et al. (2011) found a significant correlation between two survey dates of 8 months in general education (Pearson correlation: N = 1894 students: $r = 0.526$; $p \leq 0.001$). The PE context was included, and students were asked to indicate on a five-point scale (0 = almost never,

[8]Switzerland consists of 26 cantons, each with its own constitution and its own legal and political authorities. Accordingly, school and education policy are also located at the cantonal level. Of these cantons, 21 have German as their official language and were therefore targeted in this study. Of these cantons, two cantonal directorates did not give their consent to contact the corresponding schools. And of 6 cantons, no school participated, despite cantonal consent.

4 = very much), e.g., *How much they talk with them in PE* and *how much they are feeling upset with them in PE*. Instructions were also given by the researchers that talking in PE classes also involved playing together during lessons or sitting next to each other in a circle. Prestige and negative-prestige scores of the students were calculated as the sum of all the received talking or upsetting interactions in PE divided by the number of possible talking or upsetting interactions in the class. Peer acceptance was then calculated by the difference of all incoming talking contacts (prestige) and all incoming upsetting contacts (negative-prestige), considering only the assessments of the peers in each class. The values, therefore, vary between −1 and 1. A value near −1 means poor social acceptance and a value near 1 is equal to good social acceptance.

Assessment of Positive Interactions in PE

Students' positive interactions, as the second dependent variable, were operationalized using the same sociometric rating scale mentioned above. In the literature, both outgoing and incoming ties are discussed and used for the assessment of interactions. For this study, the peer-related incoming talking contacts in PE were of interest. Therefore, the sociometric parameter, prestige, was used (peer rating: *How much they talk with them in PE*: 0 = almost never, 4 = very much). This, of course, also means that the two dependent variables (social acceptance and positive interactions) are not independent of each other. Prestige means the reputation of a person (Eckhart et al., 2011). In network analysis, prestige refers to the importance of an actor regarding the incoming assessments. It records how important the actor is in the network (Jansen, 2006). A person is considered to have high prestige if many actors in the network have frequent positive interactions with that person (Eckhart et al., 2011). In this study, the prestige score of a student was calculated as the sum of all the received talking interactions divided by the number of possible talking interactions in the class. The values, therefore, vary between 0 and 1. A value near 1 means that a student is getting almost all possible talking interactions and vice versa for a value near 0.

Assessment of IRNO

The students' perceived IRNO of the PE teacher was analyzed using a scale developed originally by Schwarzer et al. (1982) in an attempt to exclude the social desirability of teachers. The risk of socially desirable responses is particularly pronounced for topics with a clear social norm, as is the case with inclusive education (Avramidis and Norwich, 2002). The scale consists of four items (e.g., *Our PE teacher praises even the worst students, when she feels they have been improving*) on a 4-point Likert scale ranging from 0 (strongly disagree) to 3 (strongly agree). Schwarzer and Jerusalem (1999) published reliability scores of three different measuring times and received acceptable Cronbach's alpha of 0.64, 0.70, and 0.71. In another study, Oswald et al. (2013) reported a Cronbach's alpha at T1 and T2 of 0.66/0.71, indicating acceptable psychometric properties. High scores on this scale indicate that the teacher was perceived to have high IRNO. The analysis of internal consistency in this study indicated a Cronbach's alpha of 0.76 for all students and 0.70 for students with ID.

Assessment of Teaching Cooperative Skills

An assessment of teaching cooperative skills was carried out using a subscale of the FSTN questionnaire (Hoffmann, 2006). Students were asked to rate five items (e.g., *It is important to our PE teacher that we learn to work together in a group*) on a 4-point Likert scale ranging from 0 (strongly disagree) to 3 (strongly agree). Again, to avoid including the social desirability of teachers, the students assessed this teaching strategy. High scores on this scale indicate that the student perceived that their PE teacher expected them to behave cooperatively. According to a validation study by Hoffmann (2006), Cronbach's alpha was high (0.86). The analysis of internal consistency in this study indicated a comparable high Cronbach's alpha of 0.79 for all students and 0.81 for students with ID.

Assessment of Psychomotor Clumsiness

The questions for the qualitative assessment of movement behavior were based on the checklist of motor behavior by Schilling (1976). This assessment consists of 78 items from eight different dimensions of movement behavior. For this study, the dimension of psychomotor clumsiness is used, and the number of items was reduced to three. Psychomotor clumsiness, which describes awkward and clumsy movement behavior, is accompanied by restricted movement. The dimension is also defined with a strongly slowed down movement learning. This instrument was used to describe sportiness. In the selection of these three adjectives, results from the preliminary study, and from the study by Valkanover (2005), were consulted, revealing a Cronbach's alpha of 0.76 in the preliminary study. Teachers were asked to rate these three items [e.g., *The movement behavior of the child in self-chosen (movement) tasks is clumsy*] for every student on a 5-point Likert scale ranging from 0 (does not apply at all) to 4 (fully applicable). The analysis of internal consistency in this study indicated a high Cronbach's alpha of 0.87 for all students by the teachers.

Data Analysis

For the evaluation, the nested structure of the data is considered. The characteristics of the students at level 1 (L1) have been coded for SEN status (0 = no SEN status, 1 = SEN status) and gender (0 = male, 1 = female). Psychomotor clumsiness at L1 was used as a continues variable. SEN status, gender and psychomotor clumsiness were included as controlling individual L1 variables. Variables have also been defined at level 2 (L2) and used as continues variables (IRNO and teaching cooperative skills). Multilevel analyses with the R statistics program and the *nmle* package have been implemented (R Core Team, 2015). With 104 classes and 1,744 students, the sample sizes at the two levels meet the requirements for multilevel models, especially for the estimation of fixed parameters and their standard errors (Hox, 2010). In order to use the degrees of freedom as sparingly as possible, the overall model was built up step by step (Snijders and Bosker, 1999). For this purpose, individual variables, contextual variables on L2, and cross-level interactions are added to the null model one after the other. The intraclass correlations (ICC) of $\rho = 0.159$ for the social acceptance and $\rho = 0.244$ for the positive social

TABLE 2 | Descriptive statistics of study variables and intercorrelations.

	N	*M*	SD	Min	Max	(2)	(3)	(4)	(5)	(6)	(7)
(1) SEN status (0 = no, 1 = yes)						**−0.05[c]**	**−0.24[b]**	**−0.27[b]**	**−0.28[b]**	0.02[b]	0.01[b]
(2) Gender (0 = male, 1 = female)							−0.03[b]	**0.10[b]**	**−0.06[b]**	−0.02[b]	−0.01[b]
(3) Psychmotor clumsiness	1744	1.25	1	0	4			**−0.33[a]**	**−0.35[a]**	0.03[a]	0.01[a]
(4) Social acceptance in PE	1744	0.22	0.20	−0.58	0.85				**0.82[a]**	**0.08[a]**	**0.11[a]**
(5) Positive interactions in PE	1744	0.41	0.13	0	0.85					−0.01[a]	0.04[a]
(6) IRNO (class mean)	104	2.05	0.32	0.93	2.80						**0.74[a]**
(7) Cooperative skills (class mean)	104	2.38	0.28	1.35	3.00						

Coefficients printed in bold are significant with $p \leq 0.05$; SEN, special educational need; PE, physical education; IRNO, individual reference norm orientation; M, mean; SD, standard deviation; [a]Pearson correlation; [b]point-biserial correlation; and [c]Phi coefficient.

interactions showed large ICC's (Hox, 2010). These values are higher than those revealed by prior research for students' election status and rejection status in inclusive classrooms in Germany (e.g., Krawinkel et al., 2017; ICC's between 0.023 and 0.149). The values of the present study clearly indicate the necessity of applying multilevel analyses. And because the central goal of this study was to investigate cross-level interactions, multi-level analyses were conducted for both dependent variables.

The predictors on L1 and L2 have been centered for better interpretation of the results. The rules of thumb of Enders and Tofighi (2007) have been applied, using both centering within cluster (SEN status) and centering at the grand mean (gender, psychomotor clumsiness, IRNO and teaching cooperative skills). In the result tables, the standardized beta coefficients were used to be able to compare the values directly.

Ethics and Quality

The study was approved by the Faculty's Ethical Committee of the University of Bern. Parental consent for all students was obtained.

RESULTS

Descriptive Statistics

Table 2 shows the mean values and standard deviations of the psychomotor clumsiness, social acceptance in PE, positive interactions in PE, IRNO, and cooperative skills. The teachers' perception of students' psychomotor clumsiness showed an average of 1.25, meaning that students were little (=1) to partly clumsy (=2). The full range of values between 0 and 4 was applied. The average social acceptance in PE of all children was 0.22, i.e., students received, on average, 22% (SD = 20%) more talking interactions than upsetting interactions. In PE, the range between −0.58 and 0.85 shows the wide variance of students being rejected (negative scores) or accepted (positive scores). On average, all students received 41% of all possible talking interactions in PE (SD = 13%). Social acceptance and positive interactions in PE correlate significantly and positively ($r = 0.82$, $p \leq 0.05$). The high intercorrelation between the two dependent variables can be taken as an indication that they are very similar facets of social participation, and that they are clearly interrelated. Both social acceptance and positive interactions in PE significantly correlate negatively with the SEN status ($r = -0.27$ resp. -0.28, $p \leq 0.05$). Students with ID have significantly lower values in the social acceptance and positive interaction scales in PE.

For the IRNO and cooperative skills, aggregated class means were calculated to find the value for the teaching strategy. As shown in **Table 2**, the average score on the 4-point Likert scale for the IRNO was 2.05 (SD = 0.32), indicating that students generally agreed that teachers used IRNO in their PE lessons. Values for teaching cooperative skills were higher with a mean of 2.38 (SD = 0.28). Students perceived their teachers as teaching cooperative skills in their PE lessons quite often. The relatively high positive and significant intercorrelation between IRNO and cooperative skills ($r = 0.74$, $p \leq 0.05$) suggests that when students perceive their teachers using IRNO, they think that the teachers are teaching cooperative skills or vice versa.

IRNO

Factors for Social Acceptance in PE

Looking at the first dependent variable, social acceptance of peers in PE, it turns out that SEN status is a significant predictor ($p \leq 0.001$, see **Table 3**, model 1). If a student has SEN status, social acceptance in PE is significantly decreased ($\Delta = 0.19$). Also, the gender of a student is a significant predictor ($p \leq 0.001$) of social acceptance: Boys were rejected more often than girls. Psychomotor clumsiness, assessed by the teacher, revealed to be the strongest predictor. The higher the clumsiness, the lower the social acceptance of a student in PE ($p \leq 0.001$). All three individual student variables (control variables) explained 15.4% of the marginal R^2. With respect to the explanation of the conditional R^2 by the whole model, the consideration of the random effect "class" (in addition to the fixed effect) results in an increase of the explained variance for social acceptance to 31.1% (see Nakagawa and Schielzeth, 2013). Therefore, class effects play an important role in social acceptance, confirming the large ICC mentioned above ($\rho = 0.160$).

The aggregated predictor IRNO at class L2 was added to model 1 to answer the first research question. The IRNO was centered at the grand mean. The inclusion of this variable did not affect the effect of the control variables SEN status, gender, and psychomotor clumsiness. There is a positive and significant correlation between the IRNO (L2) of the PE teacher and the social acceptance of the students ($p \leq 0.05$) in PE. The marginal R^2 increased to 16.3%, the conditional R^2 stayed the same. Higher

TABLE 3 | Multilevel models of social acceptance of the students in PE.

	Empty model	Model 1	Model 2	Model 3
Level 1				
SEN status		−0.190*** (0.021)	−0.191*** (0.021)	−0.195*** (0.021)
Gender student		0.083*** (0.020)	0.083*** (0.020)	0.085*** (0.020)
Psychomotor clumsiness		−0.289*** (0.022)	−0.290*** (0.022)	−0.289*** (0.022)
Level 2				
IRNO (class mean)			0.103* (0.043)	0.103* (0.044)
Cross-level interaction				
IRNO (class mean) × SEN status				0.054** (0.020)
Model characteristics				
ICC	0.160			
AIC	−725.08	−1038.68	−1036.88	−1038.17
$R^2_{GLMM(m)}$	0	0.154	0.163	0.165
$R^2_{GLMM(c)}$	0.160	0.311	0.311	0.315

$^{***}p \leq 0.001$; $^{**}p \leq 0.01$; $^{*}p \leq 0.05$; N = 1744 students, N = 104 classes; Estimation of standardized regression coefficients with standard errors in parentheses; SEN, special educational need; IRNO, individual reference norm orientation; and $R^2_{GLMM(m)}$ = marginal R^2, $R^2_{GLMM(c)}$ = conditional R^2 (after Nakagawa and Schielzeth, 2013).

values in the IRNO assessment of the teacher during the PE lessons correlated positively to a higher social acceptance of all the students, regardless of whether they had SEN status due to ID or not. By adding the cross-level interaction between the class mean IRNO and the SEN status (model 3), there was a significant effect ($p \leq 0.01$). Therefore, a differentiated effect of the IRNO teaching strategy at L2 of the PE teacher could be found for the social acceptance of students with ID compared to their TD peers. The added cross-level interaction could further raise the variances, as shown in **Table 3**.

Figure 1 shows the cross-level interaction effect between SEN status, IRNO, and social acceptance. It is apparent that the higher the IRNO of the PE teacher, the better the social acceptance of all students, regardless of having SEN status due to ID. However, the effect for students with ID is visibly and significantly greater in the higher slope. The relationship between students' social acceptance in PE and the IRNO of their teacher thus seems to depend on the SEN status ($p \leq 0.01$).

Factors for Positive Interactions in PE

Comparable to social acceptance, the control variables SEN status, gender, and psychomotor clumsiness are significant predictors of positive interactions in PE ($p \leq 0.001$, see **Table 4**). Students with ID have significantly fewer positive interactions with their peers in PE than students without ID. Girls have fewer positive interactions than boys. This is contrary to social acceptance mentioned above, where girls were more accepted than boys in PE. Furthermore, the higher the psychomotor clumsiness of a student, the fewer positive interactions he or she got. The marginal R^2 of the three individual L1 predictors in model 1 is 18.1%. The conditional R^2 is 42.6% and therefore higher than the one for social acceptance mentioned above. Class effects play an even more important role in the positive interactions, confirming the large ICC mentioned above ($\rho = 0.244$).

By adding the IRNO teaching strategy on L2 in model 2, a positive but not significant correlation can be found with the positive interactions in PE. The fixed effects explained the same variance as before and the conditional R^2 is also about the same. But, comparable to social acceptance, the analysis revealed a significant and positive cross-level interaction between aggregated IRNO and SEN status in model 3 ($p \leq 0.01$). For classes with teachers with high IRNO, the positive interactions of children with ID were higher than in the classes of teachers with low IRNO (see **Figure 2**). For TD students, the correlation is even slightly negative. In classes where teachers were using a high IRNO in PE lessons, TD students have slightly fewer positive interactions. Therefore, it can be assumed that any correlation between IRNO and positive interactions in PE for all students together is removed.

In sum, the IRNO teaching strategy revealed to be a significant predictor of social acceptance ($p \leq 0.05$) and a non-significant predictor of positive interactions of students in PE in general. For students with ID, specifically, high IRNO by the PE teacher is related to higher social acceptance by and more positive interactions with their peers ($p \leq 0.01$). For TD students, higher IRNO values in the PE teacher correlated positively with social acceptance, but negatively with the positive interactions in PE. In summary, this indicates that SEN status due to ID positively moderates the effect of IRNO and aspects of social participation.

Teaching Cooperative Skills

Factors for Social Acceptance in PE

To address the second research question, teaching cooperative skills in inclusive PE was analyzed. The empty model and model 1 are the same as in **Table 3**. The score of student perceived teaching cooperative skills was aggregated, centered at the grand mean (L2), and included in model 2 (see **Table 5**). The inclusion of this variable did not affect the effect of SEN status on social acceptance in PE, as mentioned above. Nor did it affect the effect of gender and psychomotor clumsiness ($p \leq 0.001$). Additionally, there is a positive and significant correlation between teaching cooperative skills at L2 and social acceptance in PE ($p \leq 0.01$), indicating that higher values in the social acceptance scale of all students is related to higher values in teaching cooperative skills of the PE teachers. The beta

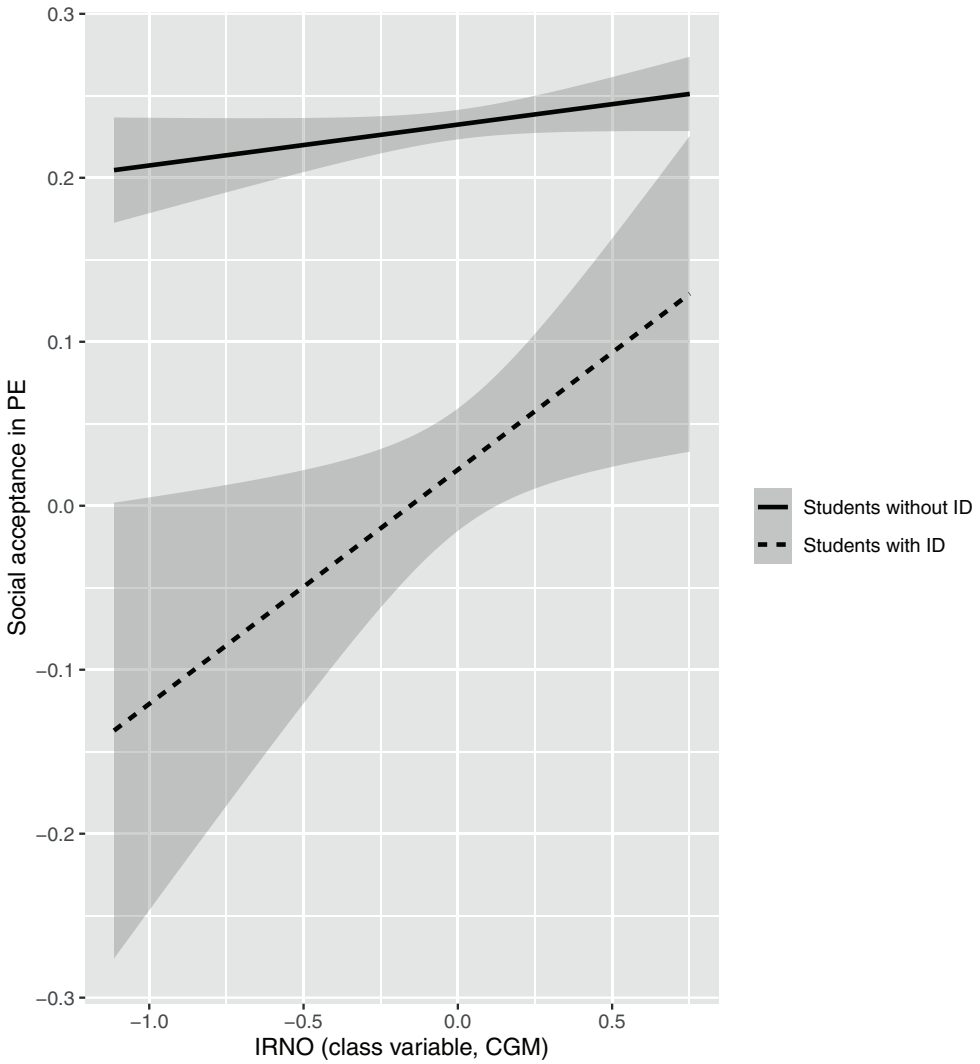

FIGURE 1 | Predicted social acceptance in physical education (PE) of children with and without intellectual disabilities (ID) related with the individual reference norm orientation (IRNO) of the PE teacher. The gray zones are the 95% confidence intervals. CGM, centered at grand mean.

value of 0.128 for teaching cooperative skills is higher than the one for IRNO (beta = 0.103, see **Table 3**). For this reason, it can be assumed that the strategy of teaching cooperative skills correlates higher with an increase in the social acceptance scale than the strategy of using IRNO in PE. Compared to the first model including only L1 variables, the marginal R^2 grew by 1.5 percentage points to 16.9%. The conditional R^2, on the other hand, increased only marginally. Adding the cross-level interaction between the class mean of teaching cooperative skills and the SEN status did not have a significant effect. There is no moderation of the SEN status due to ID between the strategy teaching cooperative skills and the social acceptance of students in PE. Also, the added cross-level interaction did not substantially increase the variances.

Figure 3 shows the interaction effect between teaching cooperative skills and social acceptance in PE. It is apparent that there is a positive and significant correlation for all students, regardless of whether they have SEN status due to ID or not.

Factors for Positive Interactions in PE

Again, the empty model and model 1 are the same as presented in **Table 4**. When adding the L2 teaching strategy in model 2, a positive but not significant correlation can be found between teaching cooperative skills and positive interactions in PE (see **Table 6**). The marginal R^2 explained almost the same variance as only the three control variables at the individual student level in model 1 (18.3%). Also, the conditional R^2 is very similar. SEN status does not moderate the effect between teaching cooperative skills and the positive interactions in PE (model 3). However, a tendency is visible insofar as students with ID experience relatively more positive interactions in PE, when their teacher teaches cooperative skills, than TD students. However, this difference is not significant.

TABLE 4 | Multilevel models of positive interactions of the students in PE.

	Empty model	Model 1	Model 2	Model 3
Level 1				
SEN status		−0.214*** (0.019)	−0.214*** (0.019)	−0.217*** (0.019)
Gender student		−0.082*** (0.019)	−0.082*** (0.019)	−0.081*** (0.019)
Psychomotor clumsiness		−0.323*** (0.020)	−0.323*** (0.020)	−0.322*** (0.020)
Level 2				
IRNO (class mean)			0.022 (0.053)	0.022 (0.053)
Cross-level interaction				
IRNO (class mean) × SEN status				0.050** (0.019)
Model characteristics				
ICC	0.244			
AIC	−2417.04	−2826.21	−2818.55	−2818.64
$R^2_{GLMM(m)}$	0	0.181	0.181	0.183
$R^2_{GLMM(c)}$	0.244	0.426	0.428	0.430

$^{***}p \leq 0.001$; $^{**}p \leq 0.01$; N = 1744 students, N = 104 classes; Estimation of standardized regression coefficients with standard errors in parentheses; SEN, special educational need; IRNO, individual reference norm orientation; and $R^2_{GLMM(m)}$ = marginal R^2, $R^2_{GLMM(c)}$ = conditional R^2 (after Nakagawa and Schielzeth, 2013).

No more variance can be explained by adding the cross-level interaction.

Taken together, the teaching strategy of teaching cooperative skills in inclusive PE was found to be a significant predictor for the social acceptance of students in inclusive PE ($p \leq 0.01$). No such connection was found for the relationship with positive interactions in PE. Contrary to the IRNO findings, no cross-level interactions were found for teaching cooperative skills, indicating that the SEN status due to ID does not positively moderate the effect between teaching cooperative skills and aspects of social participation.

DISCUSSION

This study addressed two research questions. The first question focused on the positive relationship between using IRNO in PE and the social acceptance and positive social interactions of students in inclusive PE. The second question addressed the positive relationship between teaching cooperative skills and the social acceptance and positive social interactions of students in inclusive PE. In summary, the results showed that a high IRNO of the PE teacher is positively related to higher social acceptance of the students and that the SEN status of children with ID positively moderated the relationship between the IRNO teaching strategy and both social acceptance and positive social interactions in inclusive PE in Switzerland's primary school classes (3rd to 6th grades). Regarding teaching cooperative skills in PE, there was a positive relationship with the social acceptance of children in inclusive PE, but no cross-level interaction for SEN status and no relationship with positive interactions in PE could be found. The results must be discussed because inclusive education is about striving for inclusive communities that foster social participation and the well-being of all students. For this reason, it is important to find teaching strategies that not only serve children with SEN but are beneficial for all children. However, since international work consistently shows that children with SEN included in general education classrooms are at risk of being socially excluded by their peers, it is very important to find ways to decrease this gap in social participation between students with and without SEN. This study helped to contribute to this highly relevant topic.

Concerning the first research question, this study showed that IRNO positively relates to peer acceptance of all the students, regardless of whether they have SEN status due to ID or not. This relationship could not be found for positive interactions. These results contradict the findings of Krawinkel et al. (2017), who found no relationship between the IRNO and the extent of social participation in mainstream education. On the other hand, the findings support the important influence of teacher feedback on students' social participation, as shown by Schwab et al. (2016) and Huber et al. (2018). Schwab et al. (2016) found a significant effect of positive teacher feedback and social acceptance not only for children with Down Syndrome but also for students without disabilities. Likewise, the data of Huber et al. (2018) showed that teacher feedback affected social acceptance ratings, although with smaller effect sizes than in the study by Schwab et al. (2016). A possible explanation for this partly ambivalent classification in the existing literature from general education is that PE takes place in a different setting than other classroom-based subjects and that PE has unique experience and education potential (Klein et al., 2016). In PE, the performance of a student is usually visible to peers. Therefore, if a teacher provides feedback for a student's performance based on IRNO, peers can ideally hear and understand the feedback, resulting in a positive change in the social acceptance of this student by peers.

The analysis of the cross-level interactions between IRNO and social acceptance/positive interactions showed some differentiated effects for students with ID. In particular, the social participation of students with ID is positively related to the IRNO of the PE teacher, which is in line with the work of Krawinkel et al. (2017). In their study with classes in which teachers base their performance feedback more on individual orientation, students with SEN were less likely to be rejected and experienced

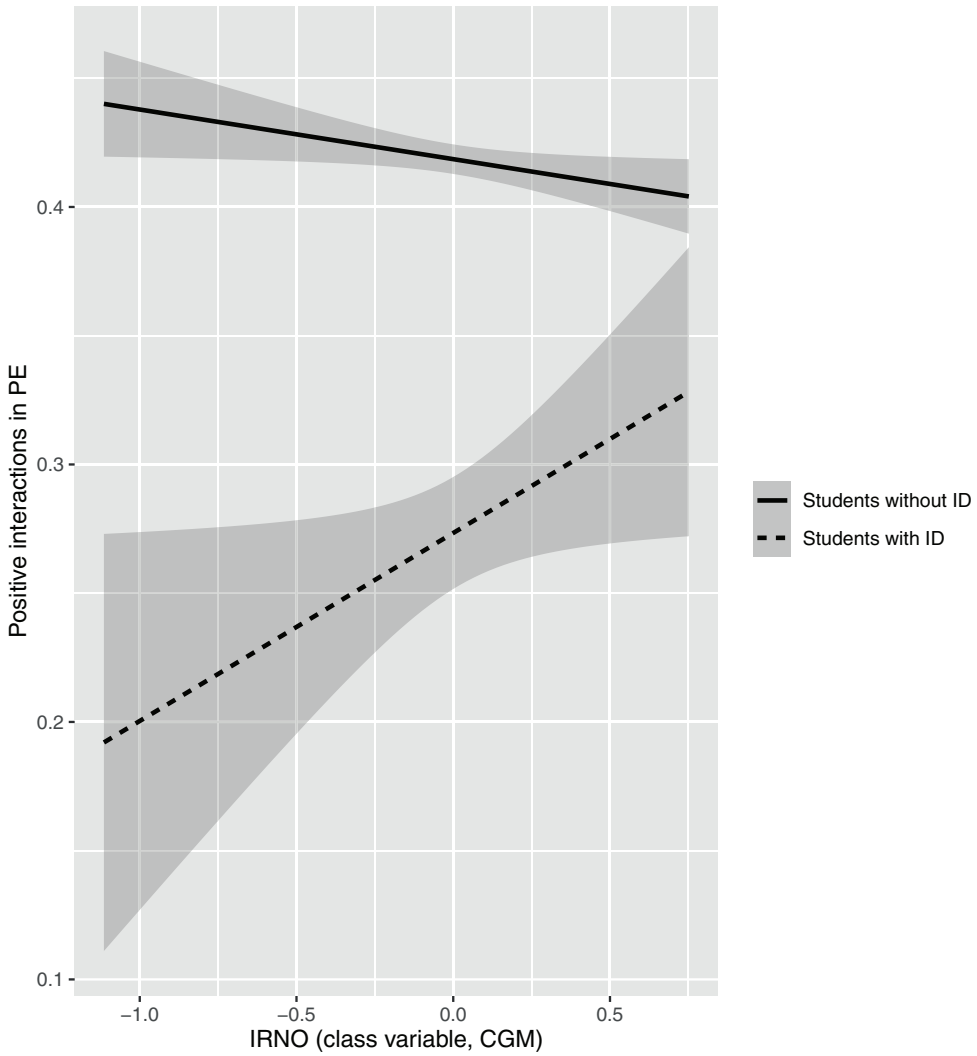

FIGURE 2 | Predicted positive interactions in physical education (PE) of children with and without intellectual disabilities (ID) related with the individual reference norm orientation (IRNO) of the PE teacher. The gray zones are the 95% confidence intervals. CGM, centered at grand mean.

more positive interactions in PE than in classes with teachers with lower IRNO. IRNO thus seems to fulfill a kind of buffering effect for the social participation of children with SEN. The increased risk of exclusion of children with SEN can be decreased by the strong IRNO of the teacher. In other words, the higher the IRNO of the PE teacher when giving feedback to students in present study, the smaller the gap in social participation between students with and without SEN due to ID. This effect might be explained insofar as students, especially students with ID, get more positive feedback from a PE teacher who uses IRNO. This explanation is contrary to the assumption that with feedback based on social comparisons, children with lower motor ability skills—and also students with ID—would receive more negative feedback. According to the theory of social referencing, where younger children, in particular, will look upon adult reference models for guidance (Walden and Ogan, 1988), the PE teacher with positive teacher-student interactions serves as a role model for the students. As a result, students with ID are more socially accepted by their TD peers in inclusive PE. Therefore, we provide novel detailed insights into the assumed relationship in inclusive PE that add to prior studies investigating the relationship between using IRNO and aspects of social participation for students with and without ID. As they confirm the moderating effect in the study by Krawinkel et al. (2017), our results might also be transferrable from a specific PE setting to a general discussion of inclusive education at primary school level.

Regarding teaching cooperative skills in the second research question, a positive relationship could be found with the social acceptance of the total sample of students in this study, including students with ID and their TD peers. This finding is partly in line with the work by André et al. (2011), who found that CL in inclusive PE positively influenced the acceptance of mainstream students with disabilities by their peers. However, their study did not measure the outcomes for students without disabilities.

TABLE 5 | Multilevel models of social acceptance of the students in PE.

	Empty model	Model 1	Model 2	Model 3
Level 1				
SEN status		−0.190*** (0.021)	−0.191*** (0.021)	−0.192*** (0.021)
Gender student		0.083*** (0.020)	0.083*** (0.020)	0.083*** (0.020)
Psychomotor clumsiness		−0.289*** (0.022)	−0.289*** (0.022)	−0.289*** (0.022)
Level 2				
Cooperative skills (class mean)			0.128** (0.044)	0.128** (0.044)
Cross-level interaction				
Cooperative skills (class mean) × SEN status				0.022 (0.020)
Model characteristics				
ICC	0.160			
AIC	−725.08	−1038.68	−1039.97	−1035.48
$R^2_{GLMM(m)}$	0	0.154	0.169	0.169
$R^2_{GLMM(c)}$	0.160	0.311	0.312	0.313

****$p \leq 0.001$; **$p \leq 0.01$; N = 1744 students, N = 104 classes; Estimation of standardized regression coefficients with standard errors in parentheses; SEN, special educational need; and $R^2_{GLMM(m)}$ = marginal R^2, $R^2_{GLMM(c)}$ = conditional R^2 (after Nakagawa and Schielzeth, 2013).*

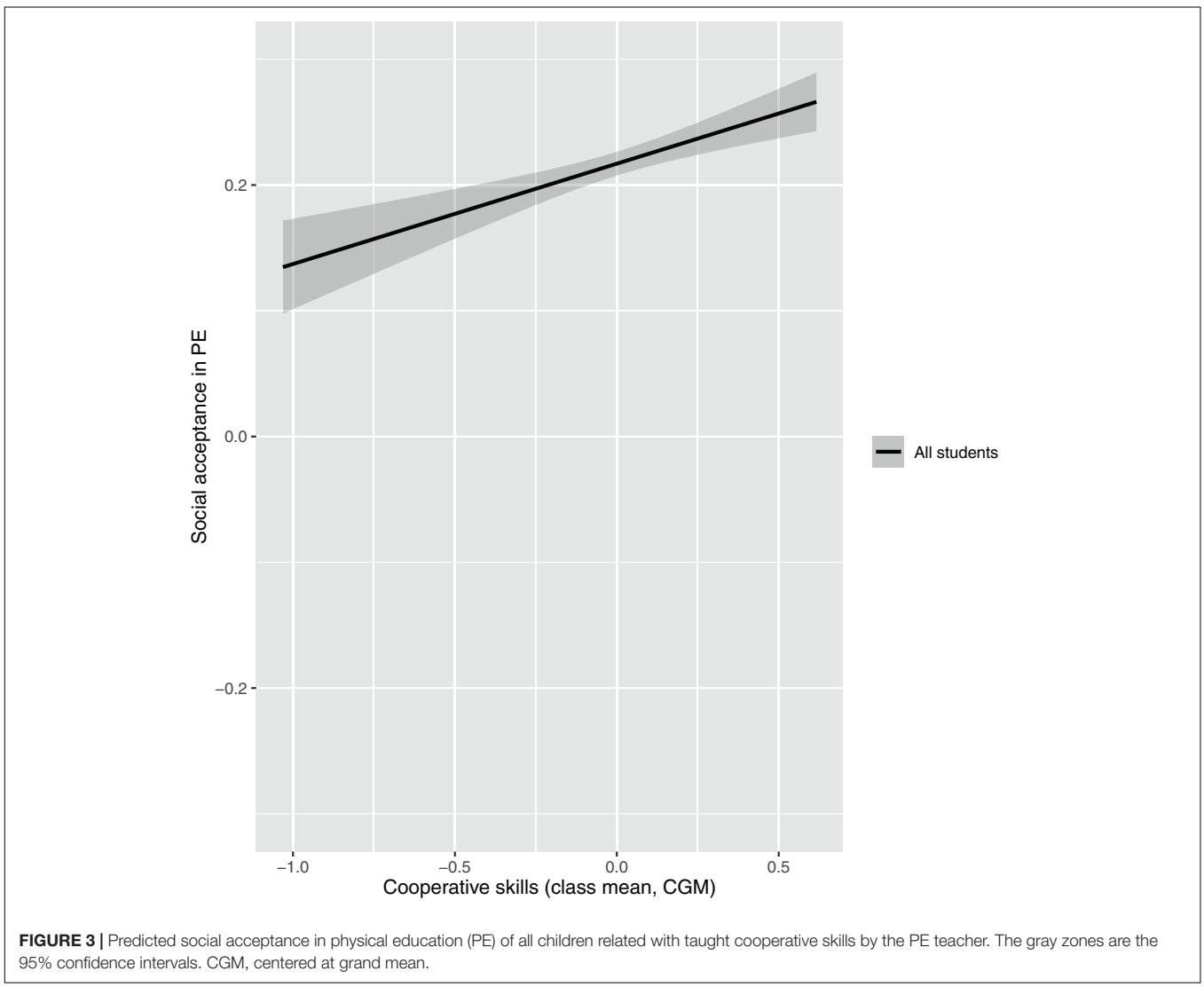

FIGURE 3 | Predicted social acceptance in physical education (PE) of all children related with taught cooperative skills by the PE teacher. The gray zones are the 95% confidence intervals. CGM, centered at grand mean.

TABLE 6 | Multilevel models of positive interactions of the students in PE.

	Empty model	Model 1	Model 2	Model 3
Level 1				
SEN status		−0.214*** (0.019)	−0.214*** (0.019)	−0.215*** (0.019)
Gender student		−0.082*** (0.019)	−0.082*** (0.019)	−0.082*** (0.019)
Psychomotor clumsiness		−0.323*** (0.020)	−0.323*** (0.020)	−0.324*** (0.020)
Level 2				
Cooperative skills (class mean)			0.053 (0.054)	0.053 (0.054)
Cross-level interaction				
Cooperative skills (class mean) × SEN status				0.028 (0.018)
Model characteristics				
ICC	0.244			
AIC	−2417.04	−2826.21	−2819.68	−2815.22
$R^2_{GLMM(m)}$	0	0.181	0.183	0.184
$R^2_{GLMM(c)}$	0.244	0.426	0.428	0.429

****p ≤ 0.001; N = 1744 students, N = 104 classes; Estimation of standardized regression coefficients with standard errors in parentheses; SEN, special educational need; and $R^2_{GLMM(m)}$ = marginal R^2, $R^2_{GLMM(c)}$ = conditional R^2 (after Nakagawa and Schielzeth, 2013).*

Furthermore, our study did not find any relationship between teaching cooperative skills and positive interactions in PE. This result does not correspond with the results from the studies by Dowler (2014), who found a positive relationship in secondary school PE classes in Australia. Interestingly, the results of their study also come from a sample of children with mild ID. However, the children were older and perhaps more receptive to CL in inclusive PE. On the other hand, the study by Keh and Hsieh (2007) found positive effects of CL in inclusive PE on the social status and peer relationships of a child with mild ID in exactly the same age group (5th grade). One potential explanation for the unexpected finding could be that teaching cooperative skills, as proposed by Hoffmann (2006), is not the same construct as CL, as defined by Dyson and Casey (2014a,b). This comparability of teaching cooperative skills and CL is arguable and thus must be discussed as a limiting factor of this study. However, our results make it possible to summarize that teaching cooperative skills in inclusive PE is a teaching strategy affecting the social dynamics of the whole class in primary school, regardless of whether students have SEN status due to ID or not. High scores on teaching cooperative skills are related to better scores on the social acceptance scale. This result from a PE setting might contribute to the discourse of teaching strategies in general inclusive primary school education, regardless of what the children's disabilities are.

Furthermore, the findings demonstrate that joint teaching (inclusive classes) alone does not guarantee that children with and without ID will be equally involved in social exchanges in class. The three individual student variables (SEN status, gender, and psychomotor clumsiness), which were used as control variables, revealed to be significant predictors of aspects of social participation. The strong predictor of SEN status is in line with international work in general education, reporting a higher risk of social exclusion for students with SEN (Garrote and Sermier Dessemontet, 2015). Focusing on the social acceptance and interactions in inclusive PE, the results support the ambivalent findings insofar as students with ID are socially less accepted and experience fewer positive interactions. This finding supports mostly qualitative work (Place and Hodge, 2001; Bredahl, 2013). Furthermore, the gender of the student is a significant predictor for social acceptance and positive interactions in inclusive PE. Interestingly, girls are better socially accepted, but they experience fewer positive interactions in inclusive PE. This result is partly in line with the work of Krawinkel et al. (2017), who found a significantly higher rejection rate for boys than for girls. It does not support the findings of Schwab (2015), who found no gender effect on peer acceptance and social interactions in Austria's inclusive classes. It further implies that, in our study, boys must have experienced more negative and upsetting interactions in PE than girls, explaining the difference in social acceptance and positive interactions in PE. Therefore, gender must be considered when talking about inclusive education. Finally, the strong predictor of psychomotor clumsiness in social acceptance and positive interactions in PE is in line with the research by Ommundsen et al. (2010). The authors found that 1st grade motor proficiency and objectively measured physical activity was predictive of 4th grade social standing among pupils in class measured by sociometric status. This result might be attributable to a sports-related and performance-oriented PE and contributes to the general discussion about a change in the perception of body and performance in inclusive PE (Meier and Ruin, 2015). Our results suggest that for inclusive PE, the idea of performance should not be highlighted.

The relatively large difference between the marginal and the conditional R^2 of all models is striking. The difference is even more significant for the models analyzing the variance of the positive interactions than in the models with social acceptance in PE. The control variables of SEN status, gender, and psychomotor clumsiness could explain around 18% of the variance. Adding the two teaching strategies as predictors did only explain little more variance, still leaving significant between-cluster heterogeneity. This relativizes the importance of the teacher and their teaching strategies in fostering social participation in inclusive PE. Other

than the discussed individual variables in this study, it can be speculated that there are still more individual variables predicting aspects of social participation. According to the study by Garrote (2017), rejected students with ID were estimated as being less cooperative and prosocial than accepted students with ID, indicating that the social behavior skills of students might play a decisive role in predicting social acceptance in general. In another study, DeBoer et al. (2012) investigated the role of peer attitudes on peer acceptance. The research group found that there is a relationship between peer attitudes and peer acceptance of students with disabilities in general primary education.

In addition to other individual variables of students, some teacher characteristics might also be of importance in predicting aspects of the social participation of students. As mentioned above, studies focusing on teachers' beliefs and attitudes toward the inclusion of children with disabilities in PE still dominate research in inclusive PE (Wilhelmsen and Sørensen, 2017). Teachers are generally seen as key players in the implementation of inclusive education, the success of which implies a positive attitude (Jerlinder et al., 2010). However, the research literature is scarce on the role of attitudes for the social experiences of students with and without SEN (Heyder et al., 2020). The data by Heyder et al. (2020) on inclusive general education suggests that increased teachers' beliefs are related to a decreased gap between the social integration of students with and without SEN. Furthermore, contextual factors might also explain some variance. As noted in the introduction, class size (Park et al., 2014) and class climate (Gasser et al., 2017; Krawinkel et al., 2017) can be used to further explain the variance of aspects of social participation. Finally, successful social participation of all students may only be possible in school settings that provide the necessary support and resources (Borg et al., 2011).

To conclude, our study is one of the first to analyze the role of using IRNO and teaching cooperative skills in inclusive PE settings in primary school education. In sum, the central findings of this study revealed some significant relationships. The high IRNO of the PE teacher is positively related to higher social acceptance of students, and the SEN status of children with ID positively moderated the relationship between the IRNO teaching strategy and both social acceptance and positive social interactions in inclusive PE. Regarding teaching cooperative skills in PE, there was a positive relationship with the social acceptance of children in inclusive PE. On the downside, the study also revealed that the teaching strategies examined in our study were not generally predictive of social acceptance and positive interactions in PE. The findings contribute to close the research gap in examining the role of teaching strategies in inclusive PE and by adding knowledge transferable to general inclusive education.

Limitations and Implications for Future Research

This study also had some limitations. It should be considered that only cross-sectional data was examined. Therefore, no statements about the direction of action of teaching characteristics and social acceptance/positive interactions can be derived. Even if the considerations here assume an influence of the teacher on social participation (based on the empirical evidence of longitudinal studies in the literature review), interactions are conceivable. This should be examined more closely in further investigations, using experimental research with different teaching strategies in longitudinal studies. With this limitation in mind, our findings indicate that it might be promising to focus on the IRNO of teachers and its effect on social participation in PE in future studies.

Furthermore, the number of students with SEN status per class in the present study is quite small compared to the number of students with no SEN diagnosis. In the field of inclusive education, such a small number of students with SEN status in the sample is normal, but it decreases the test power of the study (Henke et al., 2017). In further research, it might be fruitful to focus on a sufficiently large sample with more children with SEN status in each class.

Additionally, for the dependent variables, quantitative measures were used. Although attention was paid to the extent to which a person was spoken to, the answers were all equally weighted and finally combined into one value of social acceptance or prestige. Consequently, no conclusions can be drawn about the quality of the two aspects of social participation. For a student, it may be more beneficial to have one peer with whom one has many positive interactions and is fully accepted in PE than having few positive interactions with and not really being accepted by many peers. In future studies, qualitative aspects of social participation should be examined as well.

Also, the high correlation between the two dependent variables social acceptance and positive interactions in PE (r = 0.82) does not account for two different and independent aspects of social participation, as proposed in the review by Koster et al. (2009). Nevertheless, our study found different effects for the two dependent variables. This clearly indicates the importance of negative interactions in PE (negative-prestige), which are taken into account for the social acceptance score. Furthermore, more research looking at other aspects of social participation is of great interest to gain more insights into the relationship between teaching strategies and social participation. Juvonen and Bear (1992) and Gable et al. (1997) emphasized not only the importance of peer relations but also stressed the student's self-perception as an important part of the definition of social participation. Further research should, therefore, include not only the peer-related aspects but also the self-perception of each student. Especially with IRNO, relationships with related self-concepts might be assumed. The work by Oswald (2013) or by Conzelmann et al. (2011) in mainstream PE clearly indicated that the use of IRNO by PE teachers influences aspects of self-concept positively. It would be very interesting to test this effect in inclusive PE.

Finally, we tried to focus on one group of students with disabilities, namely children with ID. However, we must admit that this population is still very heterogeneous, and generalized statements must be made carefully. The examined teaching

strategies are very general teaching methods in PE and need to be adapted individually and applied or modified from case to case to get the desired positive social participation. A one-size-fits-all approach would not be suitable and thus limiting the conclusions of our study.

Further research is needed to investigate the relationship between teaching strategies, teacher characteristics (e.g., attitude), class variables (e.g., class climate), student characteristics (e.g., peer attitude), and the social participation of students in inclusive PE. It also seems potentially fruitful to explore possible moderators, such as the nature of the students' SEN. Furthermore, future research could also test these findings in other settings than general classrooms and PE, e.g., in music lessons or art classes. And finally, future research should also use alternate methods to questionnaires. Although we assessed the teaching strategies through students, these responses could also be biased by social desirability.

CONCLUSION

Despite the limitations mentioned above, the results are of value for teacher education. This novel study provides an insight into inclusive PE with children with ID in primary school. Results may be used for PE teacher education in primary school and further education of in-service teachers preparing them to use effective teaching strategies in inclusive PE to meet all the students' needs. The results also provide implications on what in-service teachers in PE can do to promote the social participation of students and especially of students with ID. A transfer of the knowledge gained to inclusive education in the classroom setting is worth considering, since the primary education teachers' repertoire of effective teaching strategies to promote social participation is still limited (DeLeeuw et al., 2019).

The results showed that IRNO is positively related to social acceptance and positive interactions in inclusive PE, and the SEN status of children with ID positively moderated both relationships. Hence, IRNO may help to decrease the gap in social participation between students with and without ID. Regarding teaching cooperative skills in PE, there was a positive relationship with the social acceptance of all children in PE, but no cross-level interaction for the SEN status and no relationship with positive interactions in PE. Despite these results, the importance of the mentioned teaching strategies in fostering the social participation of students in PE must be relativized. Individual variables among children still make a more significant difference when explaining social participation in inclusive PE in primary school.

Teachers must be prepared to act effectively to face the new kinds of challenges and opportunities in PE, which come with the increased heterogeneity of students and inclusive education. To decrease the gap between the social participation of students with and without SEN, teachers need to have a set of different and effective teaching strategies to meet the individual needs of students. Teaching cooperative skills and using IRNO seem to be valid teaching strategies to achieve this goal.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because it is planned to publish the used data in a repository after the project end (open access). This procedure has been agreed with the Swiss National Science Foundation (SNSF). Requests to access the datasets should be directed to VF, vitus.furrer@phbern.ch.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Faculty's Ethical Committee of the University of Bern. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

All authors contributed to conception and design of the study, contributed to manuscript revision, read, and approved the submitted version. VF organized the data collection, database, performed the statistical analysis, and wrote the first draft of the manuscript. SN, SV, and ME examined the research methods, and VF and SV conceptualized the findings.

FUNDING

This work was supported by the Swiss National Science Foundation under grant number 100019_179299. The data applied in the article stem from the project "Soziale Partizipation von Kindern mit einer geistigen Behinderung im integrativen Schul- und Vereinssport" (SoPariS), which was co-founded by the PHBern, University of Teacher Education, Bern, Switzerland and the Institute of Sport Science, University of Bern, Bern, Switzerland. Funds for open access publication fees was received from PHBern, University of Teacher Education, Bern, Switzerland.

ACKNOWLEDGMENTS

The authors wish to acknowledge the valuable contribution to this article from the whole research group in the project "Social participation in physical education" (SoPariS): Fabian Mumenthaler and Thierry Schluchter, PHBern, University of Teacher Education, Switzerland; Alexander Steiger, University of Bern, Switzerland.

REFERENCES

Achermann, B., Buholzer, A., Däppen, S., Hubmann, F., and Sahli-Lozano, C. (2017). *Länderbericht Schweiz. Zeitschrift für Inklusion*. Available online at: https://www.inklusion-online.net/index.php/inklusion-online/article/view/421/325 (accessed July 24, 2020).

Allport, G. W. (1954). *The Nature of Prejudice*. Reading, MA: Addison-Wesley.

André, A., Deneuve, P., and Louvet, B. (2011). Cooperative Learning in Physical Education and Acceptance of Students with Learning Disabilities. *J. Appl. Sport Psychol.* 23(4), 474–485. doi: 10.1080/10413200.2011.580826

Audley-Piotrowski, S., Singer, A., and Patterson, M. (2015). The role of the teacher in children's peer relations: Making the invisible hand intentional. *Transl. Issues Psychol. Sci.* 1(2), 192–200. doi: 10.1037/tps0000038

Avramidis, E. (2010). Social relationships of pupils with special educational needs in the mainstream primary class: Peer group membership and peer-assessed social behaviour. *Eur. J. Spec. Needs Educat.* 25(4), 413–429. doi: 10.1080/08856257.2010.513550

Avramidis, E., and Norwich, B. (2002). Teachers' attitudes towards integration / inclusion: a review of the literature. *Eur. J. Spec. Needs Educat.* 17(2), 129–147. doi: 10.1080/08856250210129056

Baines, E., Blatchford, P., and Kutnick, P. (2008). "Pupil grouping for learning: developing a social pedagogy of the classroom," in *Computer-Supported Collaborative Learning Volume 7. The Teacher's Role in Implementing Cooperative Learning in the Classroom*, eds R. M. Gillies, A. F. Ashman and J. Terwel (New York: Springer), 56–72.

Bertills, K., Granlund, M., and Augustine, L. (2019). Inclusive Teaching Skills and Student Engagement in Physical Education. *Front. Educat.* 4:74. doi: 10.3389/feduc.2019.00074

Block, M. E., ed. (2016). *A Teacher's Guide to Adapted Physical Education: Including Students with Disabilities in Sports and Recreation*. 4th edition. London: Brookes Publishing.

Block, M. E., Giese, M., and Ruin, S. (2017). Inklusiver Sportunterricht – eine internationale Standortbestimmung. *Sonderpädagog. Förder. Heute* 62(3), 233–243. doi: 10.3262/SZ1703233

Block, M. E., Klavina, A., and McKay, C. (2016). Facilitating Social Acceptance and Inclusion. Block 2016, 271–288.

Booth, T., and Ainscow, M. (2002). *Index for inclusion: Developing learning and participation in schools*. United Kingdom: Centre for Studies on Inclusive Education (CSIE).

Borg, G., Hunter, J., Sigurjónsdottír, B., and D'Alessio, S eds. (2011). *Key principles for promoting quality in inclusive education: Recommendations for practice*. Odense: European Agency for Development in Special Needs Education.

Bossaert, G., Colpin, H., Pijl, S. J., and Petry, K. (2012). Loneliness among students with special educational needs in mainstream seventh grade. *Res. Devel. Disabil.* 33(6), 1888–1897. doi: 10.1016/j.ridd.2012.05.010

Bredahl, A. -M. (2013). Sitting and Watching the Others Being Active: The Experienced Difficulties in PE When Having a Disability. *Adap. Phys. Activ. Q.* 30, 40–58. doi: 10.1123/apaq.30.1.40

Bula, A., Deppierraz, R., Eberhard, J., Holenstein, K., Mühlemann, K., and Oeuvray, S. (2019). *Statistik der Sonderpädagogik: Schuljahr 2017/18. Neuchâtel*. Available online at: https://www.bfs.admin.ch/bfs/de/home/statistiken/kataloge-datenbanken/medienmitteilungen.assetdetail.10227899.html (accessed June 20, 2020).

Casey, A., and Quennerstedt, M. (2020). Cooperative learning in physical education encountering Dewey's educational theory. *Eur. Phys. Educat. Rev.* 21(2), 1–15. doi: 10.1177/1356336X20904075

Cillessen, A. H. N. (2009). "Sociometric methods," in *Handbook of Peer Interactions, Relationships, and Groups*, eds K. H. Rubin, W. M. Bukowski, and B. Laursen, (New York, NY: The Guilford Press), 82–99.

Conzelmann, A., Schmidt, M., Valkanover, S., Berger, R., Crameri, S., and Joss, M. (2011). *Persönlichkeitsentwicklung durch Schulsport: Theorie, Empirie und Praxisbausteine der Berner Interventionsstudie Schulsport (BISS)*. Bern: Verlag Hans Huber.

Cooper, P. (2011). Teacher strategies for effective intervention with students presenting social, emotional and behavioural difficulties: an international review. *Eur. J. Spec. Needs Educat.* 26(1), 71–86. doi: 10.1080/08856257.2011.543547

David, R., and Kuyini, A. B. (2012). Social Inclusion: Teachers as Facilitators in Peer Acceptance of Students with Disabilities in Regular Classrooms in Tamil Nadu, India. *Int. J. Spec. Educat.* 27, 157–168.

DeBoer, A., Pijl, S. J., Post, W., and Minnaert, A. (2012). Peer Acceptance and Friendships of Students with Disabilities in General Education: The Role of Child, Peer, and Classroom Variables. *Soc. Devel.* 35(3), 831–844. doi: 10.1111/j.1467-9507.2012.00670.x

DeLeeuw, R. R., DeBoer, A., and Minnaert, A. (2019). What do Dutch general education teachers do to facilitate the social participation of students with SEBD?" *Int. J. Inclus. Educat.* 35(4), 1–24. doi: 10.1080/13603116.2018.1514081

Dowler, W. (2014). Cooperative Learning and interactions in inclusive secondary-school physical education classes in Australia. *Dyson Casey* 2014, 150–165.

Dowler, W. A. (2017). *An Investigation into the Impact of a Cooperative Learning Intervention on the Social Interaction Behaviours of Students with a Mild Intellectual Disability in Secondary School Inclusive Physical Education*. Ph. D Doctoral thesis, Wollongong: University of Wollongong.

Dyson, B. P., Linehan, N. R., and Hastie, P. A. (2010). The Ecology of Cooperative Learning in Elementary Physical Education Classes. *J. Teach. Phys. Educat.* 29(2), 113–130. doi: 10.1123/jtpe.29.2.113

Dyson, B., and Casey, A., eds. (2014a). *Cooperative learning in physical education: A research-based approach. Routledge studies in physical education and youth sport 13*. New York: Routledge.

Dyson, B., and Casey, A. (2014b). Introduction: Cooperative Learning as a pedagogical model in physical education. *Dyson Casey* 2014, 1–12. doi: 10.4324/9781315670164-1

Eckhart, M. (2012). "Soziale Integrationsprozesse in Schulklassen: Methodische Annäherungen und Entwicklung eines Computerprogramms zur Analyse sozialer Prozesse in Schulklassen (Sozio)," in *Schulische Integration gelingt: Gute Praxis wahrnehmen, Neues entwickeln*, edited A. Lanfranchi and J. Steppacher, (Bad Heilbrunn: Klinkhardt), 136–47.

Eckhart, M., Stucki, B., and von Wyl, D. (2011). *SOZIO - Programm zur Analyse und Förderung sozialer Prozesse. Ausführlicher Projektbericht*. New Jersey: SOZIO

Elliott, S., Stanec, A., and Block, M. E. (2016). What Is Physical Education? *Block* 2016, 3–18.

Enders, C. K., and Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: a new look at an old issue. *Psychol. Methods* 12(2), 121–138. doi: 10.1037/1082-989X.12.2.121

Farmer, T. W., McAuliffe Lines, M., and Hamm, J. V. (2011). Revealing the invisible hand: The role of teachers in children's peer experiences. *J. Appl. Devel. Psychol.* 32(5), 247–256. doi: 10.1016/j.appdev.2011.04.006

Farrell, P. (2000). The impact of research on developments in inclusive education. *Int. J. Inclus. Educat.* 4(2), 153–162. doi: 10.1080/136031100284867

Fitzgerald, H., and Stride, A. (2012). Stories about Physical Education from Young People with Disabilities. *Int. J. Disabil. Devel. Educat.* 59(3), 283–293. doi: 10.1080/1034912X.2012.697743

Frederickson, N. L., and Furnham, A. F. (1998). Sociometric-status-group classification of mainstreamed children who have moderate learning difficulties: An investigation of personal and environmental factors. *J. Educat. Psychol.* 90(4), 772–783. doi: 10.1037/0022-0663.90.4.772

Gable, R. K., Rucker, C. N., and Smith, E. V. (1997). Assessing Student Perceptions of Affective Outcomes of Special Education Programs: Instrument Development, Validation, and Comparisons to Regular Education Students. *Educat. Psychol. Measur.* 57(4), 685–697. doi: 10.1177/0013164497057004012

Garrote, A. (2016). Soziale Teilhabe von Kindern in inklusiven Klassen. *Empirische Pädagogik* 30, 67–80.

Garrote, A. (2017). The relationship between social participation and social skills of pupils with an intellectual disability: A study in inclusive classrooms. *Front. Learn. Res.* 5(1), 1–15. doi: 10.14786/flr.v5i1.266

Garrote, A., and Sermier Dessemontet, R. (2015). Social Participation in Inclusive Classrooms: Empirical and Theoretical Foundations of an Intervention Program. *J. Cogn. Educat. Psychol.* 14(3), 375–388. doi: 10.1891/1945-8959.14.3.375

Garrote, A., Sermier Dessemontet, R., and Moser Opitz, E. (2017). Facilitating the social participation of pupils with special educational needs in mainstream schools: A review of school-based interventions. *Educat. Res. Rev.* 20, 12–23. doi: 10.1016/j.edurev.2016.11.001

Gasser, L., Grütter, J., Torchetti, L., and Buholzer, A. (2017). Competitive classroom norms and exclusion of children with academic and behavior difficulties. *J. Appl. Devel. Psychol.* 49, 1–11. doi: 10.1016/j.appdev.2016.12.002

Giese, M., Kiuppis, F., and Baumert, K. (2016). *Adaptierter Sportunterricht – Plädoyer für einen terminologischen Anschluss an internationale Diskurse. Zeitschrift für Inklusion*. Available online at: https://www.inklusion-online.net/index.php/inklusion-online/article/view/380/301 (accessed May 17, 2020).

Grenier, M., and Yeaton, P. (2014). The Cooperative Learning model as an inclusive pedagogical practice in physical education. *Dyson Casey* 2014, 119–135. doi: 10.1080/08856257.2013.859818

Grütter, J., Meyer, B., and Glenz, A. (2014). Sozialer Ausschluss in Integrationsklassen: Ansichtssache? *Psychol. Erzieh. Unter.* 62(1), 65–82. doi: 10.2378/peu2015.art05d

Hattie, J., ed. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Reprinted. London: Routledge.

Healy, S., Msetfi, R., and Gallagher, S. (2013). 'Happy and a bit Nervous': the experiences of children with autism in physical education. *Br. J. Learn. Disabil.* 41(3), 222–228. doi: 10.1111/bld.12053

Henke, T., Bogda, K., Lambrecht, J., Bosse, S., Koch, H., Maaz, K., et al. (2017). Will you be my friend? A multilevel network analysis of friendships of students with and without special educational needs backgrounds in inclusive classrooms. *Zeitschrift für Erziehungswissenschaft* 20(3), 449–474. doi: 10.1007/s11618-017-0767-x

Heyder, A., Südkamp, A, and Steinmayr, R. (2020). How are teachers' attitudes toward inclusion related to the social-emotional school experiences of students with and without special educational needs?" *Learn. Indiv. Diff.* 77:101776. doi: 10.1016/j.lindif.2019.101776

Hoffmann, A. (2006). Pädagogisch relevante Normen im Schulsport: Entwicklung eines exemplarischen Fragebogens zu im (Schul-)Sport transportierten Normen (FSTN). *Sportwissenschaft* 36, 247–268.

Hox, J. J. (2010). *Multilevel analysis: Techniques and applications.* 2nd edition. New York, NY: Routledge.

Huber, C. (2009). Soziale Ausgrenzung in der Integration von Schülern mit sonderpädagogischem Förderbedarf: Zusammenhang von Persönlichkeit, Gruppenheterogenität und sozialer Ausgrenzung. *Empirische Pädagogik* 23, 170–190.

Huber, C., Gerullis, A., Gebhardt, M., and Schwab, S. (2018). The impact of social referencing on social acceptance of children with disabilities and migrant background: An experimental study in primary school settings. *Eur. J. Spec. Needs Educat.* 33(2), 269–285. doi: 10.1080/08856257.2018.1424778

Jacques, N., Wilton, K., and Townsend, M. (1998). Cooperative learning and social acceptance of children with mild intellectual disability. *J. Intellect. Disabil. Res.* 42(1), 29–36. doi: 10.1046/j.1365-2788.1998.00098.x

Jansen, D. (2006). *Einführung in die Netzwerkanalyse: Grundlagen, Methoden, Forschungsbeispiele*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Jerlinder, K., Danermark, B., and Gill, P. (2010). Swedish primary-school teachers' attitudes to inclusion – the case of PE and pupils with physical disabilities. *Eur. J. Spec. Needs Educat.* 25(1), 45–57. doi: 10.1080/08856250903450830

Johnson, D. W., and Johnson, R. T. (2008). "Social Interdependence Theory and Cooperative Learning: The Teacher's Role," in *The Teacher's Role in Implementing Cooperative Learning in the Classroom*, eds M. Robyn Gillies,, F. Adrian Ashman,, and T. Jan,. (New York: Springer), 9–37 doi: 10.1007/978-0-387-70892-8_1

Jones, A. P., and Frederickson, N. (2010). Multi-informant predictors of social inclusion for students with autism spectrum disorders attending mainstream school. *J. Autism Devel. Disor.* 40(9), 1094–1103. doi: 10.1007/s10803-010-0957-953

Juvonen, J., and Bear, G. (1992). Social adjustment of children with and without learning disabilities in integrated classrooms. *J. Educat. Psychol.* 84(3), 322–330. doi: 10.1037/0022-0663.84.3.322

Keh, N. C., and Hsieh, YT. (2007). The Effects of Cooperative Learning on Teacher-Student Interactions and Peer Relationships: A Case Study of a Student with Mild Intellectual Challenges. *Res. Q. Exerc. Sport* 78(1), 107–117

King, G. (2013). Perspectives on measuring participation: going forward. *Child Care Health Devel.* 39(4), 466–469. doi: 10.1111/cch.12083

Klavina, A., Jerlinder, K., Kristén, L., Hammar, L., and Soulie, T. (2014). Cooperative oriented learning in inclusive physical education. *Eur. J. Spec. Needs Educat.* 29(2), 119–134.

Klein, D., Kurth, A., Leineweber, H., Meier, S., and Ruin, S. (2016). "Inklusiver Sportunterricht – eine fachdidaktische Perspektive," in *Inklusion im Schulsport: Anregungen und Reflexionen*, eds S. Ruin, S. Meier, H. Leineweber, D. Klein, C. Buhren 40–50.

Koster, M., Nakken, H., Pijl, S. J., and van Houten, E. (2009). Being part of the peer group: A literature study focusing on the social dimension of inclusion in education. *Int. J. Inclus. Educat.* 13(2), 117–140. doi: 10.1080/13603110701284680

Krawinkel, S., Südkamp, SA., and Tröster, H. (2017). Soziale Partizipation in inklusiven Grundschulklassen: Bedeutung von Klassen- und Lehrkraftmerkmalen. *Empirische Sonderpädagogik* 3, 277–295.

Krüger, H. P. (1976). *Soziometrie in der Schule: Verfahren und Ergebnisse zu sozialen Determinanten der Schülerpersönlichkeit*. Weinheim: Beltz.

Lieberman, L. J., Robinson, B. L., and Rollheiser, H. (2006). Youth with Visual Impairments: Experiences in General Physical Education. *Review* 38(1), 35–48. doi: 10.3200/REVU.38.1.35-48

Lindsay, G. (2007). Educational psychology and the effectiveness of inclusive education/mainstreaming. *Br. J. Educat. Psychol* 77(1), 1–24. doi: 10.1348/000709906X156881

Luder, R. (2018). Praktische Umsetzung und Effekte integrativer Förderung in der Schweiz: Zusammenfassende Übersicht zu den Ergebnissen eines nationalen Forschungsprojekts. *Zeitschrift für Heilpädagogik* 24, 15–21.

McAuliffe, M. D., Hubbard, J. A., and Romano, L. J. (2009). The role of teacher cognition and behavior in children's peer relations. *J. Abnor. Child Psychol.* 37(5), 665–677. doi: 10.1007/s10802-009-93059305

Medcalf, R., Marshall, J., Hardman, K., and Visser, J. (2011). Experiences and perceptions of physical education. *Emot. Behav. Difficult.* 16(2), 189–206. doi: 10.1080/13632752.2011.569409

Meier, S., and Ruin, S. (2015). "Ist ein Wandel nötig? Körper und Leistung im Kontext von inklusivem Sportunterricht," in *Inklusion als Herausforderung, Aufgabe und Chance für den Schulsport*, eds S. Meier, and S. Ruin, (Berlin: Logos Verlag), 81–100.

Meyer, H. (2003). "Geistige Behinderung – Terminologie und Begriffsverständnis," in *Menschen mit geistiger Behinderung – Psychologische Grundlagen, Konzepte und Tätigkeitsfelder*, eds D. Irblich and B. Stahl, (Göttingen: Hogrefe), 4–30.

Mitchell, D. (2014). *What really works in special and inclusive education: Using evidence-based teaching strategies*. 2nd edition. New York: Routledge Taylor & Francis Group.

Monchy, M. D., Pijl, S. J., and Zandberg, T. (2004). Discrepancies in judging social inclusion and bullying of pupils with behaviour problems. *Eur. J. Spec. Needs Educat.* 19(3), 317–330. doi: 10.1080/0885625042000262488

Nakagawa, S., and Schielzeth, H. (2013). A general and simple method for obtaining R2 from generalized linear mixed-effects models. *Methods Ecol. Evolut.* 4(2), 133–142. doi: 10.1111/j.2041-210x.2012.00261.x

O'Brien, D., Kudlacek, M., and Howe, P. D. (2009). A contemporary review of English language literature on inclusion of students with disabilities in physical education: A European perspective. *Eur. J. Adap. Phys. Activ.* 2(1), 46–61. doi: 10.5507/euj.2009.004

Ommundsen, Y., Gundersen, K. A., and Mjaavatn, P. E. (2010). Fourth Graders' Social Standing with Peers: A Prospective Study on the Role of First Grade Physical Activity, Weight Status, and Motor Proficiency. Scandin. *J. Educat. Res.* 54(4), 377–394. doi: 10.1080/00313831.2010.493344

Oswald, E. (2013). *Selbstkonzeptförderung im Sportunterricht mittels individueller Bezugsnormorientierung: Implementationsgenauigkeit und Interventionseffekte. Inauguraldissertation*, Fakultät: Universität Bern.

Oswald, E., Schmidt, M., Valkanover, S., and Conzelmann, A. (2013). Die Förderung des sportbezogenen Fähigkeitsselbstkonzepts mittels einer Intervention mit individueller Bezugsnormorientierung im Sportunterricht. *Spect. Der Sportwissenschaften* 25(1), 5–20. doi: 10.7892/BORIS.41035

Park, S. S., Younghwan, KOH., and Block, M. E. (2014). Contributing Factors for Successful Inclusive Physical Education. *Palaestra* 28, 42–49.

Piercy, M., Wilton, K., and Townsend, M. (2002). Promoting the Social Acceptance of Young Children With Moderate-Severe Intellectual Disabilities Using Cooperative-Learning Techniques. *Am. J. Ment. Retard.* 107(5):352. doi: 10.1352/0895-80172002107

Place, K., and Hodge, S. R. (2001). Social Inclusion of Students with Physical Disabilities in General Physical Education: A Behavioral Analysis. *Adapt. Phys. Activ. Q.* 18(4), 389–404. doi: 10.1123/apaq.18.4.389

Poulin, F., and Chan, A. (2010). Friendship stability and change in childhood and adolescence. *Devel. Rev.* 30(3), 257–272. doi: 10.1016/j.dr.2009.01.001

Putnam, J. W. (1993). *Cooperative learning and strategies for inclusion: Celebrating diversity in the classroom. Children, Youth & Change: Sociocultural Perspectives*. Baltimore: Brookes Publishing Co.

Qi, J., and Ha, A. S. (2012). Inclusion in Physical Education: A review of literature. *Int. J. Disab. Devel. Educat.* 59, 257–281. doi: 10.1080/1034912x.2012.697737

R Core Team (2015). *R: A Language and Environment Fort Statistical Computing [Computer Software]*. Wien: R Core Team

Reuker, S., Rischke, A., Kämpfe, A., Schmitz, B., Teubert, H., Thissen, A., et al. (2016). Inklusion im Sportunterricht. *Sportwissenschaft* 46(2), 88–101. doi: 10.1007/s12662-016-0402407

Reuter, C. (2019). "Sport," in *Handbuch Förderschwerpunkt Geistige Entwicklung: Grundlagen - Spezifika - Fachorientierung - Lernfelder*, eds H. Schäfer, (München: Pädagogik), 556–63.

Rheinberg, F. (1983). Achievement Evaluation: Fundamental Difference and its Motivational Consequences. *Stud. Educat. Evaluat.* 9, 185–194. doi: 10.1016/0191-491x(83)90026-3

Røset, L., Green, K., and Thurston, M. (2020). Norwegian youngsters' perceptions of physical education: exploring the implications for mental health. *Sport Educat. Soc.* 25(6), 618–630. doi: 10.1080/13573322.2019.1634043

Ruijs, N. M., and Peetsma, TTD. (2009). Effects of inclusion on students with and without special educational needs reviewed. *Educat. Res. Rev.* 4(2), 67–79. doi: 10.1016/j.edurev.2009.02.002

Ruin, S., Meier, S., and Leineweber, H. (2016a). Didaktik, Leistung, Körper - Reflexionen zu grundlegenden Prämissen (inklusiven) Sportunterrichts. *Ruin.* 2016, 174–197.

Ruin, S., Meier, S., Leineweber, H., Klein, D., and Buhren, C. G., eds. (2016b). *Inklusion im Schulsport: Anregungen und Reflexionen*. Basel: Beltz.

Ruiz-Pérez, L. M., Palomo-Nieto, M., Gómez-Ruano, MA., and Navia-Manzano, JA. (2018). When We Were Clumsy: Some Memories of Adults who were Low Skilled in Physical Education at School. *J. Phys. Educat. Sports Manag.* 5(1), 30–36. doi: 10.15640/jpesm.v5n1a4

Rybová, L., and Kudláček, M. (2013). The State of Inclusion of Students with Physical Disabilities in General Physical Education in Prague and Central Bohemian Region. *Eur. J. of Adap. Phys. Activ.* 6, 57–61. doi: 10.5507/euj.2013.005

Schilling, F. (1976). *Checklist motorischer Verhaltensweisen: Handanweisung für die Durchführung, Auswertung und Interpretation*. Braunschweig: Georg Westermann Verlag.

Schoop-Kasteler, N., and Müller, CM. (2020). Peer relationships of students with intellectual disabilities in special needs classrooms – a systematic review. *J. Res. Spec. Educat. Needs* 20(2), 130–145. doi: 10.1111/1471-3802.12471

Schwab, S. (2015). Social dimensions of inclusion in education of 4th and 7th grade pupils in inclusive and regular classes: Outcomes from Austria. *Res. Develop. Disabil.* 43, 72–79. doi: 10.1016/j.ridd.2015.06.005

Schwab, S. (2018). *Attitudes Towards Inclusive Schooling: A study on Students', Teachers' and Parents' attitudes. Band*, New York: Waxmann Verlag GmbH.

Schwab, S., Gebhardt, M., Krammer, M., and Gasteiger-Klicpera, B. (2014). Linking self-rated social inclusion to social behaviour. *An empirical study of students with and without special education needs in secondary schools. Eur. J. Spec. Needs Educat.* 30(1), 1–14. doi: 10.1080/08856257.2014.933550

Schwab, S., Huber, C., and Gebhardt, M. (2016). Social acceptance of students with Down syndrome and students without disability. *Educat. Psychol.* 36(8), 1501–1515. doi: 10.1080/01443410.2015.1059924

Schwarzer, R., and Jerusalem, M., eds. (1999). *Skalen zur Erfassung von Lehrer- und Schülermerkmalen: Dokumentation der psychometrischen Verfahren im Rahmen der Wissenschaftlichen Begleitung des Modellversuchs Selbstwirksame Schulen*. Schwarzer: Berlin.

Schwarzer, R., Lange, B., and Jerusalem, M. (1982). "Die Bezugsnorm des Lehrers aus der Sicht des Schülers," in *Bezugsnormen zur Schulleistungsbewertung: Analyse und Intervention*, ed F. Rheinberg, (Düsseldorf: Pädag. Verlag Schwann), 161–72.

Seymour, H., Reid, G., and Bloom, G. A. . (2009). Friendship in inclusive physical education. *Adapt. Phys. Activ. Q.* 26, 201–219. doi: 10.1123/apaq.26.3.201

Snijders, T. A. B., and Bosker, R. J. (1999). *Multilevel network analysis for the social sciences: Theory, methods and applications*. Reprint 12. (London: Sage Publ).

Stanton-Nichols, K., and Block, M. E. (2016). Intellectual Disabilities. *Block* 2016, 157–172.

Stibbe, G. (2013). "Didaktische Konzepte für einen inklusiven Sportunterricht," in *Didaktische Konzepte für den Schulsport*, eds H. Aschebrock and G. Stibbe (Aachen: Meyer & Meyer), 19–52.

Talbot, M. (2001). "The case for physical education," in *World Summit on Physical Education*, eds G. Doll-Tepper, and D. Scoretz. (Berlin: ICSSPE).

Tant, M., and Watelain, E. (2016). Forty years later, a systematic literature review on inclusion in physical education (1975–2015): A teacher perspective. *Educat. Res. Rev.* 19, 1–17. doi: 10.1016/j.edurev.2016.04.002

United Nations (2006). *A Convention on the Rights of Persons with Disabilities: UN-BRK*. Available online at: www.un.org/disabilities/documents/convention/convoptprot-e.pdf (accessed July 24, 2020).

Valkanover, S. (2005). *Intrigenspiel und Muskelkraft: Aspekte der Psychomotorik im Zusammenhang mit Mobbing im Kindergarten. Schulpädagogik - Fachdidaktik - Lehrerbildung*. Berlin: Haupt.

Vickerman, P., and Maher, A. (2019). *Teaching physical education to children with special educational needs and disabilities*. 2nd edition. London: Routledge.

Walden, T. A., and Ogan, T. A. (1988). The Development of Social Referencing. *Child development* 59(5):1230. doi: 10.2307/1130486

Webster, M., and Foschi, M. (1992). "Social Referencing and Theories of Status and Social Interaction," in *Social Referencing and the Social Construction of Reality in Infancy*. Vol. 61, ed Feinman, S., (Boston, MA: Springer), 269–94. doi: 10.1007/978-1-4899-2462-9_11

Wegner, M., ed. (2001). *Sport und Behinderung: Zur Psychologie der Belastungsverarbeitung im Spiegel von Einzelfallanalysen. 1. Aufl. Beiträge zur Lehre und Forschung im Sport 129*. Schorndorf: Hofmann.

White, K. J., and Jones, K. (2000). Effects of teacher feedback on the reputations and peer perceptions of children with behavior problems. *J. Exper. Child Psychol.* (4), 302–326. doi: 10.1006/jecp.1999.2552

Wilhelmsen, T., and Sørensen, M. (2017). Inclusion of Children With Disabilities in Physical Education: A Systematic Review of Literature From 2009 to 2015. *Adapt. Phys. Activ. Q.* 34(3), 311–37. doi: 10.1123/apaq.2016-2017

World Health Organization [WHO] (2016). *International statistical classification of diseases and related health problems 10th revision (ICD-10)-WHO: Chapter V. Mental and behavioural disorders (F00–F99)*. Available online at: https://icd.who.int/browse10/2016/en#/V. [accessed on 08, July 2020].

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Psychology

ORIGINAL RESEARCH
published: 06 November 2020
doi: 10.3389/fpsyg.2020.587058

Teacher Scaffolding of Social and Intellectual Collaboration in Small Groups: A Comparative Case Study

Elizabeth Kraatz[1], Manisha Nagpal[1], Tzu-Jung Lin[1], Ming-Yi Hsieh[2], Seung Yon Ha[1], Saetbyul Kim[1] and Sangin Shin[1]*

[1] Department of Educational Studies, The Ohio State University, Columbus, OH, United States, [2] Institute of Education, National Chiao Tung University, Hsinchu, Taiwan

This comparative case study features two small groups of students engaging in collaborative dialog about social issues. Based on social constructivist theories, the two groups were compared across three major components of the small groups system: social dynamics, intellectual collaboration, and teacher scaffolding. Our goal was to holistically analyze these small group processes to understand why some small groups were highly successful while others were not, even within the same intervention and with the same teacher. Successful groups were those in which all students were able to access the conversational floor, many ideas were considered, students were able to share ideas and discuss collaboratively, and students were able to raise multiple forms of social reasoning to support and explain ideas. Change in social reasoning essay scores prior to and after the intervention were also considered as evidence of group success. Results show that teacher scaffolding and existing student processes served to amplify one another reciprocally. The teacher heightened productive social norms when they were present, which then served to encourage productive intellectual collaboration. However, when productive group norms were not present, the teacher took increasing control over the group, which further hampered productive social and intellectual interactions.

Keywords: collaborative discussion, relational equity, participatory equity, teacher scaffolding, idea building

OPEN ACCESS

Edited by:
Carmen L. A. Zurbriggen, University of Luxembourg, Luxembourg

Reviewed by:
Grzegorz Szumski, University of Warsaw, Poland
Margarita Knickenberg, Bielefeld University, Germany

****Correspondence:***
Elizabeth Kraatz
kraatz.3@osu.edu

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Psychology

Received: *24 July 2020*
Accepted: *12 October 2020*
Published: *06 November 2020*

Citation:
Kraatz E, Nagpal M, Lin T-J, Hsieh M-Y, Ha SY, Kim S and Shin S (2020) Teacher Scaffolding of Social and Intellectual Collaboration in Small Groups: A Comparative Case Study. Front. Psychol. 11:587058. doi: 10.3389/fpsyg.2020.587058

INTRODUCTION

Small group collaboration in classrooms is a complex and dynamic system in which various factors interact to influence student outcomes (Webb, 1982; Gillies, 2003). While many small group studies have overarchingly demonstrated the effectiveness of small group collaboration on students' cognitive development (Foorman and Torgesen, 2001; Gillies, 2004; Webb, 2009; Webb et al., 2019), others have documented the heterogeneity in small group processes among students within classrooms or even under the same intervention practices (e.g., Webb, 1982; Barron, 2003; Webb et al., 2006; Volet et al., 2009). Much remains to be understood about why some small groups struggle more than others in small-group collaboration, specifically regarding how teachers orchestrate the dynamic and heterogeneous small group processes in the classroom (e.g., Jadallah et al., 2011).

There is also a lack of research that holistically considers small group collaboration processes. While quantitative methodologies have been valuable in identifying specific factors and their functioning, they are often limited in explaining how various factors interact with each other to

constitute the dynamic system as a whole (Yin, 1994). As such, we employed comparative case study to analyze how two groups of students interacted with peers and their teacher throughout an established small-group intervention approach called Collaborative Social Reasoning (Lin et al., under review). This methodology enabled us to answer theory-informed questions while allowing us to address additional questions as they arose from observations (Yin, 1994; Merriam and Tisdell, 2016).

Our aim was to understand why some small groups of students are highly successful in a collaborative small-group discussion intervention while others are not, even when groups seem comparable and students were taught by the same teacher. Successful groups showed strong collaboration, reasoning, and social interaction. We primarily focus on the processes of teacher scaffolding, social dynamics of the groups, and level of intellectual collaboration during collaborative small-group discussions and how these factors interact and vary between collaborative small groups (**Figure 1**).

While considerable literature exists in each of these areas, there is little that examines all three within a holistic system, making the contribution of this paper unique. Although we cannot assume that these processes would be generalized to outside of the systems we are studying, our findings can point to critical processes by which teachers facilitate small group collaboration, which can inform effective instructional practices in the future.

LITERATURE REVIEW

Small Group Discussion as a Dynamic Social System

As shown in **Figure 1**, we conceptualized small group collaboration in the classroom as a dynamic social system constituting processes of teacher scaffolding, social dynamics, and intellectual collaboration. In this model, social dynamics, such as turn-taking and ability to access the conversational floor, influence intellectual collaboration by ensuring that all ideas are heard and considered. Intellectual collaboration, or the extent to which students build knowledge upon the ideas of others', influences social dynamics by providing a collaborative, constructive conversational floor for peer relations to grow and social skills to develop. The teacher's role is to scaffold both of these processes, but these processes can also influence the ways in which the teacher provides scaffolding to the groups. Based on social constructivist theories (Vygotsky, 1934), this model conceptualizes learning as engrained in the social environment in which the learning happened (Adams, 2006); in this context, a small group of collaborating students within a classroom that is within a society. The model is based on prior work reviewed in the next sections and was used to structure our in-depth analysis of the two groups' collaboration.

Social Dynamics

The ways by which students interact with one another and social relationships with peers can impact students' academic development (Wentzel and Watkins, 2002; Buchs et al., 2009; Lee and Shute, 2010). For example, being accepted by peers can motivate students to engage in learning activities and display socially appropriate forms of behavior in group learning (Wentzel and Watkins, 2002). These studies emphasize how social and academic processes coalesce to influence academic outcomes including engagement and problem solving. Vygotsky (1934) also argued about how cognitive development occurs when individuals are tasked with a problem or activity that can be accomplished through concept formation with others. Furthermore, social discourse around the concept enables students to enhance and refine their conceptualization further than they would individually be capable of.

However, the goal structure of the social activity is important. Roseth et al. (2008) showed that collaborative design can be beneficial for students' peer relationships. They found that cooperative goal structures, when individuals' goals are inextricably linked and reliant on peers' goals, promoted positive peer relationships more than either competitive or individualistic goal structures. These positive peer relationships, then, would further enhance the productivity of the group via enhanced social learning. As a result of these findings, we expected the social and cognitive processes within small group discussion to interact to produce greater learning than can be explained by either factor alone, presuming that both exist and are productive in nature. This is represented by the social dynamics and intellectual collaboration boxes in **Figure 1**.

For collaborative learning to occur effectively, the teacher must create equal opportunities for everyone to engage in constructive discourse, and students must take responsibility for advancing the group's understanding by building on each other's ideas/thinking (Hmelo-Silver and Barrows, 2008). Teacher scaffolding, then, is any teacher move that promotes students' building and awareness of conceptual understanding (Boyd and Markarian, 2011). Effective construction of knowledge involves group effort that requires an intricate balance of turn taking, meaning making, and reflection. However, there is research that shows that it is not easy to maintain this balance and that discussions may move quickly from equitable to inequitable (Esmonde, 2009; Engle et al., 2014; Shah and Lewis, 2019).

In their empirical study, Shah and Lewis (2019) emphasize that equity in collaborative learning must be maintained in two ways: relational (the extent to which students demonstrate respect for their peers) and participatory (fair distribution of participation opportunities and participation itself in collaborative learning). Their research suggests that equity cannot be conceptualized as binary. This suggests that a collaborative process cannot be statically inequitable or equitable but is constantly in a state of flux and contingent on various factors, such as nature of the task, participation structure, relative content knowledge between collaborating students, students' uptake, and teachers' abilities to moderate these collaborations. Another interesting finding brought out by Shah and Lewis's (2019) analysis of social interactions in collaboration shows that the net effect on equity of a single interaction is usually very small and it takes a series of small moves which can eventually amplify inequity over time and negatively influence the collaboration. This is

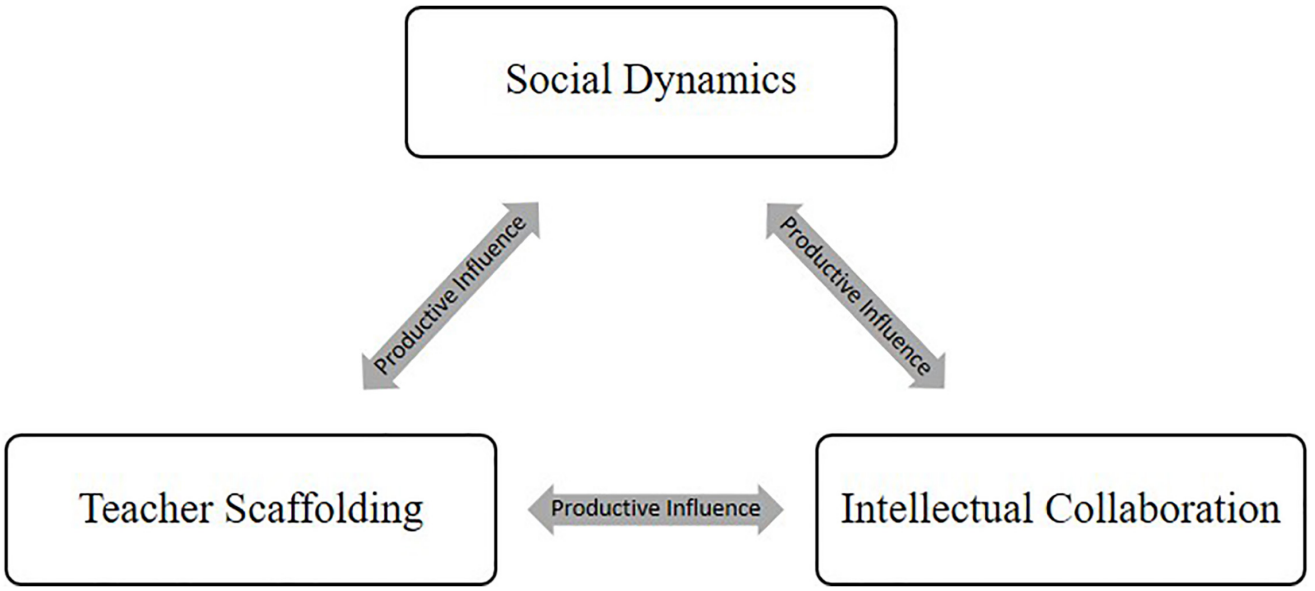

FIGURE 1 | Dynamic system of small group collaboration.

important when analyzing factors that lead to either the success or failure of certain groups; inequity is less likely to appear as obvious statements of disrespect or disregard. Instead, it is more likely to present as many small, imperceptible interactions that accumulate over time.

Boaler (2008) further explored the idea of relational equity by describing three areas in which relational equity is perceptible in classrooms: respect for people's ideas, leading to positive intellectual relations; commitment to the learning of others; and learned methods of communication and support. Boaler's (2008) study was conducted to explore major differences in achievement, behavior, and culture between three urban high schools with similar populations. They wanted to explore why one school's incoming freshmen began with the worst math test scores in the district but graduated with the highest. Their study found that high relational equity was the main difference between these schools and contributed substantially to the students' conceptual learning. These students were devoted to effective, equitable communication to ensure that all collaborators thoroughly learned the material. As a result, students saw learning gains beyond those of otherwise comparable peers at other area schools (Boaler, 2008).

Participatory equity refers to students' access to the conversational floor. Engle et al. (2014) defined participatory equity as "the degree to which the participant can initiate turns when desired, complete them without interruption, and control who else has access to the floor" (p. 8). The conversational floor, then, is "an evolving, socially negotiated space in which one or more particular people is allowed to present conversational contributions" (Engle et al., 2014, p. 253). In the context of small group discussion, participatory equity is achieved when group members have equal access to the conversational floor at will and without interruption.

Considering equity more broadly, Esmonde (2009) analyzed collaborative group work in mathematics classrooms and found that "expert" students tended to dominate certain collaborative activities. Engle et al. (2014) went further and proposed other factors that influence level of control and participation in collaborative discussions. They proposed a theoretical framework with five components to explain why some students tended to have greater influence in group discussions over others. Their findings suggest the following factors influence the level of participation, turn taking, and uptake of students' ideas: (1) the negotiated merit of each participant's contributions (i.e., the merit of student's ideas is negotiated among group members rather than through any objective criteria); each participant's (2) level of intellectual authority, (3) access to the conversational floor, (4) level of spatial privilege (physical placement, body language, etc.) and (5) level of influence in the discussion. They strongly recommended teachers and researchers consider all these factors when evaluating collaborative discussions or designing classroom activities. Overall, ensuring effective collaboration and uptake is not straightforward, and both teachers and students play important roles in balancing these discussions. The teacher can encourage provision of equal opportunities for students and facilitate connections between students' ideas, whereas students need to focus on building knowledge and interacting productively with one another.

Relatively few studies have explored the influence of collaborative discussions on peer interactions and social experiences or the opposite (i.e., the influence of peer interactions on collaborative discussions). Anderson et al. (2001) found that when students participated in discussions with open participation, they tended to influence each other's ways of thinking and phrasing arguments more than when the discussions were teacher-controlled. Lin et al. (under review)

found positive impacts of collaborative discussions on classroom relationships, but casual mechanisms and influencing factors have yet to be explored.

Overall, collaborative discussions have been shown to provide students with opportunities to learn from one another, experience varied methods of communicating, make sense of social experiences, and remain engaged and motivated (Laal and Ghodsi, 2012; Wu et al., 2013). As mentioned above, social norms, group dynamics, and equity can all impact the effectiveness of group functioning. This study will explore if and how peer interactions and group dynamics influence the quality of collaborative small-group discussions in conjunction with cognitive processes. Next, the intellectual subsystem is considered.

Intellectual Collaboration

Idea building, also referred to as knowledge building, refers to collaborative efforts to construct, transform, and refine collective knowledge through discourse (Hmelo-Silver and Barrows, 2008, pp. 48–49). This definition encompasses an infinite range of situations in which discussion helps students build conceptual understanding. However, while a great deal of work has been done on idea building in various collaborative learning settings, much of it has focused on student interactions centering around one "best" or "correct" answer (e.g., Webb, 2000; Sfard and Kieran, 2001; Hmelo-Silver and Barrows, 2008; Ing et al., 2015). The assumption underlying this body of work, much of which has been conducted in math classrooms, is that students should arrive at similar understanding around a common answer, which places students in a helper/helpee or expert/novice relationship in which some students are more, and others less, knowledgeable. This is problematic as, in many dilemmas, equally valid reasoning may result in several equally valid conclusions. This is not to say that all ideas should be assumed equally valid, but rather that there may be no "right" answer but instead be multiple well-justified, well-reasoned conclusions or courses of action based on different values, ideas, or perspectives. In these cases, it is more important that students are able to consider, critique, refine, and respond to ideas around a certain topic, rather than that they are able to clearly and effectively explain their solution to a problem. For this reason, we consider idea building as an index of intellectual collaboration, which we define in this study as a process that includes questioning an idea, proposing a new idea, responding/adding to an existing idea, or raising evidence for or against a proposed idea. This process may take multiple forms, and students are not working toward a particular answer, but are rather working to weigh different perspectives, ideas, and domains of knowledge provided by others and then formulate those into their own conclusion (Cazden, 1988; Killen, 2007; Hitti et al., 2014; Chiasson et al., 2017).

Two processes of idea building/intellectual collaboration have been found to be related to students' learning: provision of detailed explanations, and engagement with others' ideas (Webb et al., 2014; Ing et al., 2015). Vygotsky's (1934) theory emphasizes the importance of group members being willing to listen to each other's ideas and respecting it, in order to support idea building. These positive dynamics would help shape one's own ideas and connect it to others. Warner (2008) suggested that students build knowledge in several ways: explaining, reorganizing, or building on an idea; questioning to show that an idea is valid or invalid; connecting or proposing multiple representations of the idea; applying the same idea in multiple contexts; and raising hypotheticals.

Teacher Scaffolding

Wood et al. (1976) were among the first to apply the term "scaffolding" to education when they explained how adults used varying strategies to help young learners with problem solving. Examples of cognitive scaffolding include slowly increasing the complexity of the problem at hand, encouraging higher level thinking, directing students' attention to critical features, or modeling reasoning or problem solving. Social scaffolding includes managing group dynamics by helping students support one another, ensuring equal contribution/participation by all, and helping students stay on task and maintain direction toward the goal (Belland et al., 2013). Regardless of the focus of these strategies, they consistently encourage students to build awareness of and depth in their conceptual understanding of the topic at hand (Boyd and Markarian, 2011). In the context of classroom discussions, research has identified principled strategies of cognitive scaffolding to enhance the quality of discussion (Chinn et al., 2000; Alexander, 2017; Howe et al., 2019). For example, Webb (2009) found that probing students' explanations to uncover details of their thinking and problem-solving strategies is an effective scaffolding strategy to promote learning. To date, however, there is comparatively less research on the non-academic scaffolding of dialogic discussion or how teachers can support discussions in ways that are beyond prompting for reasoning alone (Puntambekar and Kolodner, 2005; Belland et al., 2008; Belland et al., 2013).

The effectiveness of scaffolding is dependent on various factors such as contingency (appropriateness of support based on student needs/ability), context, timing of fading, and nature of the task (Howe, 2013; van de Pol et al., 2015, 2019). van de Pol et al. (2015) showed that a combination of the above-mentioned factors together influences student outcomes. Their study highlighted that contingency alone does not ensure effectiveness and that the frequency with which the teacher provides support and the nature of the task is also important in determining the effectiveness of teacher scaffolding. van de Pol et al. (2019) used qualitative analyses to further show that students' uptake of contingent support was sometimes hampered by untimely fading of the support and that it was most effective when the support faded gradually. In another study, Howe (2013) showed how the efficacy of teacher scaffolding is influenced by the nature of the task. For instance, in group work that requires abstraction and resolving different opinions, teachers are encouraged to use probing to encourage students to explain their reasoning while providing support as students move toward resolution. Overall, these studies highlighted that teacher scaffolding is influenced by many factors and that the nature of scaffolding can vary depending on the task and classroom context.

Teacher's scaffolding not only influences group processes but can be shaped by group processes, indicating a bidirectional relationship. This means that the teacher both influences and

is influenced by the students she/he is scaffolding. Webb et al. (2006) found that students largely mirrored teachers' modeled discourse and communication patterns. While such research showed how teacher scaffolding can influence student outcomes, Chen and Jiang (2004) demonstrated how the opposite can also play a role, that is, how student group dynamics influenced the way the teacher provides scaffolding. In their study, Group A had better group dynamics and coordination, thereby allowing the teacher to play the role of a 'follower' and focus on providing cognitive structuring. Group B, on the other hand, lacked effective communication and coordination, so the mentor had to play the role of an initiator while increasing focus on social psychological aspects such as sensitivity, encouragement, and humor, rather than focusing on cognitive elements. This highlighted the reciprocal influence between teacher scaffolding and student group processes.

Teacher scaffolding is complex and multifaceted, as teachers both influence and are influenced by social processes in the classroom. While many factors may influence the effectiveness of scaffolding, it has been consistently shown that what is most critical is the level of conceptual consideration the teacher is helping the students interact with. This facilitation might take different forms within different contexts. Based on the literature above, we define ideal scaffolding as the timely use of teacher strategies to temporarily support students' cognitive needs and social needs in a small group discussion (including probing, modeling, direction maintenance, supporting autonomy, frustration control, monitoring group dynamics, etc.) until students gain sufficient skill to engage in a productive discussion (Webb, 2009; Belland et al., 2013).

Collaborative Social Reasoning: A Collaborative, Small-Group Intervention

This case study is situated within a dialogic, social reasoning intervention called Collaborative Social Reasoning (CSR). This approach is informed by the substantial literature on Collaborative Reasoning (Chinn et al., 2001; Reznitskaya et al., 2009). The fundamental assumption underlying the approach is that knowledge is socially constructed through meaningful and authentic interactions (Vygotsky, 1934). The context of CSR was selected for several reasons: It has been shown to be effective at improving students' social reasoning (Lin et al., under review); it allows for in-depth analysis of students and teachers engaging in collaborative, democratic discussions; and it is based on ambiguous social-moral dilemmas for which there is no single or simple answer. This enables students and teachers to engage in reasoned argumentation about social issues in genuine, democratic ways, thereby providing ample opportunity for qualitative analysis of the discussions (Lin et al., under review).

Centered specifically on complex social-moral issues, CSR adopts four theoretical and research-driven design principles aiming at creating critical dialog with purposeful and meaningful collaboration (Lin et al., under review): (1) collaborative argumentation, (2) positive social norms, or baseline expectations of respectful and productive interaction, (3) teacher facilitation, and (4) multi-faceted literary texts (Lin et al., under review). The first, collaborative argumentation (Chinn and Clark, 2013), focuses on the goal of building understanding with each other rather than convincing others of a particular viewpoint. Positive social norms included turn-taking, respect for all ideas and opinions, sharing of the conversational floor equitably (Engle et al., 2014), and open participation that enable students to share ideas freely without worrying about teacher evaluation (Au and Mason, 1981).

The purpose of teacher facilitation is to ensure that (1) all students in the group comprehend discussion texts and questions, (2) discussions do not remain at surface levels (e.g., checking facts) but involve higher-level thinking (e.g., critical thinking, metacognition) and (3) group dynamics are effective at supporting high-level cognition and collaboration. In addition, teachers play an important role as a facilitator, who gradually fade their facilitation as students become more independent thinkers.

The use of multi-faceted text is the final design principle of CSR. Fictional stories were selected, excerpted, and adapted in order to facilitate collaborative argumentation with peers (Walton, 1998); stimulate social perspective taking (Bakhtin, 1981); and help students connect thought and action. To achieve these ends, storylines were linked to current social or political issues in the students' everyday life (e.g., fitting into a social group at school, experiences of racism). The stories were designed to provoke students' knowledge and experiences about social issues in order to promote collaborative and equitable discussions.

Research Questions

This study applies a case study approach, in which in-depth analysis is completed to holistically explore small group processes as a dynamic social system, to uncover the ways in which teachers carry out these responsibilities in collaborative small group discussions, while also relating these practices to student learning. The present study aims to move beyond the existing work by examining not only the scaffolding that exists, but also how teacher scaffolding interacts with the group dynamics and intellectual collaboration within a discussion-based small-group intervention.

The present study aims to explore the interactions between cognitive, social, and scaffolding processes within small group discussions. This will enable a much fuller understanding of how teachers serve as holistic facilitators in the discussion, rather than simply as enhancers of cognition. Our aim is to explore the following research questions:

- What are the major differences in patterns of social dynamics and intellectual collaboration throughout the course of six CSR discussions between a high-performing (demonstrates high-level, collaborative dialogic, and productive social dynamics) and a low-performing group (demonstrates lack of high-level, collaborative dialogic and productive social dynamics)?
- How are the patterns of social dynamics and intellectual collaboration related to the teacher's scaffolding strategies?

MATERIALS AND METHODS

Source of Data

The data were drawn from a larger project in two urban, Midwestern public schools in the United States. The purpose of the larger project was to develop a small-group discussion approach called Collaborative Social Reasoning (CSR), and to examine its impacts on students' interpersonal competencies and social reasoning. Participating teachers engaged in a 2-day workshop to learn about CSR principles and strategies. Scaffolding strategies were suggested to the teachers, and they were encouraged to give students control of the discussion as much as possible. As a result, teachers were exposed to similar scaffolding strategies but were allowed to implement them in different ways and to different extents.

The larger project contained six fifth-grade classrooms in the treatment condition and six classrooms in two control-comparison conditions. Four small groups were formed in each of the six treatment classrooms, totaling 24 small groups and a total of 144 discussions. The research team transcribed discussions two, four, and six from all 24 small groups (mean age = 10.94 years, SD = 0.41). As a result, analyses that required transcripts were completed based on these weeks' discussions. However, all videos associated with the study cases were analyzed in depth to uncover differences in small-group discussion processes between the cases. All students were assigned a pseudonym, which are used through the remainder of the paper. Students and teacher were told about the purpose of the larger project: to understand how CSR works and affects students' learning in an authentic classroom setting. Pseudonyms were also used to represent student and teacher identities in conversations and correspondence about the project. The data were also stored using pseudonyms and/or student ID numbers.

Case Selection

For the purpose of this comparative case study, we selected one high-performing and one low-performing group based on the following procedure and criteria. First, two expert researchers independently reviewed videos of the final (week 6) discussion for all 24 small groups and nominated those that were particularly productive or struggling. Criteria evaluated were number of perspectives considered, nature of social interactions, and depth of social-moral reasoning. Groups that considered many perspectives, had positive social interactions, and showed great depth in their reasoning were nominated as high achieving. Groups in which this was most notably absent were nominated as low performing. There was more than 75% overlap in the groups noted by the two researchers. Groups that were nominated by both researchers were presented to the research team via video clips of the week 6 discussion. The research team was shown the clips without indication of prior evaluation and asked to rate the group's success in the discussion. Of the groups unanimously agreed to be high- or low-performing, two of the most contrasting groups came from the same teacher in the same school. These two small groups were chosen for the study because they were unanimously agreed to be high- or low-performing and they allowed us to examine teacher's roles under the same school and cultural contexts, reducing extraneous influencing factors.

For the intervention, groups were designed to be heterogeneous to best represent the classroom composition. We used pretest data collected from the larger project to identify shy, aggressive, popular, and rejected students. This information, along with students' academic level, race, and gender, were used to create heterogeneous groups within each classroom. For more information on these scales and the group creation procedure, please see Lin et al. (under review) and Nagpal et al. (2020). In the struggling group, there were two females and four males. Both females and one male were White and the other three students were Black. In the high-performing group, there were three males and four females. Two males were Hispanic and the other was Black. All the females were White. The teacher was a White female in her first year of teaching.

To establish that the two groups of students were comparable at the outset of the intervention, we compared three of the major pre-test measures drawn from the larger project: (1) peer acceptance, defined as the extent to which peers like to work and play with each student, was assessed using a peer nomination approach in which students rated each of their classmates according to how much they liked to play or work with that peer on a scale of 1 (not at all) to 10 (very much) (Parker and Asher, 1993); (2) social reasoning, defined as knowledge about the complex social world (Turiel, 1983), was assessed by an individual essay task, which was coded based on a coding scheme designed to examine the number of perspectives students considered in the essay (see Kraatz et al., 2019 for more details about the coding scheme; inter-rater reliability $\alpha = 0.88$); (3) academic achievement, which was based on students' 4th grade state standardized language arts scores. Independent samples t-tests were conducted to compare the groups' average peer acceptance, social reasoning, and academic performance. There were no significant differences in pre-test peer acceptance [$M = 4.46$, $SD = 1.18$; $t(10) = -1.46$, $p = 0.18$], social reasoning [$M = 0.82$, $SD = 1.33$; $t(9) = 0.33$, $p = 0.58$], or 4th grade standardized test score [$M = 693$, $SD = 28.67$; $t(9) = 0.59$, $p = 0.57$]. Over the course of the intervention, the high-performing group significantly increased their social reasoning score [Time 1 $M = 0.86$, $SD = 1.57$; Time 2 $M = 2.71$, $SD = 1.25$; $t(6) = -2.64$, $p = 0.04$], while the low-performing group did not [Time 1 $M = 0.08$, $SD = 0.96$; Time 2 $M = 0.50$, $SD = 0.58$; $t(3) = 1$, $p = 0.39$]. The average length of discussions in both groups was 24 min, indicating similar time spent in the small groups over the 6 weeks.

CSR Procedure

The CSR intervention occurs over 6 weeks, and students read and discuss one story related to social exclusion each week. Each discussion focuses around a "big question," which features an ambiguous social moral dilemma. A researcher was present in each classroom during all CSR discussions to monitor the fidelity of the implementation. Prior to the intervention, a norm-setting session lasting about an hour was conducted by a researcher and the teacher within each classroom to elaborate expectations for critical, collaborative, and respectful dialog and

give students a chance to set norms for their own discussions. Teachers were trained to facilitate and encourage CSR norms while scaffolding students' argumentation. However, it was emphasized that the discussion belonged to the students; they controlled the ideas, flow, and turn-taking. Furthermore, in order to promote equity, teachers were encouraged to help students problematize content by encouraging questioning, challenging, and other intellectual contributions; share authority by making students genuine participants in classroom discourse; ensure accountability to others' and intellectual norms; and provide access to needed resources (Cornelius and Herrenkohl, 2004). Students were encouraged to consider all possible viewpoints before arriving at their own conclusion, with no need for group consensus. The discussion then ended with a teacher-led debriefing session in which students reflected on their individual and group performance with respect to their goals. The group then discussed possible goals for their next discussion.

Group Comparison Approaches

Once the groups were selected, the first and second authors engaged in in-depth analysis of the six discussion videos for each group. Following Creswell and Poth's (2018) data analysis procedure, we first took detailed notes and completed memoing of the data. Weekly meetings were held in order to compare notes and consolidate areas of interest. We then examined the notes, memos, and codes from the twelve total discussions and compared these to the three major themes previously identified in the literature. Within each of the three major categories, we used pattern matching to examine the ways in which the teacher interacts with both groups of students and then compared the similarities and differences in these interactions (Yin, 1994). We found several areas of difference within the theoretically defined categories: within social dynamics, we found differences in social equity, which can further be broken into participatory and relational equity. Idea building and resulting collaborative arguments differed within the "intellectual collaboration" umbrella, and major differences in teacher scaffolding were noted for both social and cognitive scaffolding moves. The results of the memoing were used to conduct more detailed literature review to guide our in-depth analysis. The qualitative and quantitative analyses were used together in order to triangulate findings and increase validity (Atkins and Wallace, 2015; Merriam and Tisdell, 2016).

Social Dynamics

Two aspects of social dynamics were observed to differ between the high- and low-performing groups: relational equity and participatory equity (Shah and Lewis, 2019). Relational equity refers to respect for others' differences, ideas, perspectives, and actions (Boaler, 2008). One researcher notated all instances in both groups in which students demonstrated consideration of others' learning, ideas, and perspectives. These occurrences could be explicit statements such as "oh, I never thought of it like that!" or more subtle, seen through engagement in intellectual conversation in which students considered the ideas of others in relation to their own ideas, demonstrating distribution of power within the group (Cornelius and Herrenkohl, 2004). Each transcript was examined at the turn-of-talk level–each student turn of talk was examined and if it included that student showing relational equity, it was coded as such. One researcher coded all the transcripts, and another researcher independently reviewed the entire coding for reliability. There was 90% agreement between the researchers and any disagreements were discussed until 100% agreement was reached.

In terms of participatory equity, we examined the extent to which students accessed, or were unable to access, the conversational floor (Engle et al., 2014) across the six discussions. This was completed by coding all interruptions that occurred within each discussion. Instances in which students uttered exclamations or other phrases that did not disrupt the flow of the conversation (interjections) were not counted because there was not a genuine conflict for the conversational floor. Examples of interjections include simple agreement (e.g., 'yeah,' 'uh-hm') or other short, non-essential turns (e.g., 'That's weird'). Each interruption was coded during video analysis; videos were initially coded in order to examine the flow of the conversation, which is difficult to do from a transcript. Approximately 25% of all interruption codes were verified by another researcher for accuracy. There was 100% agreement between the two researchers.

Each time two or more students entered the conversation in a way that created a conflict for the floor, an interruption was coded. This could be one student interrupting another, two students initiating a turn of talk at the same time, or students talking over one another. We coded disruptions to the conversation with the assumption that, unless the conversation is disrupted, students are able to gain the floor when they choose to. We did not assume that all students desire to speak with the same frequency, so we did not consider the number of turns each student takes as a measure of equity. During the video analysis, there was no evidence that students wanted but were unable to gain the floor except where interruptions occurred (no students showed signs of wanting but being unable to speak), so this represents a reasonable estimation of equitable access to the floor. Each interruption was further coded as amicable or competitive.

Amicable conflicts occurred in two forms. First, two students may begin speaking simultaneously and one then cedes the floor to the other. This indicates that the students were aware of peers' speech and saw value in releasing the floor even though this meant their own idea would not be heard immediately. Second, amicable conflicts occurred when one student interrupted another, realized their interruption, and ceased speaking. This was often accompanied with a "sorry" or a nod to the person being interrupted. This shows students' recognition of their peers' speech and the equitable norms that require respectful turn-taking. All other interruptions that did not involve the teacher were coded as competitive and tended to take the form of one student interrupting another and both trying to be heard at the expense of the other. Sometimes, the original speaker abruptly ended their attempt to share rather than trying to compete for the floor. Looking at amicable conflicts in addition to total conflicts enables deeper examination of social dynamics;

even highly-functioning conversations may have instances of simultaneous speech or accidental interruptions, especially if participants are eager to share, so it can be beneficial to separate these interruptions from those that restrict access to the floor for quieter group members.

Instances of student inviting or encouraging one another to share were also coded as participatory equity. This was done in tandem with the relational equity codes. All codes were completed by the first author and reviewed by the second. There was greater than 90% agreement between researchers. Discrepancies were discussed until 100% agreement was reached.

After coding was completed, videos were again reviewed and notated with observations and explanations that the codes alone could not encapsulate. We used explanation building methods to examine reasons for the findings from the coding. Explanation building methods are a procedure in which various possible explanations are considered iteratively to build an explanation within a case study (Yin, 1994). We completed this procedure to examine the possible impacts that various teacher behaviors had on the functioning of the small groups.

Intellectual Collaboration

To examine intellectual collaboration, we first considered how often students were building upon each other's ideas, versus simply sharing without co-construction. In order to examine this, all student turns of talk were analyzed and those that questioned another's idea in a constructive way, built upon an idea, or provided a different viewpoint or piece of evidence on an idea were counted. We call this code "idea-building." Simple agreement or disagreement, as well as agreement or disagreement that simply stated an alternate idea without relating that idea to the previous were not counted because they demonstrated little intellectual collaboration. This coding was intended to show how students' ideas related to one another's. All codes were completed by the first researcher and reviewed by the second author to ensure consistency and validity. Initial agreement was approximately 90% and any disagreement was discussed until 100% agreement was reached.

Arguments, or claims made about the topics of conversation, made by individual group members were also analyzed. This was done by summarizing all arguments into tables by group member. In order to summarize the trends in the two groups, the number of ideas professed by each group member was counted. For this analysis, we did not conduct a quality evaluation of whether the idea professed was reasonable or made sense; instead, we were simply looking at how many ideas were put forth by each group member during the discussion. Then, the tables were examined to identify trends in reasoning in both groups. For instance, did students consider multiple possible viewpoints in the discussion or simply repeat arguments for one or two? Were they able to support their ideas with evidence? These trends were examined in depth for discussions two and six to compare the starting and ending points in the group's intellectual collaboration. Week 1 was not included because we assumed students needed time to adjust to the novel discussion format. All points made in the discussions were summarized by one researcher and the first and second author analyzed them collaboratively.

Teacher Scaffolding

Teacher's talk was analyzed through creation of tables which placed the teacher's speech in each group side by side for comparison. Because teacher's turns of talk were relatively few in each discussion, we were able to examine all teacher turns of talk in each group to identify similarities and differences. This made differences in teacher interactions with each group apparent and similarities and differences salient. Teacher's turns of talk (excluding interjections and acknowledgments) were categorized by function. Nine different types of teacher cognitive scaffolding emerged: asking open questions, redirection to the Big Question, modeling reasoning, playing devil's advocate, presenting hypotheticals, prompting individual students to speak, asking clarifying questions, and providing low-level support (e.g., vocabulary, giving instructions). All teacher turns of talk were analyzed collaboratively by the first and second authors, who discussed the key features and differences until 100% agreement was reached. The videos were then revisited in order to examine the ways in which students reacted to the teacher's input. We particularly focused on the ways in which the teacher interacted with student ideas and how she built upon them or asked students to build upon her ideas.

To examine the role of the teacher's social scaffolding within these small groups, we also coded each instance of the teacher granting the floor to a particular student (participatory equity) or engaging in promoting relational equity (promotion of value for and validity of varied viewpoints). Because the teacher holds a unique position in which she can prioritize the contributions of some students over others, participatory inequity was also coded, which represents instances in which the teacher puts the contributions of one student or her own ideas above those of another student. This coding was completed on the transcripts for discussions two, four, and six. All transcripts were coded by the first author and an independent researcher coded 33% percent to ensure reliability. Cronbach's alphas were 0.85, 0.83, and 0.94 for relational equity, participatory equity, and participatory inequity, respectively. Examples of these codes can be found in **Table 1**. After coding, videos and transcripts were reviewed in order to identify the ways in which teacher equity moves function within the group. Areas of focus were the group peer dynamics and the interactions and dynamics of how the students shared ideas in relation to teacher talk.

RESULTS

Social Dynamics

The raw numbers of social dynamics codes are presented in **Table 2**. The low-performing group had a discussion with no positive social dynamics in week 4 and showed general decrease in all codes from week 2 to week 6. The high performing group, on the other hand, showed an opposite trend, with increases in all fields from week 2 to week 4 and again in most fields from week 4 to week 6. Discussion lengths are provided to give context to the raw scores. Since all discussions were not equal in length, it is probable that shorter discussions may have fewer codes.

TABLE 1 | Teacher equity codes.

Relational equity examples (demonstrate value for and consideration of others' perspectives)	Participatory equity examples (increase equitable access to the conversational floor)	Participatory inequity examples (decrease equitable access to the conversational floor)
"Oh, that's a good thought!" Jordan: I change my answer to yes. Teacher: Okay, I'm just saying that some can say. I'm not saying that it's the right answer. Right? [1] [1] [to Jordan] Why do you agree?	"What are you thinking over there, Cameron?" Jordan: I change my answer to yes. Teacher: Okay, I'm just saying that some can say. I'm not saying that it's the right answer. Right? [1] [1] [to Jordan] Why do you agree?	Teacher: Why do you think that? Peyton: [Be]Cause emotional harm.// T: Use this is to help you answer the big question should she forgive her? (Floor released to Ali) Spencer: My viewpoint is starting// Teacher: I didn't mean to cut you off I'm just trying to get you to think from the other perspective. Could you ignore that? Because the sixties were a rough time to be down south. They would kill you, beat you, that picture of the thing by the fire hydrant, blowing water at them. Elliot: Yeah it even said here in page seven that like that one of their um uncles and stuff said that they're gonna-if you go down south they're going to lynch you which means that they're basically going to kill you or hang you. Spencer: Um// T: Tricky, isn't it?

TABLE 2 | Counts of student social dynamics codes.

	Low group			High group		
Week	**2**	**4**	**6**	**2**	**4**	**6**
Discussion length (minutes)	29	17	28	21	25	32
Relational equity (count)	3	0	2	3	6	16
Participatory equity (count)	11	0	6	1	4	1

TABLE 3 | Conflicts for the floor.

	Low group			High group		
Week	**2**	**4**	**6**	**2**	**4**	**6**
Discussion length (minutes)	29	17	28	21	25	32
Total conflicts	60	16	15	6	8	6
Proportion of amicable conflicts	0.20	0.31	0	0.83	0.63	0.67

However, **Table 2** indicates that length alone does not explain the differences between groups.

The low-performing group generated more conflicts for the floor than the high-performing group over time (**Table 3**). Additionally, the proportion of amicable conflicts was lower in the low-performing than the high-performing group. This indicates that, in addition to fewer overall conflicts in the high-performing group, they were also able to attend to peer's speech and adjust their own accordingly. It may seem that the low-performing group improved their interactions over time, as the number of conflicts for the floor peaks early in the intervention. However, this does not seem to be the case; instead, the conflicts were reduced as students became less participatory in the discussion. This was observed during the video analysis. Students in the low-performing group showed signs of low engagement including staring into space, increased fidgeting, or even putting their head on the table. The conversational floor was more open, but not because students were improving at sharing it.

Further considering these conflicts for the floor, in the low-performing group conflicts tended not to be directly related to the content of talk; students were talking over one another in a competitive way (trying to have their own idea heard) rather than in a collaborative way (building on one another's ideas). As shown in the most conflict-dense segments of each group's week 4 discussion in the **Appendix**, there was a lack of relational equity in the low-performing group, as students were prioritizing their own ideas at the expense of their classmates' and were not demonstrating respect for the contributions of their peers. Furthermore, researchers' memos of video analysis documented that in the low-performing group there was, at times, clear animosity between group members, in facial expressions (making a face when someone talked) or body language (turning away from a group member to exclude them from the discussion).

The social dynamics in this group were not always negative; students in this group did encourage one another to speak, ask one another questions, and intentionally attempt to include those group members that participated less frequently, as can be seen in the conflicts for the floor data above. However, these positive social interactions decreased over time, and individual students seemed more and more frustrated with the discussion process.

In the high-performing group, the students contributed more equitably. There were still students who participated more often than others, but the disparity was less severe, and the teacher did not seem to feel it necessary to intervene in participation. In the early discussions, two students served as leaders, showing imbalance of intellectual authority (Engle et al., 2014). However, this is not apparent in the later discussions, with the majority of ideas being addressed to the group as whole and no discernible differences in intellectual authority. In this group, when conflicts for the floor occurred, the students seemed aware and apologized for interruptions or yielded the floor to a peer. There is clear respect for the input and ideas of others, without apparent imbalance of power, showing high levels of relational equity. An example of the respectful exchanges that were the norm in this group is below. In this excerpt from the high-performing group's week 2 discussion, we see an example of an amicable conflict, in which one student, Cameron, interrupts another, Spencer. Cameron then realizes the interruption, yields the floor back to Spencer, and waits until Spencer finished speaking to

share her own point. This awareness of peer's access to the floor seemed to increase collaboration within the group and promote increasing equity.

Spencer: Oh. But like- they're two different teams and like most likely they'll end up on the field together and that's why it happened. I think that- [1] [1] Um, I think that um, Aki- I think that they could have prevented it from happening if like- if- I forget the girl that like she wasn't going to tell on Shirley for being racist. [looks in text] Um I think her name is. . . I forget her name, but um she could have told the coach instead of making their team look better, she could have told the coach of what Shirley has been doing. To make sure it didn't happen.

Cameron: [1] I. . . go ahead. [1]

Cameron: I think that Aki's friends could have prevented this by not to happen because like they knew that Shirley was running in the baseline and then they would know that Aki could have gotten her and said like "watch out" and yeah.

Consistent with the result of participatory equity coding, we observed from the discussion videos that even though some students spoke less often than others, they were easily able to gain the floor when they chose to participate, and their body language indicated engagement in the conversation. Furthermore, most conflicts for the floor occurred in the midst of collaboration and are in the pursuit of idea building. Students in this group did not show visible signs of frustration with group dynamics and seemed to consider their collaboration as a source of pride, as seen by comments in their debriefing sessions. The excerpt below was taken from a debriefing after week six's discussion, which shows that students reported experiencing growth in their own abilities.

Jaymie: We started to argue more.

Spencer: Yeah, how we have our different opinions, and our different sides of the story.

Harper: We went back in the text and looked for things that we could use to try to say.

Teacher: Okay, so this question goes along with what we are talking about. So, remember, at the beginning of this group, we made class goals for all of us in the class? Which do you think we've improved the most? Like, you've seen the most growth? In which of those goals up there?

Harper: Arguing more. Everyone participates. We used the text to support our answers, to support our opinion.

Cameron: And then, we also that we explain our ideas clearly, and we didn't mumble what we have to say.

Elliot: We listen to both sides.

Spencer: Yeah, we stayed on task.

Cameron: And we respected each other.

. . . . . .

Spencer: I learned to give lots of details, and lots of reasons on my opinion, and my point of view on the story.

Harper: I learned to respect what everyone had to say about their opinion.

TABLE 4 | Idea building.

	Low group			High group		
Week	**2**	**4**	**6**	**2**	**4**	**6**
Disc. length (minutes)	29	17	28	21	25	32
Idea building (count)	40	0	8	13	32	37
Idea building per minute	1.38	0	0.29	0.62	1.28	1.16

TABLE 5 | Number of arguments by group member.

Group	Student	Week 2	Week 6
Low	Jordan	23	20
	Ryan	14	16
	Taylor	2	3
	Peyton	30	11
	Ali	33	Absent
High	Cameron	7	14
	Elliot	4	36
	Harper	6	28
	Jaymie	4	29
	Parker	7	20
	Spencer	5	Absent

Intellectual Collaboration

In considering the idea building within the two groups, we observed a decrease over time in the low-performing group and an increase in the high-performing group. We observed students in the high-performing group increasing the collaborative nature of their contributions. The opposite happens in the low group. This can be seen in **Table 4**.

The number of arguments generated by each group member are presented in **Table 5**. One high group student was omitted from the table because they were absent in both week 2 and week 6.

Discourse Data Linking Social Dynamics and Intellectual Collaboration

In this section, we present qualitative evidence from CSR discussions demonstrating how the high- and low-performing groups changed in their social dynamics and intellectual collaboration over time. In the earlier discussions, students in the low-performing group held different initial positions to the Big Question and were able to voice their opinion and explain why they held it. This can be seen in the following excerpt from week 2, in which students are expressing reasons for their differing opinions on whether one character (Aki) should forgive another character (Shirley). Shirley hurt Aki because Aki is of Japanese heritage and Shirley's father was killed by Japanese soldiers at Pearl Harbor. These students from the low-performing group discuss the characters' emotion and its connection to the experiences of each, their own ideas about right and wrong, the role of "difference" in social interactions, characters' rights, and how these factors were situated within the social-historical context. We do see an amicable conflict in this excerpt, as we see Ali yielding the floor to Jordan. However, this did not become

the norm in this group, as is evident in **Table 3**'s data on conflicts for the floor.

Jordan: Shirley probably was just upset that her dad died, and. . . And she just was out of control, and she just hit the softball toward Aki.

Ali: I disagree with you, because I think that Shirley shouldn't have taken it out on someone else. I know she was probably upset, but it's still not right to take her anger out on someone else.

Ryan: Just because they're different, doesn't mean. . . She wasn't the cause of what all happened. She didn't plan for all of it to happen, and it's not her fault she was born Japanese, and just because she's that type of person. . . A Japanese person, doesn't mean that she really has the right to hurt her.

Peyton: Yeah, yeah, besides, war ended already. So I understand her dad died, but she needs to. . . I think. . . He's passed away. You need to get over it.

Taylor: Maybe she's just trying to avenge her father.

Peyton: Yeah, I know, but the Japanese and Americans signed a peace treaty. So why is there a reason that Shirley hit Aki? Why is there a reason that she hit her? [1] [1] I know her dad died, but everybody passes away sometime, and she needs to get over it.

Jordan: [1] I think the reason that- [1]

Ali: I- [to Jordan] You can go.

Jordan: I think that she just was too just frustrated that her dad died, and she only had her mom, and she just didn't plan to hit Aki, but she just was thinking that. [1] [1] That she was just thinking of her dad, and she just got out of control, and she hit Aki, and. . .

The high-performing group, on the other hand, started off with less intellectual collaboration between the group members. There were frequent pauses and students were not able to generate ideas as fluently as in the low-performing group, as seen in the week 2 excerpt below. These students discuss the idea of blame, characters' desires and emotions, and story occurrences. However, the nuance, integration of ideas, and constructive flow that was present in the previous excerpt is not apparent here.

Parker: Well I think that um, Aki should not forgive Shirley because it's not really her fault what happened, and she basically like blamed her for everything and it's not her fault. She didn't do anything.

Spencer: Well yeah I understand but I kind of disagree with your answer because um that Shirley like she may have not well like they're- what- I forget what grade they're in. . .

Cameron: Sixth.

Harper: They're probably just//

Spencer: So like very young. Well they like- they may not have known what they were doing and why- so yeah.

Jaymie: I agree with Parker because Shirley keep on like being mean to Aki.

Cameron: I think that Shir- that Aki shouldn't forgive Shirley because like if you like hurt somebody like Shirley did, then you probably don't want to forgive them after they hurt you.

Harper: Umm. . . I think that Aki should forgive Shirley um because they're probably just both angry at each other and they probably just want to um. . . just get all of their anger out or something.

Spencer: Well Aki isn't like mad at Shirley she just like- she really don't care about it. Because I bet that probably happened to her like multiple times.

However, over time, we observed less intellectual collaboration in the low-performing group. The majority of different perspectives were raised by two students, Jordan and Ryan, and, as the teacher focused her attention on the other group members, these ideas were often ignored. This led to little change in the contributions from Ryan and Jordan over time and less intellectual collaboration present in the group overall. Ryan and Jordan's ideas were not picked up by others, who tended to focus on their own opinions. This is seen in particular in Jordan and Peyton's comments in the following excerpt from week 6. The story for this week focused on a character (Dovey) whose brother (Amos) accidentally killed someone (Parnell) in preventing Parnell from further hurting Dovey, who was unconscious. The question is regarding whether Dovey should tell what she knows or allow the blame to be placed on another deceased character in order to protect her brother. Peyton is discussing the unsavory nature of Parnell, while Jordan is commenting on the unfairness in the story. However, these students are not able to connect their parallel ideas into a coherent overarching conclusion.

Jordan: If you keep it a secret, then the dude that was there when he has to go to jail for no reason, [1] [1] when he didn't do it. And they think that he killed Parnell,// but he didn't.

Ryan: [1] Well. . . [1]

Peyton: //Hey Jordan, Hey Jordan. Um. . . well two dogs couldn't do it because they wouldn't be able to lift something that. . . they wouldn't be able to lift that?

Jordan: (Get) Parnell. I get that Amos had wanted to protect// himself.

Peyton: //He wanted- Yeah, he had his reasons. Maybe it was because Parnell was a big jerk with a big ego. [1] [1] Or maybe because he was trying to protect his sisters.

Jordan: [1] But like. . . [1]

Jordan: But it doesn't mean to take the life from [1] someone. [1] That's a little (mistaken).

Peyton: [1] I know. [1]

Ryan: But like [1] Parnell [1] was drinking and he was trying to hurt- well he did hurt Dovie just because her older sister did not want to marry him.

Peyton: [1] I understand. [1]

Peyton: Beca- Well, here's what she said, "I wouldn't want to marry you, even if you were the last man on earth."

Jordan: And I get that he hurt those and. . . [1] [1] And when he took the dog, 'cause he was mad about that; but he didn't need to get his life taken out of his life.

Would you want- If you'd been a terrible snake like him, would you want someone to kill you?

The high-performing group, on the other hand, actively engaged with one another's ideas and considered their ability to do so both a source of group focus and pride as shown in the debriefing comments. Their growth in social dynamics and intellectual collaboration can also be seen in the following excerpt from week 6. Students in this excerpt collaboratively weighed the bad choices made by Parnell and the other characters' need for self-defense with the severity of Parnell losing his life.

Elliot: Yeah, I agree with Parker because... um like, sometimes you need somebody to protect you if you can't do it.
Harper: And um... Like, if I saw a man did this (stuff) to my sister, I would try to protect my sister. So, uh, yeah. [nods]
Teacher: But he killed someone.
Jaymie: Um, but he killed someone to stood up for her sister because her sister showed, um... His sister showed him how to read, and read lips?
Parker: Well, he killed someone to, basically... It's not because he didn't... It might have been be he also didn't LIKE him, but I mean... He still tried to attack um...
Jaymie: Dovey.
Parker: Dovey, and that's basically self-defense for Dovey.
Jaymie: (But)//
Harper: //And Parnell had the dog? And Dovey was just trying to get them back, and she couldn't. So, Amos was probably helping Dovey, and Huck or Tom, whatever dog he had, because he probably loved both of them a lot, and he didn't want to see neither one of them die, or anything.
Jaymie: I think Parnell kind of deserves it because he was being mean to Amos and Dovey.
Elliot: I// agree with Jaymie.
Parker: //And he... And he like, he basically, like basically, tried to hurt Dovey, and that was wrong.
Jaymie: Even though that Dovey didn't do anything.
Harper: But also, I agree with (all of these three). I don't think that he should have lost his life. I don't think he should have died though.

This group worked together to consider as many ideas as possible, to challenge each other, and to build on each other's ideas. Because of this, the students in the high-performing group increased their idea building and their contributions over time. This indicates that students were not only voicing more ideas, but were able to relate those ideas to one another to build increasingly complex social arguments. The qualitative evidence also supports the results of transcript and video coding. While the coding results showed that the high-performing group engaged in more equitable social interaction and greater numbers of idea building over time, the qualitative evidence supports that the social interactions may have driven the cognitive changes. In the low-performing group, on the other hand, we see social interactions apparently driving a decrease in cognitive engagement and intellectual collaboration. These findings are also evident in the conflict-dense discussion 4 segments presented in the **Appendix**.

The Role of Teacher Scaffolding

As mentioned previously, the high-performing group began with positive social dynamics but lower levels of social reasoning compared to the low-performing group. The teacher was quick to notice that the high-performing group needed encouragement to consider multiple perspectives and engage in higher level thinking. Thus, she started prompting them to consider alternative viewpoints, while also modeling perspective taking and argumentation. In the low-performing group, the teacher seemed pleased with the advanced social reasoning by a few students but realized that this group had other students who were quiet and disengaged. She then began focusing her attention on these disengaged students by encouraging them to speak repeatedly. This, however, led her to neglect the students who participated fully from the beginning. She did not intervene in turn-taking or other social relations and decreased her cognitive scaffolding as she focused more on equal turns of talk. Even when students looked to her for social support, she did not intervene in the social aspects of the discussion outside of simple participation. In this way, we see her decreasing the authority she gives to students in the discussion as she increasingly controls access to the conversational floor.

The high-performing group members were consistently cognizant of the norms of having an open discussion, maintaining mutual respect, and ensuring equitable participation. Therefore, the teacher seemed to put all her attention on scaffolding the students' intellectual collaboration. She prompted them to provide reasons for their opinions while encouraging them to make connections to their life and to the texts. She demonstrated and modeled perspective taking by explaining the thoughts and feelings of the characters in the story and what she would have done in their position. She treated students' ideas as equal to her own and took little control over the discussion mechanics, further increasing the already-high relational equity in this group. On the other hand, in the low-performing group the teacher decreased relational equity over the weeks by controlling access to the floor, dominating the power within the group, and not responding to students' help-seeking. **Table 6** shows the teacher's social scaffolding in both groups. Examples can be seen in the transcript excerpts below, and **Table 7** outlines all instances the teacher's intervention in both groups, excepting interjections and demonstrations of understanding (e.g., "oh, ok").

TABLE 6 | Counts of social scaffolding codes.

	Low group			High group		
Week	**2**	**4**	**6**	**2**	**4**	**6**
Relational equity	2	2	5	1	1	7
Participatory equity	1	3	2	0	1	1
Participatory inequity	3	2	0	0	2	1

TABLE 7 | Teacher's cognitive scaffolding counts.

	Low group		High group	
Week	**2**	**6**	**2**	**6**
Open questions	3	4	3	8
Redirection to the big question	3	0	0	1
Modeling reasoning	0	2	3	5
Playing devil's advocate	0	1	0	5
Presenting hypotheticals	0	0	0	3
Prompting individuals	1	8	0	1
Clarifying questions	1	3	1	1
Low-level support (i.e., vocabulary, giving instructions)	0	4	0	0
Praise	0	3	1	3

Overall, while the teacher's initial scaffolding in both groups of students was quite similar, by the end she served a drastically different role in each group. In the low-performing group, the teacher served more and more as an authority, often posing a question and having each student respond to it directly. She did not challenge students when ideas did not align with previous comments or encourage them to take one another's ideas into account in their future considerations. This contributed to the lack of collaboration and relational equity in the low-performing group, as, at times, the teacher actively discouraged collaboration by ignoring student comments to ask a different student to respond to an earlier question she had posed. The following is an example of this from week 6.

Teacher: 'Cause protecting your family's worth lying for?
Jordan: [nods] Mhm [affirmative].
Ryan: Um, yeah.
Teacher: You think it is?
Ryan: I think it is.
Teacher: Do you think it is, Peyton? It's worth lying to protect your family? Yes or no, and why?

In the high-performing group, by contrast, the teacher posed ideas and asked students to consider them without putting her contribution on a higher level than the students'. She built questions and ideas from students' and seemed genuinely interested in students' input. In this way, she indirectly encouraged collaboration and built relational equity in the high-performing group. An example is seen in the excerpt from week 6 below.

Elliot: I agree, also, because they already hated Amos enough, and probably would in jail, they would hated him more.
All: [pause × 7 s]
Teacher: But now, everyone hates the other guy.
Elliot: Wait, the guy who. . . the guy. . .
Harper: That got killed.
Teacher: Yeah, he's being blamed.
Elliot: Ohhhh. . .
Teacher: How do you choose whose life is more important?

DISCUSSION

This comparative case study presents how two groups of students who were seemingly similar in their initial social reasoning, academic achievement, and peer acceptance engaged in an intervention called Collaborative Social Reasoning (CSR) and ended up with contrasting levels of social reasoning at posttest. We explored the role of social and cognitive processes and the roles of teacher scaffolding in the dynamic evolution of both the groups. Despite the fact that the two groups of students were facilitated by the same teacher, our findings revealed notable differences between the groups regarding three areas of discussion process: social dynamics, intellectual collaboration, and teacher scaffolding. Specifically, the two groups showed different trajectories of change in relational equity, participatory equity, and idea building. While these practices decreased in the low-performing group, they increased in the high-performing group over time. The ways in which the teacher facilitated the two groups also demonstrated qualitative differences. The teacher seemed to heighten the trends naturally occurring in the students' social dynamics and intellectual collaboration.

Social Dynamics

With regard to participatory equity, overall, we observed fewer instances of it in the high-performing group than the low-performing group. In reviewing this group's discussions, it seems that this is due to the fact that all students were engaged and participating, so invitations to speak were less necessary. When all members of the group elected to share, no one was left sitting silently, and thus, the conversation flowed smoothly and naturally. There was little need for explicit invitations for group members to share, resulting in fewer instances of explicit participatory equity. In contrast, some students in the low-performing group voiced their own opinions to appease the teacher and then returned to silence, without really engaging with ideas or peers, while some other students rarely participated at all. These trends frustrated some students who tried to engage with one another, reducing collaboration over time and leading to greater teacher control.

In terms of relational equity, in the high-performing group students showed respect for the ideas of others, even if it were different from their own. No one seemed to dominate over others. In contrast, in the low performing group, students tended to prioritize their own ideas at the expense of their classmates' and were not demonstrating respect or value for differences of opinion. Analysis of their expressions and body language further revealed animosity. These students not only generated more conflicts for the floor than the high-performing group over time, but also failed to attend to peer's speech and adjust their own accordingly. Over a period of time, all of this led to lowered engagement. It was interesting to see how this group, despite starting off on a relatively good note, were not able to balance their social dynamics throughout the intervention. This is in line with Shah and Lewis's (2019) analysis of social interactions that it takes a series of such small incidences which can eventually accumulate over time and influence group collaboration. In this case, small instances of

negative interactions such as interruptions added up over time to worsen the group's collaboration.

The poor social dynamics of the low-performing group also increased because the teacher began prioritizing the need for silent students to participate over engaging with the ideas of the already-participating students. She began posing a question and asking students to respond to it, instead of considering and building on the ideas that were shared. Chen and Jiang (2004) emphasized the need for teachers to balance multiple dimensions of a discussion while providing contingent scaffolding. The teacher in this study did not maintain such a balance in the low-performing group, probably because of the difficulty in dividing her attention between scaffolding participation and cognitive processes. It is possible that she believed equal numbers of turns of talk was prerequisite for a collaborative discussion and chose her scaffolding strategies accordingly. Future research is needed to identify strategies for finding appropriate balance in cognitive and social scaffolding. In contrast, the high-performing group was able to manage their own social dynamics effectively, and therefore the teacher's focus on cognitive dimension of the discussion was appropriate to the group's needs. In the low-performing group, the teacher's singular focus on cognitive but not social processes was detrimental, and this group spiraled into ineffectiveness over time. These findings thus suggest the reciprocal influence between teacher scaffolding and student group processes.

Intellectual Collaboration

Our study suggests that intellectual collaboration, including idea building and argumentation, is possible only when positive social dynamics are in place. This is aligned with Vygotsky's (1934) theory about the intricate relationships between thoughts and affect. In order to build ideas upon others', group members must be willing to listen to each other's ideas and to respect different opinions and values. In the low performing group, some of the students focused only on voicing their own opinions, without paying attention to what the others were saying. Some of these students did not appreciate differences in opinion and thereby, did not pick up on each other's ideas. The high-performing group, on the other hand, actively engaged with one another's ideas and considered their ability to do so as a source of group focus and pride. They were happy and felt rewarded to have such productive discussions.

The two groups of students' intellectual collaboration also seem to be affected by how they interacted with the teacher. In watching how the teacher interacted with the students during the discussions, it did seem that high-performing students responded to the teacher's scaffolding of their intellectual collaboration in a way that enhanced the discussion. When the teacher set up a positive social norm by showing interests in and value for student ideas, the other students in the group followed the norm. Because the teacher engaged in the discussion with the students, her cognitive scaffolding enhanced the opportunities for students to engage in collaborative idea building. The students in the high-performing group therefore were able to actively engage with one another's ideas and weigh different perspectives by providing detailed explanations. This is aligned with Vygotsky's (1934) theory that learning occurs through social discourse and collaboration. However, students in the low-performing group became visibly less engaged, with only a few students voicing their opinions in the later discussion. They seldom questioned another's idea in a constructive way, built upon an idea, or provided a different viewpoint or evidence to support another's idea. In this group, the teacher acted more as an authoritative figure, choosing students to speak in turn and rarely engaging herself with student ideas. Both the lack of positive social dynamics and the loss of the teacher's cognitive scaffolding prevented this group from developing the social discourse that Vygotsky (1934) suggested was so critical for learning. These trends could be one of the main factors that explain the difference in both the groups of students' social reasoning at posttest. These findings also support previous research that has shown how engaging with others' ideas, providing explanations, considering multiple representations are essential for students' learning (Warner, 2008; Webb et al., 2014; Ing et al., 2015).

The Roles of Teacher Scaffolding

In a productive collaborative discussion, intellectual collaboration and social dynamics are interrelated (Anderson et al., 2001; Engle et al., 2014), and the teacher serves to support both intellectual collaboration and social dynamics through cognitive and social scaffolding. Interestingly, what we observed in this study was the teacher amplifying existing patterns of relationships between social dynamics and intellectual collaboration in the two groups. This aligns with the bi-directional view of teacher scaffolding, meaning that the teacher both influences and is influenced by the students they are scaffolding (Chen and Jiang, 2004; Webb et al., 2006). In responding to each groups' existing patterns of interaction, the teacher functioned as a heightening influence on existing patterns. The high-performing group was able to manage their own social dynamics effectively which seemed to facilitate their intellectual collaboration over time. The teacher was able to further this trend by increasing her use of cognitive scaffolding strategies, including open questions, playing devil's advocate, modeling reasoning, and presenting hypotheticals. These interactions are illustrated in **Figure 2**. By putting her own ideas into the discussion for consideration, the teacher served to improve argumentation and, indirectly, relational equity. This seemed to give students increasing motivation to value and solicit one another's opinions, which then further increased positive social dynamics. Even though the teacher's instances of explicitly referencing relational equity increased in the low-performing group over time, the teacher's scaffolding does not support these professions; she increases her control of turn-taking and provides low-level support in this group instead of increasing her engagement in equitable discourse. As the focus increasingly became encouraging individuals to talk, there was less cognitive interaction and therefore, less intellectual collaboration in the group.

In considering the implications of this study, it is possible that these findings could inform how collaborative learning is handled. While these findings are preliminary, if future work also finds that the success of intellectual collaboration is dependent

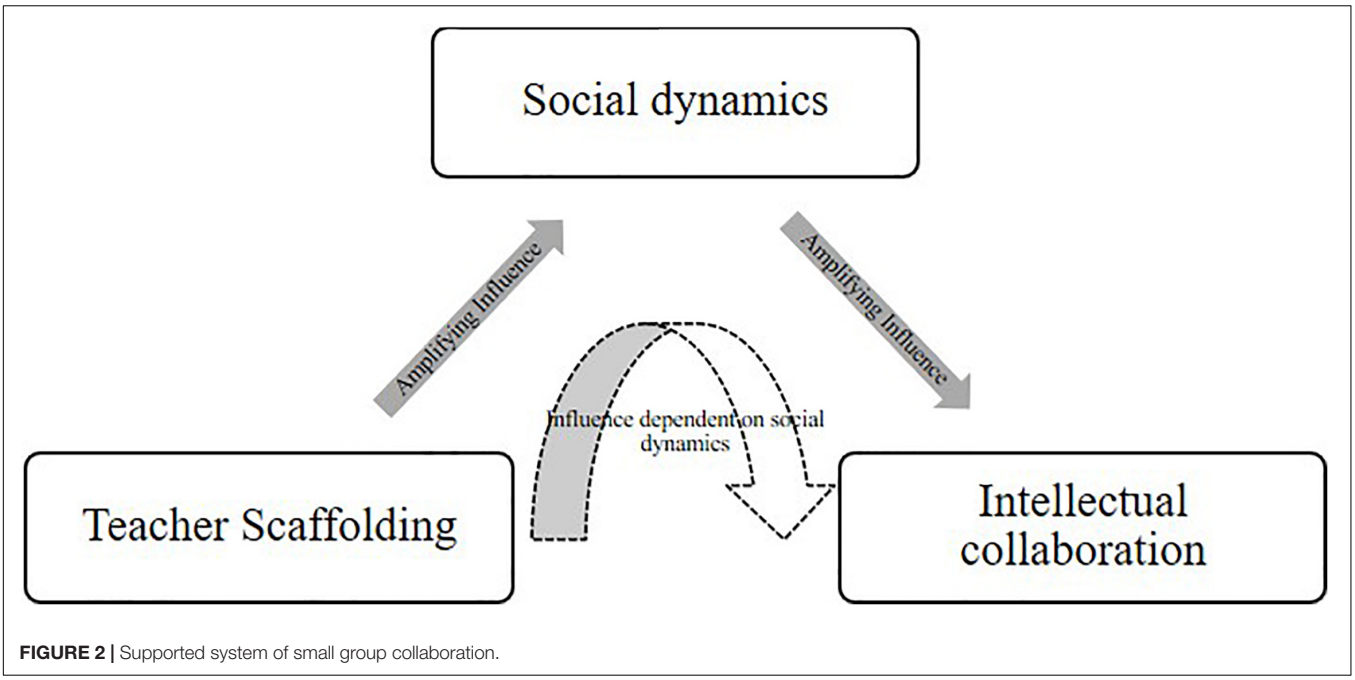

FIGURE 2 | Supported system of small group collaboration.

on social dynamics, more emphasis would need to be placed on social interaction in preparing and structuring collaborative learning. Teachers would need to be trained specifically in how to balance their scaffolding between social support and cognitive support while still giving students interpretive authority within the work. This could help ensure that the reciprocal influence between social dynamics and intellectual collaboration is beneficial rather than detrimental to the success of the activity.

Limitations and Future Directions

This research illustrates the ways in which social, intellectual, and instructional factors are inextricably linked in collaborative classroom settings. Too often, these factors are studied separately, which does not enable a comprehensive representation of the complexity of classroom systems. Additionally, these findings point to social dynamics as the driving factor in the groups we studied, which may have implications for how teacher training and collaborative scaffolding take place in the future. These connections must be explored in more detail and in more settings in order to determine whether the patterns identified here are consistent.

Despite the study contributions, there are limitations to this work. As noted, the small number of groups and singular social setting decrease the generalizability of our findings, although the analyses performed in this study are not intended to test any causal relationships. In addition, transcript coding was mainly based on three of the 6 weeks' discussions due to the labor-intensive process of transcription and coding. The variables that were coded on these 3 weeks of transcripts show a generally linear trend due to the number of time points analyzed. It is possible that the change in these variables is less linear than three timepoints show. Another limitation of the study was that there is limited analysis of post-intervention outcomes. It is not known whether the success of the groups had meaningful implications outside of the discussions, though we did see changes in social reasoning in the high-performing group as noted in the group comparison section. These areas provide fruitful next steps for future research.

This paper provides an initial look at the social, cognitive, and teacher factors within a small group collaborative learning activity as a system, rather than as independent factors, making it unique in its contribution to the field. We found that these factors are inherently interconnected when examining the functioning of the small group, or system, which indicates that work looking at only one of these areas may not accurately represent the learning system. Moving forward, more research should undertake a more holistic research approach so that we can build understanding of the relationships between well-studied individual factors.

CONCLUSION

This paper provides an important initial step on this journey and provides evidence that teacher intervention in learning activities may amplify existing patterns rather than build more effective systems. If this trend is found in future work, this will have major implications for teacher training. Finally, this work supports the existence of a critical link between social dynamics and intellectual collaboration and indicates that the connection between the two may be deeper and more intertwined than previous work has suggested. While it is expected that teachers influence power dynamics and equity in the classroom, it is interesting that in this study the teacher heightened the existing social and cognitive relations in the groups. In the group that began with positive social dynamics, she heightened equity and contributed to intellectual collaboration. In the group that began

with poorer social dynamics, even with slightly better reasoning, she worsened existing problems by affording less and less power to students, increasing what began as moderate inequity and ended as high levels of inequity.

In considering what these findings mean for collaborative learning more broadly, there is no way to know from these data whether similar findings would be seen outside of these small groups. However, there is an interesting question about interacting factors in collaborative learning that is raised by this work. If social dynamics are, as we found here, the driving force behind the success or failure of collaborative learning, then it is even more critical that students are taught to interact productively in the classroom and that positive relationships are supported. Furthermore, if teachers do indeed serve to amplify existing dynamics in other settings, then research on how teachers can productively intervene to overcome negative social dynamics and support collaboration will be critical.

The consistency in the findings across factors also points both to the validity of the findings and to the interrelatedness of the three factors being studied. While separate examples were provided throughout the findings, a single excerpt represented evidence of multiple findings in several cases. While the directionalities of influence do not follow the ideal hypothesized pathways, the connectedness and relatedness of the factors was as complex as our initial figure predicted. This is further evidence for the need to avoid research that looks at classroom factors in a vacuum and move to work that considers cognitive and social systems more holistically.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because, as the data consist largely of videos and video transcriptions, they necessarily contain considerable identifying information. As such, limited access to the data corpus can be provided to individuals not approved by the IRB. Additional examples, coding results, and limited identified data can be provided by contacting the first or third authors. Requests to access the datasets should be directed to kraatz.3@osu.edu; lin.1653@osu.edu.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Ohio State University Internal Review Board. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin. Written informed consent was obtained from the individual(s), and minor(s)' legal guardian/next of kin, for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

EK was responsible for the majority of the planning, data analysis, and writing of this manuscript. MN contributed significantly to the planning, analysis, and writing of the manuscript. T-JL oversaw the project, provided advice and revisions, and was the primary investigator on the larger project from which this data was taken. M-YH, SH, and SK were part of the research team on the larger project and contributed through intellectual collaboration, coding and theoretical assistance, and manuscript revisions. SS contributed to the planning and implementation of the data collection and is now deceased. All authors contributed to the article and approved the submitted version.

FUNDING

This research was supported by the National Academy of Education/Spencer Foundation as part of the third author's postdoctoral fellowship. An additional small research grant from the Spencer Foundation also supported this work. The opinions expressed are those of the authors and do not necessarily represent views of the foundation.

ACKNOWLEDGMENTS

We would like to thank the research team and the many administrators, teachers, and children without whom this study would not have been possible. We especially thank Michael Glassman, Alyssa Tonissen, Rebecca Sallade, Trent Cash, and Ziye Wen for assisting us through the process.

REFERENCES

Adams, P. (2006). Exploring social constructivism: theories and practicalities. *Education* 34, 243–257. doi: 10.1080/03004270600898893

Alexander, R. (2017). *Towards Dialogic Teaching: Rethinking Classroom Talk*, 5th Edn. Thirsk: Dialogos UK Ltd.

Anderson, R. C., Nguyen-Jahiel, K., McNurlen, B., Archodidou, A., Kim, S., Reznitskaya, A., et al. (2001). The snowball phenomenon: spread of ways of talking and ways of thinking across groups of children. *Cogn. Instr.* 19, 1–46. doi: 10.1207/s1532690xci1901_1

Atkins, L., and Wallace, S. (2015). *Qualitative Research in Education*. London: Sage Publications.

Au, K. H., and Mason, J. M. (1981). Social organizational factors in learning to read: the balance of rights hypothesis. *Read. Res. Q.* 17, 115–152. doi: 10.2307/747251

Bakhtin, M. M. (1981). *Dialogic Imagination: Four Essays*, eds C. Emerson and M. Holquist Austin: University of Texas Press.

Barron, B. (2003). When smart groups fail. *J. Learn. Sci.* 12, 307–359. doi: 10.1207/S15327809JLS1203_1

Belland, B. R., Glazewski, K. D., and Richardson, J. C. (2008). A scaffolding framework to support the construction of evidence-based arguments among middle school students. *Educ. Technol. Res. Dev.* 56, 401–422. doi: 10.1007/s11423-007-9074-1

Belland, B. R., Kim, C., and Hannafin, M. J. (2013). A framework for designing scaffolds that improve motivation and cognition. *Educ. Psychol.* 48, 243–270. doi: 10.1080/00461520.2013.838920

Boaler, J. (2008). Promoting "relational equity" and high mathematics achievement through an innovative mixed-ability approach. *Br. Educ. Res. J.* 34, 167–194. doi: 10.1080/01411920701532145

Boyd, M. P., and Markarian, W. C. (2011). Dialogic teaching: talk in service of a dialogic stance. *Lang. Educ.* 25, 515–534. doi: 10.1080/09500782.2011.597861

Buchs, C., Chatard, A., Desrichard, O., and Mugny, G. (2009). Social dynamics in judgment and performance in academic settings. *Eur. J. Psychol. Educ.* 24, 125–128. doi: 10.1007/bf03173005

Cazden, C. B. (1988). *Classroom Discourse: The Language of Teaching and Learning*. Portsmouth, NH: Heinemann.

Chen, F. C., and Jiang, H. M. (2004). Exploration of peer-facilitator dynamics in two contrasting groups. *Instr. Sci.* 32, 419–446. doi: 10.1007/s11251-004-2275-7

Chiasson, V., Vera-Estay, E., Lalonde, G., Dooley, J. J., and Beauchamp, M. H. (2017). Assessing social cognition: age-related changes in moral reasoning in childhood and adolescence. *Clin. Neuropsychol.* 31, 515–530. doi: 10.1080/13854046.2016.1268650

Chinn, C., and Clark, D. B. (2013). "Learning through collaborative argumentation," in *International Handbook of Collaborative Learning*, eds C. E. Hmelo-Silver, C. A. Chinn, C. K. K. Chan, and A. M. O'Donnell (New York, NY: Routledge), 314–332.

Chinn, C. A., Anderson, R. C., and Waggoner, M. A. (2001). Patterns of discourse in two kinds of literature discussion. *Read. Res. Q.* 36, 378–411. doi: 10.1598/rrq.36.4.3

Chinn, C. A., O'Donnell, A. M., and Jinks, T. S. (2000). The structure of discourse in collaborative learning. *J. Exp. Educ.* 69, 77–97. doi: 10.1080/00220970009600650

Cornelius, L. L., and Herrenkohl, L. R. (2004). Power in the classroom: how the classroom environment shapes students' relationships with each other and with concepts. *Cogn. Instr.* 22, 467–498. doi: 10.1207/s1532690xci2204_4

Creswell, J. W., and Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, 4th Edn. Great Oaks, CA: Sage Publications.

Engle, R. A., Langer-Osuna, J. M., and McKinney de Royston, M. (2014). Toward a model of influence in persuasive discussions: negotiating quality, authority, privilege, and access within a student-led argument. *J. Learn. Sci.* 23, 245–268. doi: 10.1080/10508406.2014.883979

Esmonde, I. (2009). Mathematics learning in groups: analyzing equity in two cooperative activity structures. *J. Learn. Sci.* 18, 247–284. doi: 10.1080/10508400902797958

Foorman, B. R., and Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learn. Disabil. Res. Pract.* 16, 203–212. doi: 10.1111/0938-8982.00020

Gillies, R. M. (2003). The behaviors, interactions, and perceptions of junior high school students during small-group learning. *J. Educ. Psychol.* 95, 137–147. doi: 10.1037/0022-0663.95.1.137

Gillies, R. M. (2004). The effects of cooperative learning on junior high school students during small group learning. *Learn. Instr.* 14, 197–213. doi: 10.1016/S0959-4752(03)00068-9

Hitti, A., Mulvey, K. L., Rutland, A., Abrams, D., and Killen, M. (2014). When is it okay to exclude a member of the ingroup? Children's and adolescents'. *Soc. Reason. Soc. Dev.* 23, 451–469. doi: 10.1111/sode.12047

Hmelo-Silver, C. E., and Barrows, H. S. (2008). Facilitating collaborative knowledge building. *Cogn. Instr.* 26, 48–94. doi: 10.1080/07370000701798495

Howe, C. (2013). Optimizing small group discourse in classrooms: effective practices and theoretical constraints. *Int. J. Educ. Res.* 63, 107–115. doi: 10.1016/j.ijer.2013.03.011

Howe, C., Hennessy, S., Mercer, N., Vrikki, M., and Wheatley, L. (2019). Teacher–student dialogue during classroom teaching: does it really impact on student outcomes? *J. Learn. Sci.* 28, 462–512. doi: 10.1080/10508406.2019.1573730

Ing, M., Webb, N. M., Franke, M. L., Turrou, A. C., Wong, J., Shin, N., et al. (2015). Student participation in elementary mathematics classrooms: the missing link between teacher practices and student achievement? *Educ. Stud. Math.* 90, 341–356. doi: 10.1007/s10649-015-9625-z

Jadallah, M., Anderson, R. C., Nguyen-Jahiel, K., Miller, B. W., Kim, I. H., Kuo, L. J., et al. (2011). Influence of a teacher's scaffolding moves during child-led small-group discussions. *Am. Educ. Res. J.* 48, 194–230. doi: 10.3102/0002831210371498

Killen, M. (2007). Children's social and moral reasoning about exclusion. *Curr. Dir. Psychol. Sci.* 16, 32–36. doi: 10.1111/j.1467-8721.2007.00470.x

Kraatz, E., Ha, S. Y., Lin, T. J., Paul, N., and Tonissen, A. (2019). "Students' goal setting as predictors of growth in social reasoning in small-group discussions," in *Proceedings of the Annual Meeting of the American Educational Research Association*, (Washington, DC: American Educational Research Association).

Laal, M., and Ghodsi, M. (2012). Benefits of collaborative learning. *Proc. Soc. Behav. Sci.* 31, 486–490. doi: 10.1016/j.sbspro.2011.12.091

Lee, J., and Shute, V. J. (2010). Personal and social-contextual factors in K-12 academic performance: an integrative perspective on student learning. *Educ. Psychol.* 45, 185–202. doi: 10.1080/00461520.2010.493471

Merriam, S. B., and Tisdell, E. J. (2016). *Qualitative Research: A Guide To Design And Implementation*. San Francisco, CA: Jossey-Bass Inc.

Nagpal, M., Lin, T.-J., and Wen, Z. (2020). "Bridging the gap between social reasoning and action: impacts of collaborative discussions," in *Poster Presented at the Annual Meeting of the American Psychological Association*, (Washington, DC: American Psychological Association).

Parker, J. G., and Asher, S. R. (1993). Friendship and friendship quality in middle childhood: links with peer group acceptance and felings of loneliness and social dissatisfaction. *Dev. Psychol.* 29, 611–621. doi: 10.1037/0012-1649.29.4.611

Puntambekar, S., and Kolodner, J. L. (2005). Toward implementing distributed scaffolding: helping students learn science from design. *J. Res. Sci. Teach.* 42, 185–217. doi: 10.1002/tea.20048

Reznitskaya, A., Kuo, L., Clark, A., Miller, B., Jadallah, M., Anderson, R., et al. (2009). Collaborative reasoning: a dialogic approach to group discussions. *Camb. J. Educ.* 39, 29–48. doi: 10.1080/03057640802701952

Roseth, C. J., Johnson, D. W., and Johnson, R. T. (2008). Promoting early adolescents' achievement and peer relationships: the effects of cooperative, competitive, and individualistic goal structures. *Psychol. Bull.* 134, 223–246. doi: 10.1037/0033-2909.134.2.223

Sfard, A., and Kieran, C. (2001). Cognition as communication: rethinking learning-by-talking through multi-faceted analysis of students' mathematical interactions. *Mind Cult. Activity* 8, 42–76. doi: 10.1207/S15327884MCA0801

Shah, N., and Lewis, C. M. (2019). Amplifying and attenuating inequity in collaborative learning: toward an analytical framework. *Cogn. Instr.* 37, 423–452. doi: 10.1080/07370008.2019.1631825

Turiel, E. (1983). *The Development of Social Knowledge: Morality and Convention*. Cambridge: Cambridge University Press.

van de Pol, J., Mercer, N., and Volman, M. (2019). Scaffolding student understanding in small-group work: students' uptake of teacher support in subsequent small-group interaction. *J. Learn. Sci.* 28, 206–239. doi: 10.1080/10508406.2018.1522258

van de Pol, J., Volman, M., Oort, F., and Beishuizen, J. (2015). The effects of scaffolding in the classroom: support contingency and student independent working time in relation to student achievement, task effort and appreciation of support. *Instr. Sci.* 43, 615–641. doi: 10.1007/s11251-015-9351-z

Volet, S., Summers, M., and Thurman, J. (2009). High-level co-regulation in collaborative learning: how does it emerge and how is it sustained? *Learn. Instr.* 19, 128–143. doi: 10.1016/j.learninstruc.2008.03.001

Vygotsky, L. (1934). *Thought and Language*. Cambridge: MIT Press.

Walton, D. (1998). *The New Dialectic: Conversational Contexts of Argument*. Toronto: University of Toronto Press.

Warner, L. B. (2008). How do students' behaviors relate to the growth of their mathematical ideas? *J. Math. Behav.* 27, 206–227. doi: 10.1016/j.jmathb.2008.07.002

Webb, N. M. (1982). Group composition, group interaction, and achievement in cooperative small groups. *J. Educ. Psychol.* 74, 475–484. doi: 10.1037/0022-0663.74.4.475

Webb, N. M. (2000). Verbal interaction and learning in peer-directed groups. *Theory Pract.* 24, 32–39. doi: 10.1080/09540250600667892

Webb, N. M. (2009). The teacher's role in promoting collaborative dialogue in the classroom. *Br. J. Educ. Psychol.* 79, 1–28. doi: 10.1348/000709908X380772

Webb, N. M., Franke, M. L., Ing, M., Wong, J., Fernandez, C. H., Shin, N., et al. (2014). Engaging with others' mathematical ideas: interrelationships among student participation, teachers' instructional practices, and learning. *Int. J. Educ. Res.* 63, 79–93. doi: 10.1016/j.ijer.2013.02.001

Webb, N. M., Loef, M., and Nicholas, C. (2019). "Promoting productive student participation across multiple classroom participation settings," in *Promoting Academic Talk in Schools: Global Practices and Perspectives*, ed. R. M. Gillies (Abingdon: Taylor and Francis).

Webb, N. M., Nemer, K. M., and Ing, M. (2006). Small-group reflections: parallels between teacher discourse and student behavior in peer-directed groups. *J. Learn. Sci.* 15, 63–119. doi: 10.1207/s15327809jls1501_8

Wentzel, K. R., and Watkins, D. (2002). Peer relationships and collaborative learning as contexts for academic enablers. *Schl. Psychol. Rev.* 31, 366–377. doi: 10.1080/02796015.2002.12086161

Wood, D., Bruner, J. S., and Ross, G. (1976). The role of tutoring in problem solving. *Child Psychol. Psychiatry Allied Discipl.* 17, 89–100. doi: 10.1111/j.1469-7610.1976.tb00381.x

Wu, X., Anderson, R. C., Nguyen-Jahiel, K., and Miller, B. (2013). Enhancing motivation and engagement through collaborative discussion. *J. Educ. Psychol.* 105, 622–632. doi: 10.1037/a0032792

Yin, R. K. (1994). *Case Study Research*, 2nd Edn. Thousand Oaks, CA: Sage Publications.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

APPENDIX

TABLE A1 | Discussion four's most conflict-dense excerpts by group.

Low-performing group		High-performing group	
Peyton	Hold on. I would drive it all over the neighborhood and show 'em, but I wouldn't drive it toward the South and show that tailgate thing.	Harper	I agree with Elliot, because like when the cop pulled him over and put him in the handcuffs and stuff because it just would be unusual for a black man at that point of time to be driving a gold Cadillac, a Cadillac though. That is all gold and that just to be driving a Cadillac. [1] [1] And then he's a black man.
Jordan	I wouldn't really. . .//	Jaimie	[1] I'm not. . . [1]
Teacher	//Why? Why not South?	Spencer	I'm not sure if they had license plates back then? I don't know. But if they did, they could have read his license plate and said it was from Ohio and since he lived, and since the family lived in Toledo, they would probably know that "Oh that's a city that doesn't do segregation so we could we could just let him go because he probably did just buy the car he didn't steal it."
Jordan	I. . .//	Elliot	I disagree with Jaimie because what if the cop thought differently and didn't give the father a chance to talk?
Peyton	//Well, because it's dangerous!	Spencer	Well they can't. . . well yeah. True.
Jordan	I would actually just, if I had a Lamborghini, I wouldn't go out there just bragging that I had a Lamborghini. I would just use it to get to somewhere because not everyone has the same thing as we do.	Harper	Um I agree with Elliot because like if the white man was racist he probably just would have put the black man in jail anyway. Probably because he didn't like black people.
Ryan	And the family, they could have went during nighttime, where people weren't really out- or their family could've just came to them instead of them having to go to the family.	Cameron	I switch my decision to say that they should be able to take it down because of what Jaimie said before that it was after the rights were making. . . that after the rights were made and the now they can't do slavery and that they could take the car wherever they wanted if they paid good money for it.
Teacher	That's a good point. So you're saying the family could have drove to them instead of them risking them going dangerous down South. Is that a lot to ask of the family?	Jaimie	And. . .//
Jordan	No.	Elliot	//I disagree with Cameron because what if the cop don't know that you bought and they probably thought that you stole it?
Peyton	No.	Spencer	Well normally when you buy a car- well normally when you buy a car you like there's things in the car [1] that states that it's [1] yours. Yeah a title that states that you have. . . that it's your car so they couldn't just like, like think that he stole the car. They have to actually find evidence why they think they stole the car.
Ryan	No because they chose to live there.	Harper	[1] Title. [1]
Jordan	Yeah.	Harper	What if. . .// [to Jaymie] Go ahead.
Teacher	It was their choice. Yeah, because didn't the dad used to live there? And then they moved up to Ohio before?	Jaymie	//I. . . Alright. I changed my mind because if they knew that they couldn't drive expensive cars, like, they will get in more problems.
Peyton	Well, the car. If the car was a pet and it drove all the way to the South with me in it, I would say, Bad car, bad!// And. . .	Spencer	But he wants to show off like what he's doing and wants to show what he's been doing working and so I think that's a good idea to show them that he's proud of what he does and. . .//
Jordan	//The mom also got angry about something.	Harper	//Um I disagree because like that's like a reason why I wouldn't drive that down south because like when you try to show things off, people mostly want it and they'll try to take it. That's why I don't show things off. Because if you want to show a car off and you park that car, somebody wanna come up and try to steal it if you're showing it off.
Teacher	Why do you think she got so angry?	Teacher	Do you have personal experience with that?// Or just seen people do that?
Jordan	Because they were going to drive up South?	Harper	//Um.. yes. Like I said I was showing my stuff off before and my friend stole it and I wasn't going to do that after that.
Ryan	They were gonna buy a home with the money and save up to have a better neighborhood to live in. [1] [1] Less chances of being robbed or killed or. . .	Cameron	Oh what did he steal?
Jordan	[1] So that they wouldn't. . . [1]	Harper	He stole my toys. [All laugh] He stole my toy out of my toy bin.
Jordan	Or uh. . . arrested at the same time.	Teacher	I'm so sorry to hear that, bud.
Ryan	Maybe a bit safer.	Spencer	Um well I think that if he's like showing- if he's like telling. . . Well he's-if he's showing them that he has the gold Cadillac I think it's a good idea because he's showing them that just not, it doesn't mean if you're colored you can't get the respect that you want. Well if you're white you don't always have- if you're white you don't have to always put people down because of their color and he's like probably telling them like "I have respect for other people and I'm going to show- and I want people to have respect for me."s

frontiers in Education

ORIGINAL RESEARCH
published: 26 November 2020
doi: 10.3389/feduc.2020.598330

Teachers' Accuracy in Estimating Social Inclusion of Students With and Without Special Educational Needs

Jürgen Wilbert[1]*, *Karolina Urton*[2,3], *Johanna Krull*[2], *Pawel R. Kulawiak*[1,2], *Anja Schwalbe*[1] and *Thomas Hennemann*[2]

[1] Department of Inclusive Education, University of Potsdam, Potsdam, Germany, [2] Department of Special Education and Rehabilitation, University of Cologne, Cologne, Germany, [3] Faculty of Educational and Social Science, University of Münster, Münster, Germany

It is unclear to what extent teachers can accurately assess the social inclusion of their students with and without SEN. The study aims to shed light on these desiderata. Students ($N = 1.644$) with SEN (learning, behavior, and language problems) and without SEN and their teachers ($N = 79$) participated in the study. Sociometric peer nominations, students' self-perceived social inclusion, and teachers' assessments regarding students' social inclusion and self-perceived social inclusion were administered. The results suggest that teachers are moderately accurate in identifying social acceptance and social rejection, while accuracy is low when assessing students' self-perceived social inclusion. That said, rating accuracy varied strongly between teachers, ranging from no agreement to a perfect concordance. Teachers seem to be more accurate in estimating the social acceptance of students with learning problems. The results emphasize the importance of differentiating between various social inclusion criteria (i.e., students' self-report vs. peer nominations) and accounting for inter-individual differences in teachers' rating accuracy.

Keywords: judgement accuracy, social inclusion, special educational needs, teacher, inclusive education, sociometry

OPEN ACCESS

Edited by:
Luciano Gasser, University of Teacher Education Lucerne, Switzerland

Reviewed by:
Beau Oldenburg, University of Groningen, Netherlands
Rachel Sermier Dessemontet, University of Teacher Education of State of Vaud, Switzerland

***Correspondence:**
Jürgen Wilbert
jwilbert@uni-potsdam.de

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *24 August 2020*
Accepted: *02 November 2020*
Published: *26 November 2020*

Citation:
Wilbert J, Urton K, Krull J, Kulawiak PR, Schwalbe A and Hennemann T (2020) Teachers' Accuracy in Estimating Social Inclusion of Students With and Without Special Educational Needs. Front. Educ. 5:598330. doi: 10.3389/feduc.2020.598330

INTRODUCTION

Being part of a social community is a basic psychological need (Deci and Ryan, 1985). A positive social status and sense of social inclusion are also important conditions for a positive cognitive and social-emotional development of children and adolescents (Male, 2007; Rubin et al., 2015; Siegler et al., 2016). Besides this, numerous studies have shown that children with special educational needs (SEN) in inclusive classes are at higher risk of being excluded (Lindsay, 2007; Ruijs and Peetsma, 2009; Avramidis, 2012; Krull et al., 2014, 2018) and have fewer friendships compared to peers without SEN (Henke et al., 2017; Hoffmann et al., 2020). This puts students with SEN in jeopardy of a negative cognitive, emotional, and social development and poses a threat to the goals of the *Convention on the Rights of Persons with Disabilities (CRPD),* which claims that all people with disabilities should receive the support required to facilitate their effective education within an inclusive school setting (article 24, 3, The United Nations, 2006).

Various studies have shown that teachers influence the processes of social interaction and social judgement taking place within their classes (Huber et al., 2018; Wullschleger et al., 2020). They exert influence through one-to-one interactions with students and through classroom management by implementing social learning settings and seating arrangements (Gest and Rodkin, 2011). Research indicates that in classes where teachers provide a high level of emotional support (Gest and Rodkin, 2011; Hendrickx et al., 2016) and actively shape peer interactions (Gest and Rodkin, 2011), student friendships develop more frequently and positively.

The present paper does not try to answer which intervention and educational practices by teachers are most effective in mitigating social exclusion processes (for that, see Garrote et al., 2017; Huber, 2019). Instead, we address a necessary prerequisite for an effective intervention in social inclusion and exclusion: A valid estimation of the status of social exclusion and inclusion in a classroom and detailed knowledge about who is excluded. More precisely, we want to address the question of how well-teachers are able to estimate the status of their students' social inclusion and exclusion. Our main assumption here is that, prior to providing adequate support for the social inclusion of students, it is essential that teachers are familiar with the social structure within their class. We base this assumption on research showing that teachers' knowledge about students' proficiency in a specific subject is an essential prerequisite for effectively planning and implementing lessons and for supporting students individually (Südkamp and Praetorius, 2017). The ability to accurately assess a student's competence level has been termed *diagnostic competences* (Schrader, 2007; Artelt and Gräsel, 2009). Transferred to the topic of social inclusion, this would essentially be the ability to (a) perceive a valid and reliable picture of the social interactions among students within the classroom and (b) draw differentiated and accurate judgements about the specific characteristic of this social structure and the social inclusion of individual students.

What We Already Know About Teachers' Accuracy in Estimating the Social Inclusion of SEN Students

The research on teachers' accuracy (or diagnostic competence) in estimating the social inclusion of their students is fragmented and limited (Meyer and Ostrosky, 2018). Moreover, the terminology used to describe students' social situations is inconsistent (see Koster et al., 2009). In the following section, we try to follow the terminologies used in the respective studies. Therefore, we will speak of social participation, social inclusion, social exclusion, bullying, number of friendships, etc. We are aware that these concepts are not interchangeable but, due to the scarce number of studies, our goal is to review all the relevant literature. We focus on the extent to which accuracy depends on (1) the criteria of social inclusion, (2) students' SEN, and (3) contextual factors.

Criteria of Social Inclusion

We only found one study comparing teachers' rating accuracy on two different inclusion criteria. A study by Falkmer et al. (2012) suggests that teachers are better in estimating social participation than they are in estimating forms of social exclusion. They found that teachers were able to adequately estimate the self-perceived social participation of students with autism spectrum conditions, but there was little agreement when it came to students' self-perception of being bullied.

Students' SEN

Some studies show that teachers' ratings are less accurate for students with emotional and behavioral problems. A study by Wienke Totura et al. (2009) demonstrated that when students showed a higher level of moodiness, it was much harder for the teachers to tell whether or not the students were victims of bullying. Another study by Liau et al. (2004) found that teachers rated interpersonal violence in children less accurately when the children showed generally high levels of aggression. Similarly, a study comparing the ability of kindergarten teachers to identify friendships in children with and without disabilities (Meyer and Ostrosky, 2018) showed that the teachers performed less accurately for students with disabilities than for students without disabilities. Another finding also documents a lower rating accuracy of teachers in identifying peer relations of students with SEN (Shilshtein and Margalit, 2019): The correlation of children's self-reports and teachers' estimations of peer acceptance was lower in the group of students with learning disabilities than for those without SEN. In contrast, Pearl et al. (2007) found a higher rating accuracy for students with emotional and behavioral problems: Boys whose social network participation was estimated correctly showed a higher level of externalizing behavior (aggressive and troublemaking behavior) than boys who were estimated incorrectly. For girls, rating accuracy was higher when they had a higher level of internalizing behavior (social withdrawal and depression).

The studies reported up to this point examined teachers' accuracy by contrasting their ratings for students with and without SEN. Studies conducted in inclusive classrooms where teachers only estimated social interactions for students with SEN concluded that teachers are overly positive about the frequency of peer relations and tend to overestimate the social inclusion of students and the number of their friendships (Monchy et al., 2004; Koster et al., 2007; Pijl et al., 2008). A study by Monchy et al. (2004) showed that while teachers generally accurately estimated the number of friendships of students with SEN, they misinterpreted their sociometric status, (e.g., they frequently miscategorized students who were actually rejected by their peers as sociometrically average). These results have been replicated for preschool children with various disabilities (including developmental delays, autism spectrum disorders, and language impairments) in a study by Ferreira et al. (2017). Schwab et al. (2019) report concurrent results for hearing-impaired students: Although students with hearing impairments felt less socially integrated and less accepted by their peers, their teachers evaluated their social situation more positively.

Contextual Factors

We only found scattered studies addressing how contextual factors moderate teachers' rating accuracy of their students' social inclusion. It should be noted that the studies described below

do not focus on students with SEN. Gest (2006) as well as Neal et al. (2011) indicated a positive relationship between students' academic year and the teacher's accuracy in estimating their social inclusion. In contrast, Harks and Hannover (2017) reported more accurate teacher ratings for the lower grades. Studies on the influence of class size showed that teachers' rating accuracy of social inclusion was lower for large classes (Ahn et al., 2013; Harks and Hannover, 2017; Marucci et al., 2018). Furthermore, the amount of time teachers spent with their students also had a positive influence on their accuracy (Harks and Hannover, 2017; Marucci et al., 2018).

Individual Differences in Teachers' Rating Accuracy

In our literature review, we also wanted to look into individual differences in teachers' ability to accurately judge the social inclusion of their students. We did not find a study addressing this aspect in the context of social inclusion. Some studies from related areas suggested a large variability in teachers' rating accuracy. In a literature review on teachers' accuracy in rating academic performance, Hoge and Coladarci (1989) reported considerable differences between teachers. A more recent study by (Gabriele et al., 2016) also found rating accuracies for mathematical performance ranging between low and high (hit-rate scores between 0.33 and 0.93). Similar results were found for teachers' accuracy in rating students' motivation (Praetorius et al., 2017) and students' goal setting (Dicke et al., 2012).

What Remains Unclear

It remains unclear to what extent teachers can accurately estimate the social inclusion and exclusion of students with and without SEN. Studies on this topic are rare. On top of that, many studies do not include a group of students without SEN, so little can be said about whether teachers are more sensitive to peer relations of students with SEN compared to those of students without SEN. In addition, the above-summarized studies do not systematically differentiate between various types of SEN (e.g., emotional-behavioral disorders, learning problems, language development problems). These studies either include one specific kind of SEN, or all students with SEN are put into one category. Hence, the question remains unanswered as to whether teachers are better able to identify peer relations of children with specific types of SEN.

Furthermore, it is unclear whether teachers rate the social inclusion of SEN students overly positively compared to students without SEN. Most studies suggesting such a connection only include students with SEN but not both groups (SEN and non-SEN students).

Previous research has inconsistently operationalized social participation including sociometric approaches asking about the most liked and disliked peers as well as questionnaire-based self-reports on social participation. It is unclear to what extend these measurement differences could explain varying results and inconsistencies between studies (Kulawiak et al., 2020). Similarly, although students' gender and academic year seem to be related to teachers' rating accuracy, these factors have not been systematically included in previous studies.

Finally, we can assume that teachers differ with respect to the accuracy of social-inclusion ratings. This intergroup variability has not been addressed, but insight on this is a prerequisite for future research into what improves and deteriorates rating accuracy.

Research Questions

The present study is exploratory and tries to shed light on the above-described desiderata. Our research questions are the following:

Q1: To what extent are teachers accurate in estimating their students' social inclusion?

Q2: To what extent do teachers vary in their rating accuracy?

Q3: Are the results for rating accuracy consistent across different social inclusion criteria (i.e., the degree to which students are accepted or rejected by their peers and their self-perceived social inclusion)?

Q4: Is teachers' rating accuracy higher or lower for students with SEN (i.e., learning problems, behavioral problems, and language problems) compared to students without SEN?

We think that previous research results have not been consistent enough, nor can we draw clear predictions from theoretical models to state explicit hypotheses at this juncture. Finally, it is important to take into account students' academic year and gender as contextual factors.

METHODS

Materials and Measures

Special Educational Needs (SEN)

To identify children with and without SEN, we asked classroom teachers to indicate for each student of their class the area in which they were diagnosed with a SEN. In total, they could choose between the following seven categories of support: Learning, emotional and behavioral development, language, intellectual development, physical and motor development, hearing and communication, and vision (multiple choices were possible). In addition, the teachers were asked to indicate in which categories each child required increased support (regardless of whether a SEN had been diagnosed). This two-step approach was necessary because, due to an inclusive educational approach, administrative ascriptive diagnostic procedures have been avoided or suspended in the German primary education system. The responses on diagnosed and additional SEN were condensed into one variable for each SEN category indicating whether a diagnosed or additional SEN was prevalent in that category. Then, five new categories were calculated: Students without SEN, students with SEN in learning but in no other category (learning problems), students with SEN in emotional and behavioral development but in no other category (behavior problems), students with SEN in language but in no other category (language problems), and students with multiple SEN or SEN in a category other than learning, behavior, or language (miscellaneous SEN).

Students' Social Acceptance and Rejection by Their Classmates

To evaluate social acceptance and rejection by classmates, a sociometric nomination questionnaire (Moreno, 1996; Cillessen, 1999; Bukowski and Cillessen, 2012) was used. All students were asked to write down the names of the classmates whom they liked the most (*social acceptance*) and whom they liked the least (*social rejection*). The number of nominations was unlimited. The children were not allowed to nominate themselves, and answers such as "all girls" or "all boys" were not valid. Students' social acceptance and rejection were calculated by the votes they received on the respective questions (indegrees).

Students' Self-Perceived Social Inclusion

To assess *self-perceived social inclusion*, a shortened version of the subscale "social inclusion" (6 items instead of 11) from the FEESS questionnaire (German acronym for "questionnaire for assessment of emotional and social school experiences") (Rauer and Schuck, 2003) was administered (example items: "My classmates are nice to me" and "I get along well with my classmates"). Participants in the first and second grades had to assess whether or not they agreed with the statements. Third and fourth graders had to indicate the extent to which the statements applied to them on a four-point Likert scale ("strongly disagree," "disagree," "agree," "strongly agree"). To create a coherent dataset, each response on a four-point scale was aggregated to a two-point scale ("agree" and "disagree"). The internal consistency of the social inclusion subscale based on the data of the present study was Cronbach's $\alpha = 0.66$.

Teachers' Assessment of Student's Social Inclusion

The class teachers were asked to assess the social inclusion of each student with three questions corresponding to the three student measures.

For students' social acceptance, they were given the question "*In a sociometric questionnaire, your students will be asked which classmates they particularly like. How often do you think this student is selected by the other children in the class?.*" They could give their answers on a five-point Likert scale ("never," "seldom," "sometimes," "often," and "very often"). We will address this variable as *teacher rating social acceptance.*

For students' social rejection, the question was "*Furthermore, the students will be asked which classmates they do not like. How often do you think this student is selected by the other children in the class?.*" The same Likert scale was provided ("never," "seldom," "sometimes," "often," and "very often"). We will name this variable *teacher rating social rejection.*

For students' self-perceived social inclusion, the question was *"The students will also be asked how much they feel socially integrated into their class. How much do you think your student feels socially integrated in his/her class?."* Responses could be given on a five-point Likert scale ("not at all," "a little," "moderately," "mostly," and "completely"). We will address this variable as *teacher rating self-perceived social inclusion.*

TABLE 1 | Sample description by grade.

grade	Students *n*	Girls %	Age *M(SD)*	SEN %
1	357	50.14	6.97 (0.37)	16.8
2	440	50.00	8.09 (0.53)	23.9
3	442	47.06	9.10 (0.52)	21.0
4	405	49.88	10.04 (0.52)	18.0
Total	1,644	49.21	8.60 (1.21)	20.13

TABLE 2 | Distribution of SEN.

SEN	*n*	% of all students	% of students with SEN
Learning	140	8.52	33.49
Behavior	144	8.76	34.45
Language	103	6.27	24.64
Physical	14	0.85	3.35
Intellectual	3	0.18	0.72
Hearing	10	0.61	2.39
Vision	4	0.24	0.96

A student could belong to more than one category.

Participants

The present study is part of a German 4-year research project (see Hennemann et al., 2018; Urton et al., 2018). Data were collected in nine inclusive primary schools in an urban district in the federal state of North Rhine-Westphalia, Germany, in 2018. The original sample included 2,020 students and their 86 class teachers. In order to create a coherent sample, teachers and their students were excluded from the sample when < 10 valid ratings were available in that class. A rating was considered as valid when the teacher rated a student's social inclusion, and corresponding data for that student (social acceptance and rejection or self-perceived social inclusion) were available. This procedure resulted in a sample of 79 teachers (median age category: 41–50 years, 92% female, median time working as a teacher category: 4–10 years) with 1,644 students. The students were between 6 and 12 years old and attended grades one to four. The number of students ($Min = 357$; $Max = 442$) and the gender ratio ($Min = 47.1$ %; $Max = 50.1$ %) were approximately evenly distributed across the grades (**Table 1**). The percentage of children with a specific type of SEN is depicted in **Table 2** (one student could belong to more than one category). Behavior (8.76%), learning (8.52%), and language (6.27%) were most frequent, while intellectual (0.18%) and vision (0.24%) were the least frequent types of SEN. This distribution is in line with the federal states' policy of primarily including students who are struggling with learning, behavior, or language into mainstream schools.

Procedure

Data collection took place from February to April 2018 (from the beginning until the middle of the second school semester). Graduate and undergraduate students working in dyads collected the sociometric data as well as the FEESS data. A standardized

TABLE 3 | Absolute numbers and percentage of aggregated SEN categories.

SEN category	*n*	%
Without SEN	1,313	79.87
Learning problems	91	5.54
Behavior problems	100	6.08
Language problems	74	4.50
Miscellaneous SEN[a]	66	4.01

[a]*All students with SEN not included in the other categories (learning, behavior, or language problems).*

data collection script was provided and students were trained in data collection. All children from the second to fourth grades filled out both questionnaires within 45 min in the classroom unless (in the teachers' opinion) they needed special support in answering the questions. Most of the first graders were interviewed in a one-on-one interview (20 min) in a separate room, due to their insufficient reading and writing skills. At the same time as interviewing the children, the responsible classroom teachers filled out a 10-min questionnaire for each student in the class.

The study was approved by the education authority of the district (approval criteria: compliance with data protection regulations and educational relevance of research) and all participating children had a declaration of consent from their parents or legal guardians. Additional ethics approval was not required in accordance with the national legislation and institutional requirements.

RESULTS

Descriptive Statistics

After ascribing a SEN category to each student as described in the materials and measures section, around 20% of the students belonged to a SEN category (**Table 3**). Behavioral problems (6.1%) and learning problems (5.5%) had about the same prevalence, followed by language problems (4.5%). Four percent of all students belonged to the miscellaneous category, which comprises all students with a combination of several SEN or students with physical, intellectual, hearing, or vision problems.

Teachers' Rating Accuracy (Research Questions Q1/Q3)

In the first step, we calculated a correlation between teacher ratings and students' attributes for all three criteria of social inclusion, disregarding the nested data structure (see **Table 4**). For *social acceptance*, the correlation was medium-sized ($r = 0.38$, $p < 0.001$) and tended to be large for *social rejection* ($r = 0.47$, $p < 0.001$). For *self-perceived social inclusion*, the correlation was small to medium ($r = 0.29$, $p < 0.001$).

For a more detailed insight into the rating accuracy, we plotted the distribution of students' attributes against each level of teachers' ratings (ranging from 0 to 4; see **Figure 1**). For *social acceptance* and *social rejection,* we rescaled students' indegrees to a percentage value (i.e., percentage of peers in the class), where 100% indicated that a student was chosen (social acceptance) or rejected (social rejection) by all peers in that class.

Social Acceptance

Students receiving the highest rating (4: "very often") had a median of 47% peer ratings, whereas students receiving the lowest rating (0: "never") had a median of 12%. The distribution spreads considerably: social acceptance values of students rated 0 actually ranged between 0 and 50% and students rated 4 ranged between 7 and 90%. The overlaps between the five distributions were strong, indicating a low degree of differentiation between teachers' rating levels. The medians were close to the regression line (except for teacher rating level 0, which is a bit below), indicating a linear relation between teachers' ratings and students' indegrees (**Figure 1A**).

Social Rejection

The picture is quite similar here: Students receiving the highest rating (4) had a median of 60% peer ratings, whereas students receiving the lowest rating (0) had a median of 13%. Again, the distributions spread considerably (for teacher rating 0, between 0 and 72% and for teacher rating 4, between 26 and 93%). The regression line indicates a linear relation from categories 0 to 3, but for category 4 the values are above the line. This indicates that a much higher increase in social rejection is necessary to get from categories 3 to 4 than compared to the transition from categories 0 to 1, 1 to 2, and 2 to 3. That is, only students with a proportionally high amount of social rejection were rated as "very often" socially rejected (**Figure 1B**).

Self-Perceived Social Inclusion

When teachers rated the lowest category (0: "not at all"), the self-perceived social inclusion values ranged from $Z = -3.2$ to $Z = 0.2$ with a median of $Z = -1.9$. When they rated the highest category (4: "completely"), values ranged between $Z = -3.2$ and $Z = 0.8$ with a median of $Z = 0.8$. That is, many students with below-average self-perceived social inclusion were rated by the teacher as having a positive or very positive self-perception, resulting in a ceiling effect for the highest category. The median of category 0 was much lower than estimated by the regression line and for category 4 the median was above the regression line, indicating a non-linear relation. This indicates that only students with proportionally very low self-perceived social inclusion were ranked by their teachers into the lowest category (**Figure 1C**).

Differences Between Teachers in Rating Accuracy (Research Questions Q2/Q3)

We calculated correlation coefficients for all three social inclusion criteria for each teacher (the correlation of a teacher's ratings of social inclusion with the scores derived from students' measures). **Table 5** shows statistical indices for these correlations (correlations were not Fisher-*Z* transformed): The mean values were close to the values reported above (this time they were weighted for teachers), with medium to large correlations for social acceptance ($r = 0.53$, $p < 0.001$) and social rejection ($r = 0.55$, $p < 0.001$). The mean values for self-perceived social inclusion, again, were small to medium-sized ($r = 0.29$, $p <$

TABLE 4 | Descriptives and correlation matrix.

Variable	*M*	*SD*	1	2	3	4	5	6	7
1 Social acceptance	6.48	3.58	–						
2 Social rejection	4.50	3.74	−0.27***	–					
3 Self-perceived social inclusion	0.79	0.25	0.30***	−0.25***	–				
4 Teacher rating social acceptance	2.19	0.99	0.38***	−0.37***	0.28***	–			
5 Teacher rating social rejection	1.07	1.03	−0.31***	0.47***	−0.28***	−0.49***	–		
6 Teacher rating self-perceived social inclusion	2.87	0.88	0.31***	−0.26***	0.29***	0.60***	−0.50***	–	
7 Age	8.60	1.21	0.16***	0.11***	0.15***	−0.01	0.07**	−0.06*	–
8 Grade	2.54	1.08	0.23***	0.10***	0.18***	0.03	0.05	−0.03	0.91***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

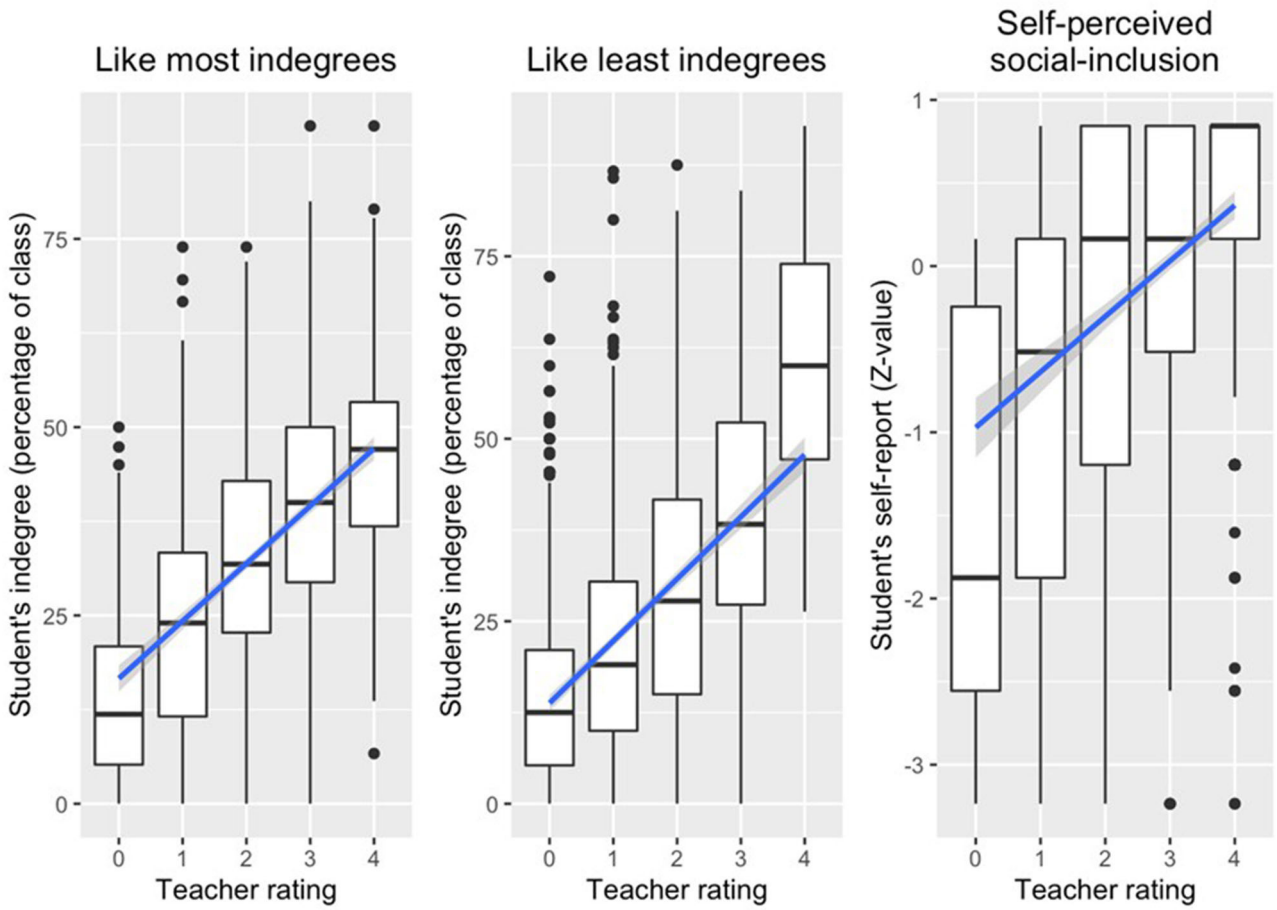

FIGURE 1 | (A–C) Concordance between teachers' ratings (from 0 to 4) and students' attributes (in percentage of indegrees received from participating class peers for the sociometric measures and *Z*-values for the self-perceived social-inclusion). The horizontal lines within the boxplots indicate the median, the lower and upper hinges correspond to the first and third quantiles, the whiskers extend to the largest and lowest values, but not further than 1.5 times the interquartile range (difference between third and first quantiles) from the respective hinge. All values outside the whiskers are depicted as dots and considered to be outliers. The diagonal lines depict regression lines with a gray area indicating the standard errors.

0.001), indicating a weak concordance here. The variability was very high for all three criteria (minima between $r = -1.0$, $p < 0.001$, and $r = -0.02$, $p = 0.95$ and maxima between $r = 0.86$, $p < 0.001$, and $r = 0.92$, $p < 0.001$), indicating considerable differences between teachers. The exact distribution of correlations is depicted in **Figure 2**.

TABLE 5 | Variability of correlations between students' sociometric status and teacher ratings.

Statistic	*n*	*M*	*SD*	*Min*	*Max*	*Range*	*Median*	*Mad*
Number of students rated by teacher	79	20.81	4.74	10.00	29.00	19.00	21.00	5.93
Correlation: Social acceptance and teacher rating	72	0.53	0.18	−0.02	0.86	0.87	0.55	0.17
Correlation: Social rejection and teacher rating	72	0.55	0.22	−0.65	0.87	1.51	0.56	0.16
Correlation: Self-perceived social inclusion and teacher rating	75	0.29	0.32	−1.0	0.92	1.92	0.31	0.35

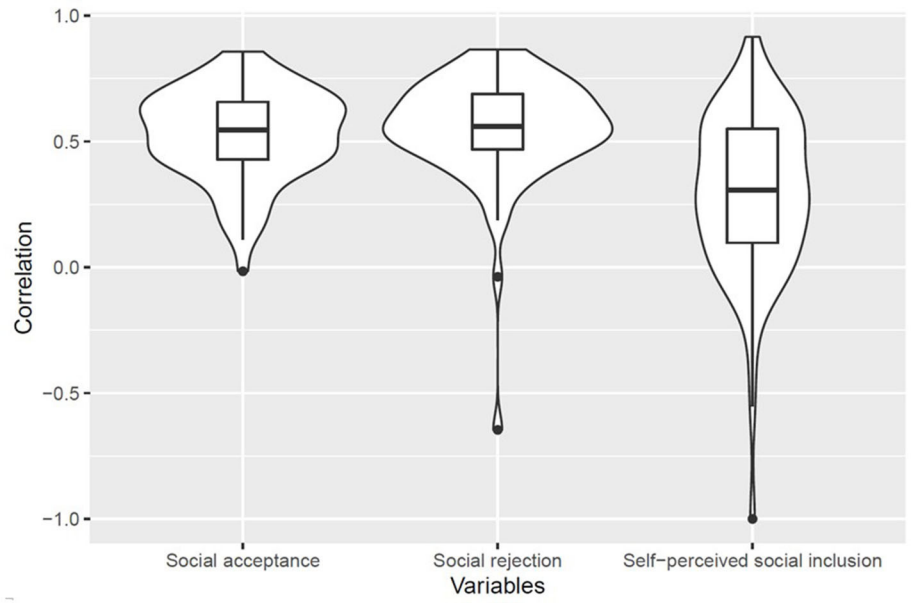

FIGURE 2 | Distribution of correlations between teacher ratings and students' attributes for three criteria of social inclusion. For an explanation of the boxplots, see **Figure 1**.

Rating Accuracy and SEN (Research Questions Q4/Q3)

To estimate the influence of SEN on rating accuracy, we set up three multilevel regression models. Model 1 predicted students' *social acceptance* values, model 2 the *social rejection* values, and model 3 students' *self-perceived social inclusion* values (see **Table 6**). Controlling predictor variables were the *class grade*, *gender*, and *class size* (the number of students per class who answered the sociometric questions). The four SEN categories were included as dummy predictors (*without SEN* as the reference category). For each model, the corresponding teacher rating was included: *Teacher rating social acceptance* for model 1, *teacher rating social rejection* for model 2, and *teacher rating self-perceived social inclusion* for model 3. Furthermore, the interactions of each SEN category, *gender*, *class grade*, and *class size* with the respective teacher rating variable was included.

All predictor and criteria variables were standardized except for the categorical *gender* variable, which was Helmert contrasted (−1 for female and 1 for male), and the SEN categories, which were dummy-coded. Students were nested in classes. Therefore, the class identifier was included as a random factor. The analyses were conducted with the R Package lmer (Bates et al., 2015; R Core Team, 2020).

Social Acceptance

First, we start with the general effects on social acceptance and then continue with the results for the accuracy of the teacher ratings. *Class grade* was a positive predictor of students' social acceptance ($B = 0.19$, $p < 0.001$), while we found no significant gender differences. With regard to class size, students received significantly more sociometric nominations in larger classes ($B = 0.68$, $p < 0.001$). Students with learning problems ($B = -0.20$, $p = 0.030$) and students with behavioral problems ($B = -0.25$, $p = 0.006$) were significantly less socially accepted. The regression weights for language problems and miscellaneous SEN were not significant. Teacher ratings of social acceptance were significantly correlated with students' actual social acceptance ($B = 0.36$, $p < 0.001$). *Class grade* and *gender* did not significantly moderate this correlation, but teacher ratings were more accurate with increasing class size ($B = 0.12$, $p < 0.001$). With respect to SEN, ratings were more accurate for students with learning problems ($B = 0.18$, $p = 0.039$) and for students with miscellaneous

TABLE 6 | Regression models for three social inclusion criteria.

	Model 1: Social acceptance		Model 2: Social rejection		Model 3: Self-perceived social inclusion	
Predictors	***B***	***p***	***B***	***p***	***B***	***p***
(Intercept)	−0.05	0.247	−0.15	0.001	0.00	0.923
Class grade	0.19	< 0.001	0.04	0.223	0.20	< 0.001
Gender	−0.01	0.475	0.12	< 0.001	0.03	0.254
Class size	0.68	< 0.001	0.47	< 0.001		
Learning problems	−0.20	0.030	0.32	< 0.001	−0.33	0.007
Behavior problems	−0.25	0.006	0.39	< 0.001	−0.05	0.658
Language problems	−0.15	0.125	0.07	0.451	0.14	0.240
Misc[a] SEN	−0.03	0.798	0.29	0.012	−0.27	0.060
TR[b] social acceptance	0.36	< 0.001				
TR social acceptance x learning problems	0.18	0.039				
TR social acceptance x behavior problems	0.02	0.810				
TR social acceptance x language problems	0.09	0.275				
TR social acceptance x Misc SEN	0.31	0.001				
TR social acceptance x class grade	0.03	0.098				
TR social acceptance x gender	0.01	0.579				
TR social acceptance x class size	0.12	< 0.001				
TR social rejection			0.41	< 0.001		
TR social rejection x learning problems			−0.07	0.460		
TR social rejection x behavior problems			0.07	0.308		
TR social rejection x language problems			0.08	0.376		
TR social rejection x Misc SEN			0.13	0.111		
TR social rejection x class grade			0.05	0.033		
TR social rejection x gender			−0.01	0.459		
TR social rejection x class size			0.18	< 0.001		
TR self-perceived social inclusion					0.30	< 0.001
TR self-perceived social inclusion x learning problems					−0.18	0.137
TR self-perceived social inclusion x behavior problems					0.18	0.073
TR self-perceived social inclusion x language problems					−0.17	0.112
TR self-perceived social inclusion x Misc SEN					0.15	0.308
TR self-perceived social inclusion x class grade					0.09	0.004
TR self-perceived social inclusion x gender					−0.07	0.006
Random effects						
σ^2	0.48		0.51		0.77	
$\tau_{00(Classroom)}$	0.12		0.12		0.06	
$\tau_{11(Teacherrating)}$	0.01		0.01		0.03	
$\rho_{01(Classroom)}$	0.90		0.56		−0.16	
ICC	0.21		0.20		0.10	
N Teacher	73		73		78	
N Students	1,555		1,555		1,343	
Marginal R^2/Conditional R^2	0.421/0.544		0.404/0.524		0.154/0.241	

[a]*Misc, Miscellaneous;* [b]*TR, Teacher rating.*

SEN ($B = 0.31$, $p = 0.001$). Students' behavioral problems and language problems were not significant predictors of teachers' rating accuracy.

Social Rejection

Class grade did not significantly predict students' social rejection. *Gender* ($B = 0.12$, $p < 0.001$) and *class size* ($B = 0.47$, $p < 0.001$) were significant predictors. Students with learning problems ($B = 0.32$, $p < 0.001$), behavioral problems ($B = 0.39$, $p < 0.001$), and miscellaneous SEN ($B = 0.29$, $p < 0.001$) were significantly more socially rejected, while language problems were not a significant predictor. Teacher ratings of social rejection were significantly correlated with students' actual social rejection ($B = 0.41$, $p < 0.001$). The correlation was significantly increased by class grade ($B = 0.05$, $p = 0.033$) and class size ($B = 0.18$, $p < 0.001$), while students' gender did not show a significant moderation. Neither of the SEN categories were significant predictors of teachers' rating accuracy.

Self-Perceived Social Inclusion

Class grade significantly predicted students' self-perceived social inclusion, while students' gender showed no significant prediction. *Class size* was only included in the two prior models, because the number of sociometric choices had to be controlled for the number of nominees. Students with learning problems ($B = -0.33$, $p = 0.007$) perceived their social inclusion to be significantly lower. The other SEN categories did not significantly predict self-perceived social inclusion (although the regression weight of students with miscellaneous SEN was of considerable size: $B = -0.27$, $p = 0.060$). Teachers ratings were significantly correlated to students' self-perceptions ($B = 0.30$, $p < 0.001$). The correlation was somewhat lower for male students ($B = -0.07$, $p = 0.006$) and somewhat higher with increasing class grade ($B = 0.09$, $p = 0.004$). None of the SEN categories showed a significant interaction with teachers' rating accuracy for students' self-perceived social inclusion.

DISCUSSION

Summary and Interpretation

The social integration of students with SEN is an important indicator of a successful inclusive school system (Artiles et al., 2006). Whether this can be achieved depends, to a large extent, on teachers' behavior (Farmer et al., 2011; Gest and Rodkin, 2011; Hendrickx et al., 2016). Adequate support for social inclusion processes is preceded by teachers' perceptions of the social processes within the class. Accordingly, the aim of the present study was to examine the extent to which teachers are able to assess the social inclusion of their students.

First, in line with previous studies (Lindsay, 2007; Ruijs and Peetsma, 2009; Krull et al., 2014, 2018), our investigation shows that students with learning and behavioral problems are less often accepted and more often rejected by their classmates compared to other students. Moreover, students with learning problems do not feel socially integrated to the same extent as their peers.

Considering the ability to which teachers are able to assess the social inclusion of their students in terms of different criteria of social inclusion (research questions Q1/Q3), our results show that they are similarly accurate in assessing students' social acceptance and social rejection status and less accurate in estimating students' self-perceived social inclusion. We also find a slightly lower rating accuracy for social acceptance than previous studies (Ahn and Rodkin, 2014; Südkamp et al., 2018). Overall, teachers' rating accuracy regarding their students' social inclusion is moderate and somewhat lower than that for students' academic performance (see Hoge and Coladarci, 1989; Südkamp et al., 2012).

Furthermore, our results reveal a very high degree of variability in teachers' assessment accuracy (research questions Q2/Q3), similar to studies on teachers' rating accuracy in other areas (Dicke et al., 2012; Gabriele et al., 2016; Praetorius et al., 2017). This is particularly pronounced for the assessment of student-perceived social inclusion. This indicates considerable differences in teachers' diagnostic competence, which can be related to differences in teachers' information processing capacity or differences in teachers' judgement criteria (van Ophuysen and Behrmann, 2015).

Our results indicate that teachers' rating accuracy varies depending on students' SEN (research questions Q4/Q2). The pattern here is complex: The social acceptance of students with learning problems and miscellaneous SEN was rated more accurately, while for social rejection and self-perceived social inclusion no such effects were present. Moreover, no differences in rating accuracy in any of the three criteria of social inclusion could be found for students with behavioral or language problems, which is in contrast to a study by Pearl et al. (2007) that showed a higher accuracy for students with behavioral problems.

Overall, SEN has only a weak influence on teachers' rating accuracy. Moreover, our results indicate the need to differentiate between several types of SEN (O'Mara et al., 2012), as well as to include various operationalizations of social inclusion. Finally, our study shows that teachers in higher class grades are a bit better in estimating the social inclusion status of their students. With respect to gender, teachers seem to be better in estimating the self-perceived social inclusion of female students. Both results stress the importance of including these moderators when analyzing teachers' rating accuracy.

Limitations

The results of the present study must be interpreted with some reservations. SEN status was not diagnosed through a standardized instrument, but was estimated by teachers or based on the official SEN assessment process as conducted in Germany. This might be particularly critical in terms of language problems, as students with German as a second language may have been wrongly assigned a SEN for language. Secondly, the self-perceived social inclusion scale had low internal consistency. This might account for the lower teacher rating accuracy (as well as the low conditional R^2 of model 3 in **Table 6**). Thirdly, a teachers' rating of a student's self-perceived social inclusion was based on one single item. A more reliable estimation could probably be achieved with a multi-item scale (Südkamp et al., 2018).

Implications and Further Research

The *Realistic Accuracy Model* (Funder, 2012) states that the accuracy of a diagnostic judgement is influenced by three sets of features: (a) characteristics of the criteria to be observed, (b) characteristics of the observer, and (c) characteristics of the observed person. Thus, future studies should (a) precisely define and identify which aspect of social inclusion they are addressing and how these can be best operationalized in a classroom, (b) which abilities and characteristics of teachers influence their rating accuracy, and (c) which characteristics of students are correlated with a higher (or lower) degree of rating accuracy.

We think it is particularly important to investigate the high variability of rating accuracy between teachers. Identifying the competences a teacher needs to successfully detect social exclusion processes in their classroom will help to successfully teach these skills and competence areas to prospective teachers during their academic education. This, in turn, will help these future teachers implement a classroom climate in which all students receive the support required to facilitate their effective education within an inclusive school setting.

DATA AVAILABILITY STATEMENT

The data set cannot be made publicly available because informed consent from study participants did not cover public deposition of data. However, the minimal data set underlying the findings presented in this article is archived and will be made available by the authors for all interested researchers.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

JW, KU, JK, PK, and AS conceptualized and wrote the manuscript. JK, KU, JW, and TH planned and organized the data collection. JW conducted the statistical analyses and created the figures and tables. All authors contributed to the article and approved the submitted version.

REFERENCES

Ahn, H.-J., and Rodkin, P. C. (2014). Classroom-level predictors of the social status of aggression: friendship centralization, friendship density, teacher–student attunement, and gender. *J. Educ. Psychol.* 106, 1144–1155. doi: 10.1037/a0036091

Ahn, H.-J., Rodkin, P. C., and Gest, S. (2013). Teacher–student agreement on "bullies and kids they pick on" in elementary school classrooms: gender and grade differences. *Theory Pract.* 52, 257–263. doi: 10.1080/00405841.2013.829728

Artelt, C., and Gräsel, C. (2009). Diagnostische Kompetenz von Lehrkräften. *Z. Für Pädagog. Psychol.* 23, 157–160. doi: 10.1024/1010-0652.23.34.157

Artiles, A. J., Kozleski, E. B., Dorn, S., and Christensen, C. (2006). Chapter 3: Learning in inclusive education research: re-mediating theory and methods with a transformative agenda. *Rev. Res. Educ.* 30, 65–108. doi: 10.3102/0091732X030001065

Avramidis, E. (2012). Self-concept, social position and social participation of pupils with SEN in mainstream primary schools. *Res. Pap. Educ.* 28, 421–442. doi: 10.1080/02671522.2012.673006

Bates, D., Mächler, M., Bolker, B., and Walker, S. (2015). Fitting linear mixed-effects models using lme4. *J. Stat. Softw.* 67, 1–48. doi: 10.18637/jss.v067.i01

Bukowski, W. M., and Cillessen, A. H. N. (2012). "Peer ratings," in *Handbook of Developmental Research Methods*, eds B. Laursen, T. D. Little, and N. A. Card (New York, NY: Guilford), 211–228.

Cillessen, A. H. N. (1999). "Sociometric methods," in *Handbook of Peer Interactions, Relationships, and Groups (Social, Emotional, and Personality Development in Context),* eds K. H. Rubin, W. M. Bukowski, and B. Laursen (New York, NY: Guilford Press), 82–99.

Deci, E. L., and Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York, NY: Plenum. doi: 10.1007/978-1-4899-2271-7

Dicke, A.-L., Lüdtke, O., Trautwein, U., Nagy, G., and Nagy, N. (2012). Judging students' achievement goal orientations: are teacher ratings accurate? *Learn. Individ. Differ.* 22, 844–849. doi: 10.1016/j.lindif.2012.04.004

Falkmer, M., Parsons, R., and Granlund, M. (2012). Looking through the same eyes? Do teachers' participation ratings match with ratings of students with autism spectrum conditions in mainstream schools? *Autism Res. Treat.* 2012, 1–13. doi: 10.1155/2012/656981

Farmer, T. W., McAuliffe Lines, M., and Hamm, J. V. (2011). Revealing the invisible hand: the role of teachers in children's peer experiences. *J. Appl. Dev. Psychol.* 32, 247–256. doi: 10.1016/j.appdev.2011.04.006

Ferreira, M., Aguiar, C., Correia, N., Fialho, M., and Pimentel, J. S. (2017). Social experiences of children with disabilities in inclusive portuguese preschool settings. *J. Early Interv.* 39, 33–50. doi: 10.1177/1053815116679414

Funder, D. C. (2012). Accurate personality judgment. *Curr. Dir. Psychol. Sci.* 21, 177–182. doi: 10.1177/0963721412445309

Gabriele, A. J., Joram, E., and Park, K. H. (2016). Elementary mathematics teachers' judgment accuracy and calibration accuracy: do they predict students' mathematics achievement outcomes? *Learn. Instr.* 45, 49–60. doi: 10.1016/j.learninstruc.2016.06.008

Garrote, A., Sermier Dessemontet, R., and Moser Opitz, E. (2017). Facilitating the social participation of pupils with special educational needs in mainstream schools: a review of school-based interventions. *Educ. Res. Rev.* 20, 12–23. doi: 10.1016/j.edurev.2016.11.001

Gest, S. D. (2006). Teacher reports of children's friendships and social groups: agreement with peer reports and implications for studying peer similarity. *Soc. Dev.* 15, 248–259. doi: 10.1111/j.1467-9507.2006.00339.x

Gest, S. D., and Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *J. Appl. Dev. Psychol.* 32, 288–296. doi: 10.1016/j.appdev.2011.02.004

Harks, M., and Hannover, B. (2017). Sympathiebeziehungen unter Peers im Klassenzimmer: Wie gut wissen Lehrpersonen Bescheid? *Z. Für Erzieh.* 20, 425–448. doi: 10.1007/s11618-017-0769-8

Hendrickx, M. M. H. G., Mainhard, M. T., Boor-Klip, H. J., Cillessen, A. H. M., and Brekelmans, M. (2016). Social dynamics in the classroom: teacher support and conflict and the peer ecology. *Teach. Teach. Educ.* 53, 30–40. doi: 10.1016/j.tate.2015.10.004

Henke, T., Bogda, K., Lambrecht, J., Bosse, S., Koch, H., Maaz, K., et al. (2017). Will you be my friend? A multilevel network analysis of friendships of students with and without special educational needs backgrounds in inclusive classrooms. *Z. Für Erzieh.* 20, 449–474. doi: 10.1007/s11618-017-0767-x

Hennemann, T., Hillenbrand, C., Fitting-Dahlmann, K., Wilbert, J., and Urton, K. (2018). Auf dem Weg zum inklusiven Schulsystem im Kreis Mettmann – Konzeption der wissenschaftlichen Begleitevaluation. *Z. Für Heilpädag.* 69, 4–16.

Hoffmann, L., Wilbert, J., Lehofer, M., and Schwab, S. (2020). Are we good friends? – friendship preferences and the quantity and quality of mutual friendships. *Eur. J. Spec. Needs Educ.* 1–15. doi: 10.1080/08856257.2020.1769980. [Epub ahead of print].

Hoge, R. D., and Coladarci, T. (1989). Teacher-based judgments of academic achievement: a review of literature. *Rev. Educ. Res.* 59, 297–313. doi: 10.2307/1170184

Huber, C. (2019). Ein integriertes Rahmenmodell zur Förderung sozialer Integration im inklusiven Unterricht. *Vierteljahresschr. Für Heilpädag. Ihr Nachbargeb.* 88:17. doi: 10.2378/vhn2019.art06d

Huber, C., Gerullis, A., Gebhardt, M., and Schwab, S. (2018). The impact of social referencing on social acceptance of children with disabilities and migrant background: an experimental study in primary school settings. *Eur. J. Spec. Needs Educ.* 33, 269–285. doi: 10.1080/08856257.2018.1424778

Koster, M., Nakken, H., Pijl, S. J., and van Houten, E. (2009). Being part of the peer group: a literature study focusing on the social dimension of inclusion in education. *Int. J. Incl. Educ.* 13, 117–140. doi: 10.1080/13603110701284680

Koster, M., Pijl, S. J., Houten, E., van, and Nakken, H. (2007). The social position and development of pupils with SEN in mainstream dutch primary schools. *Eur. J. Spec. Needs Educ.* 22, 31–46. doi: 10.1080/08856250601082265

Krull, J., Wilbert, J., and Hennemann, T. (2014). The social and emotional situation of first graders with classroom behavior problems and classroom learning difficulties in inclusive classes. *Learn. Disabil. Contemp. J.* 12, 169–190.

Krull, J., Wilbert, J., and Hennemann, T. (2018). Does social exclusion by classmates lead to behaviour problems and learning difficulties or vice versa? A cross-lagged panel analysis. *Eur. J. Spec. Needs Educ.* 33, 235–253. doi: 10.1080/08856257.2018.1424780

Kulawiak, P. R., Urton, K., Krull, J., Hennemann, T., and Wilbert, J. (2020). Internalizing behaviour of sociometrically neglected students in inclusive primary classrooms - a methodological issue? *Front. Educ.* 5:32. doi: 10.3389/feduc.2020.00032

Liau, A. K., Flannery, D. J., and Quinn-Leering, K. (2004). A comparison of teacher-rated and self-reported threats of interpersonal violence. *J. Early Adolesc.* 24, 231–249. doi: 10.1177/0272431604265669

Lindsay, G. (2007). Educational psychology and the effectiveness of inclusive education/mainstreaming. *Br. J. Educ. Psychol.* 77, 1–24. doi: 10.1348/000709906X156881

Male, D. (2007). "The friendships and peer relationships of children and young people who experience difficulties in learning," in *The Sage Handbook of Special Education*, ed L. Florian (London: SAGE), 460–474.

Marucci, E., Oldenburg, B., and Barrera, D. (2018). Do teachers know their students? Examining teacher attunement in secondary schools. *Sch. Psychol. Int.* 39, 416–432. doi: 10.1177/0143034318786536

Meyer, L. E., and Ostrosky, M. M. (2018). Identifying classroom friendships: teachers' confidence and agreement with children. *Top. Early Child. Spec. Educ.* 38, 94–104. doi: 10.1177/0271121418763543

Monchy, M., de Pijl, S. J., and Zandberg, T. (2004). Discrepancies in judging social inclusion and bullying of pupils with behaviour problems. *Eur. J. Spec. Needs Educ.* 19, 317–330. doi: 10.1080/0885625042000262488

Moreno, J. L. (1996). *Die Grundlagen der Soziometrie: Wege zur Neuordnung der Gesellschaft. 4th edn*. VS Verlag für Sozialwissenschaften. (Wiesbaden). doi: 10.1007/978-3-663-09720-4

Neal, J. W., Cappella, E., Wagner, C., and Atkins, M. S. (2011). Seeing eye to eye: predicting teacher–student agreement on classroom social networks. *Soc. Dev.* 20, 376–393. doi: 10.1111/j.1467-9507.2010.00582.x

O'Mara, A., Akre, B., Munton, T., Marrero-Guillamon, I., Martin, A., Gibson, K., et al. (2012). *Curriculum and Curriculum Access Issues for Students With Special Educational Needs in Post-Primary Settings: An International Review*. Available online at: https://ulir.ul.ie/handle/10344/5005 (accessed July 24, 2020).

Pearl, R., Leung, M., Van Acker, R., Farmer, T. W., and Rodkin, P. C. (2007). Fourth- and fifth-grade teachers' awareness of their classrooms' social networks. *Elem. Sch. J.* 108, 25–39. doi: 10.1086/522384

Pijl, S. J., Frostad, P., and Flem, A. (2008). The social position of pupils with special needs in regular schools. *Scand. J. Educ. Res.* 52, 387–405. doi: 10.1080/00313830802184558

Praetorius, A.-K., Koch, T., Scheunpflug, A., Zeinz, H., and Dresel, M. (2017). Identifying determinants of teachers' judgment (in)accuracy regarding students' school-related motivations using a Bayesian cross-classified multilevel model. *Learn. Instr.* 52, 148–160. doi: 10.1016/j.learninstruc.2017.06.003

R Core Team (2020). *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing. Available online at: https://www.R-project.org/.

Rauer, W., and Schuck, K. D. (2003). *Fragebogen zur Erfassung Emotionaler und Sozialer Schulerfahrungen (FEESS 3-4)*. Göttingen: Beltz Test GmbH.

Rubin, K. H., Bukowski, W. M., and Bowker, J. C. (2015). "Children in Peer Groups," in *Handbook of Child Psychology and Developmental Science*, ed R.M. Lerner, M.H. Bornstein, and T. Leventhal Hoboken, NJ: Wiley, 175–222.

Ruijs, N. M., and Peetsma, T. T. D. (2009). Effects of inclusion on students with and without special educational needs reviewed. *Educ. Res. Rev.* 4, 67–79. doi: 10.1016/j.edurev.2009.02.002

Schrader, F.-W. (2007). "Diagnostische Kompetenz von Eltern und Lehrern," in *Handwörterbuch Pädagogische Psychologie*, ed D. H. Rost (Weinheim: Beltz), 95–100.

Schwab, S., Wimberger, T., and Mamas, C. (2019). Fostering social participation in inclusive classrooms of students who are deaf. *Int. J. Disabil. Dev. Educ.* 66, 325–342. doi: 10.1080/1034912X.2018.1562158

Shilshtein, E., and Margalit, M. (2019). Discrepancies between perceptions of first-grade students at risk for learning disabilities, their parents and teachers. *Eur. J. Spec. Needs Educ.* 34, 702–711. doi: 10.1080/08856257.2019.1603600

Siegler, R., Eisenberg, N., DeLoache, J., and Saffran, J. (2016). *Entwicklungspsychologie im Kindes- und Jugendalter*. 4th ed., Berlin Heidelberg: Springer-Verlag.

Südkamp, A., Kaiser, J., and Möller, J. (2012). Accuracy of teachers' judgments of students' academic achievement: a meta-analysis. *J. Educ. Psychol.* 104, 743–762. doi: 10.1037/a0027627

Südkamp, A., Krawinkel, S., Lange, S., Wolf, S. M., and Tröster, H. (2018). Lehrkrafteinschätzungen sozialer Akzeptanz und sozialer Kompetenz: Akkuratheit und systematische Verzerrung in inklusiv geführten Schulklassen. *Z. Für Pädagog. Psychol.* 32, 39–51. doi: 10.1024/1010-0652/a000212

Südkamp, A., and Praetorius, A.-K. (eds.). (2017). *Diagnostische Kompetenz von Lehrkräften: theoretische und methodische Weiterentwicklungen*. New York, NY: Waxmann.

The United Nations (2006). Convention on the rights of persons with disabilities. *Treaty Ser.* 2515:3. Available online at: https://treaties.un.org/doc/Publication/CTC/Ch_IV_15.pdf

Urton, K., Börnert-Ringleb, M., Krull, J., Wilbert, J., and Hennemann, T. (2018). Inklusives Schulklima: Konzeptionelle Darstellung eines Rahmendmodells. *Z. Für Heilpädag.* 69, 40–52.

van Ophuysen, S., and Behrmann, L. (2015). Die Qualität pädagogischer Diagnostik im Lehrerberuf - Anmerkungen zum Themenheft "Diagnostische Kompetenzen von Lehrkräften und ihre Handlungsrelevanz". *J. Educ. Res. Online* 7, 82–98.

Wienke Totura, C. M., Green, A. E., Karver, M. S., and Gesten, E. L. (2009). Multiple informants in the assessment of psychological, behavioral, and academic correlates of bullying and victimization in middle school. *J. Adolesc.* 32, 193–211. doi: 10.1016/j.adolescence.2008.04.005

Wullschleger, A., Garrote, A., Schnepel, S., Jaquiéry, L., and Moser Opitz, E. (2020). Effects of teacher feedback behavior on social acceptance in inclusive elementary classrooms: exploring social referencing processes in a natural setting. *Contemp. Educ. Psychol.* 60:101841. doi: 10.1016/j.cedpsych.2020.101841

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Psychology

ORIGINAL RESEARCH
published: 01 December 2020
doi: 10.3389/fpsyg.2020.592582

Perceived Teacher Responses to Bullying Influence Students' Social Cognitions

Karlien Demol[1], Karine Verschueren[1], Christina Salmivalli[2] and Hilde Colpin[1]*

[1]School Psychology and Development in Context, Faculty of Psychology and Educational Sciences, KU Leuven, Leuven, Belgium, [2]INVEST Research Flagship, Department of Psychology and Speech-Language Pathology, University of Turku, Turku, Finland

Teachers' responses to bullying incidents are key in bullying intervention at school. Scholars have suggested that teacher responses can predict student cognitions that are associated with their bullying behaviors. However, little is known about whether and how teacher responses affect these cognitions. Therefore, the current study investigated the effects of four immediate teacher responses on four bullying-related student cognitions, using an experimental vignette design. Additionally, it was examined whether students' own participant role behaviors in actual bullying moderated these effects. The investigated teacher responses were non-response, comforting the victim, correcting the bully, and a combination of comforting the victim and correcting the bully. The investigated student cognitions were perceived teacher attitudes toward bullying, perceived teacher moral disengagement regarding bullying, student willingness to report bullying to the teacher and student expectations regarding bullying participant role behaviors in the classroom. Fourth-to-sixth grade students (N = 910; 47% boys; M_{age} = 11.04 years, SD = 0.91) read a vignette describing a hypothetical teacher's response to a same bullying incident, following random assignment to one of eight conditions (i.e., four teacher responses × two genders of bully and victim in the vignette). Afterward, students completed questionnaires about their social cognitions and manipulation checks. ANOVA demonstrated that students perceived stronger teacher anti-bullying attitudes and less teacher moral disengagement when the hypothetical teacher displayed an active response. These effects were even stronger when the teacher corrected the bully compared to when only the victim was comforted. Further, students were more willing to report bullying when the teacher corrected the bully than when the teacher only comforted the victim. Finally, students expected less pro-bullying behaviors, more defending and less victimization in the vignette's classroom following active teacher response compared to non-response. The effects of teacher responses on student cognitions were not moderated by students' own participant roles in bullying. Taken together, these findings emphasize the importance of active teacher responses to bullying, and especially, responses that clearly show that bullying is not tolerated. Teachers are encouraged to be aware that students can deduce beliefs from teacher responses which can, in turn, affect bullying processes in the classroom.

Keywords: teacher responses to bullying, student social cognitions, perceived teacher attitudes, perceived teacher moral disengagement, willingness to report bullying, bullying participant role behaviors, experimental vignettes

OPEN ACCESS

Edited by:
Antonius H. N. Cillessen, Radboud University Nijmegen, Netherlands

Reviewed by:
Wanderlei Abadio de Oliveira, University of São Paulo, Brazil
Francesca Giovanna Maria Gastaldi, University of Turin, Italy

****Correspondence:***
Karlien Demol
karlien.demol@kuleuven.be

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Psychology

Received: *07 August 2020*
Accepted: *09 November 2020*
Published: *01 December 2020*

Citation:
Demol K, Verschueren K, Salmivalli C and Colpin H (2020) Perceived Teacher Responses to Bullying Influence Students' Social Cognitions. Front. Psychol. 11:592582. doi: 10.3389/fpsyg.2020.592582

INTRODUCTION

Bullying among students at school is a persistent problem predicting various difficulties for victims (Arseneault, 2018). Although prevalence rates vary, several large-scale international studies have demonstrated that bullying affects the lives of students worldwide. For instance, in the latest report of the Health Behavior in School-aged Children (HBSC) survey of the WHO, overall, 10% of youth indicated that they had been repeatedly bullied at school during the past months (Inchley et al., 2020). Bullying has mostly been defined as repeated and intentional aggressive behavior toward others who have difficulties defending themselves (Olweus, 1993). Further, it has been recognized as a group process (Salmivalli et al., 1996) embedded in social contexts such as classrooms (e.g., Saarento et al., 2015b). Victims often suffer from a wide range of health and psychosocial problems, both in the short and long run (Moore et al., 2017). Also, they have a higher risk to develop poor socioeconomic outcomes throughout the life span (e.g., Wolke and Lereya, 2015; Arseneault, 2018). Clearly, research on the risk and protective factors of bullying and victimization is critical.

Teachers play an important role in reducing bullying (Brendgen and Troop-Gordon, 2015). They are the responsible adults in class and they are expected to secure a safe learning environment and deal effectively with any negative behaviors, including bullying (Kochenderfer-Ladd and Pelletier, 2008). A limited number of mostly observational studies have reported associations between teacher responses to bullying and the levels of bullying and victimization in classrooms (e.g., Troop-Gordon and Ladd, 2015; Campaert et al., 2017). However, to date, it remains largely unclear how exactly teacher responses may impact bullying. Scholars have pointed to student cognitions as possible intervening mechanisms (Troop-Gordon and Quenette, 2010; Menesini, 2019), but, thus far, few studies have examined effects of teacher responses on student cognitions. This study addresses this gap by investigating how teacher responses to bullying affect student social cognitions, using an experimental design.

Effects of Teacher Responses to Bullying on Students' Social Cognitions

When teachers are confronted with bullying among their students, they can intervene in multiple ways (Campaert et al., 2017; Wachs et al., 2018). Campaert et al. (2017) distinguished five responses in their conceptualization of teacher responses, more specifically a relational and supportive response (i.e., support to victim), a confronting response (i.e., disciplinary sanction for the bully), a response that involves both the bully and victim (i.e., mediation) and the whole class (i.e., group discussion). Additionally, Campaert et al. (2017) distinguished non-response as previous research showed that sometimes teachers do not respond to bullying.

Based on socio-cognitive theory (Bandura, 1986), students are expected to cognitively process teacher responses to bullying and look for the meaning behind these responses. Consequently, students may take different cues from teacher responses which may, in turn, affect their bullying-related behaviors. Although scholars have brought attention to different bullying-related student cognitions that could be impacted by teacher responses, so far, only a small number of mostly observational studies have examined this (Troop-Gordon and Quenette, 2010; Menesini, 2019). To fill this gap, the current study experimentally investigates the effects of different teacher responses to bullying on a comprehensive set of student social cognitions that are expected to be explanatory mechanisms in the association between teacher responses and bullying. These cognitions comprise (1) perceived teacher attitudes toward bullying, (2) perceived teacher moral disengagement regarding bullying, (3) students' willingness to report bullying to the teacher, and (4) students' expectations regarding classmates' participant role behaviors in bullying.

First, students may take cues regarding teacher attitudes toward bullying. By their responses to bullying, teachers can communicate what they consider appropriate and inappropriate behavior (Veenstra et al., 2014; van der Zanden et al., 2015). Based on goal-framing theory (Lindenberg, 2013), goals related with bullying behavior (e.g., achieving and maintaining high status in the peer group) are expected to be inhibited when an overarching goal to behave socially appropriately is activated. The "normative goal" that bullying is not acceptable can be activated when significant others stand for this norm. Teachers can be this significant other when students see them as authority figures who clearly stand up against bullying (Veenstra et al., 2014). Consequently, when teachers actively respond to bullying, they can promote the norm that bullying is not tolerated. Students may adjust to this norm making them less likely to bully again (Bandura, 1977; van der Zanden et al., 2015). Conversely, when teachers do not respond to bullying or only passively, they might signal that bullying is accepted which can result in more bullying (van der Zanden et al., 2015). Indeed, longitudinal studies have shown that teachers' efforts to intervene in bullying contributed negatively to the perceived acceptability of bullying in the classroom, and lower perceived acceptability, in turn, predicted lower bullying levels (Saarento et al., 2015a). Referring to social cognitive theory (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014), students are expected to perceive stronger anti-bullying attitudes in teachers who actively respond to bullying. Accordingly, weaker anti-bullying attitudes might be perceived when teachers do not respond.

Second, students may take cues of teacher moral disengagement regarding bullying. The mechanism of moral disengagement (Bandura et al., 1996) has been used to explain how people justify aggressive behavior and bullying (e.g., meta-analysis by Gini et al., 2014). A cross-sectional study indicated that teacher responses to bullying affect students' own levels of moral disengagement regarding bullying which, in turn, predicted the level of bullying (Campaert et al., 2017). Based on their findings, Campaert et al. (2017) stated that students may be less inclined to justify bullying when they understand from reasoning on teacher responses that bullying is unacceptable harmful behavior. However, to our knowledge, no previous study has investigated whether students take cues regarding moral disengagement of teachers based on their responses.

In line with perceived teacher attitudes, students might perceive less moral disengagement regarding bullying from teachers who actively respond. Conversely, when teachers do not respond, students might think that this is due to teachers justifying bullying in some way.

Third, teacher responses to bullying may affect students' willingness to report the bullying to teachers. Studies have found that students' willingness to report bullying is predicted by teachers' helpfulness in resolving past bullying episodes (Aceves et al., 2010), by students' expectations regarding how teachers would respond to bullying incidents (Cortes and Kochenderfer-Ladd, 2014) and by student-perceived teacher attitudes toward bullying (Blomqvist et al., 2020). For instance, by ignoring bullying, teachers express a lack of concern and give students the message that they cannot expect any assistance (Yoon and Bauman, 2014). Also, when teachers do not respond to bullying, less negative teacher attitudes toward bullying can be perceived (Veenstra et al., 2014). As a result, it is expected that students would be less willing to report bullying to non-responding teachers. Contrarily, it is expected that students would be more willing to report bullying to teachers who actively respond.

Fourth, teacher responses may impact students' expectations regarding classmates' participant role behaviors in bullying. In previous research, six participant roles that students can have in the group process of bullying have been identified: besides being victimized themselves, students may bully others, assist the bullies, reinforce the bullies' behaviors, defend and support the victimized peers, or remain non-involved outsiders (Salmivalli et al., 1996). Such responses are affected by individual as well as contextual factors (Salmivalli et al., 1996). Based on social learning theory (Bandura, 1977), teachers are expected to be role models for students. By their responses to bullying incidents, teachers can set expectations for students' behavior and the relational climate in class (Yoon and Bauman, 2014). For instance, when teachers do not respond after witnessing bullying, they may model insensitive and uncaring behavior (Yoon and Bauman, 2014) and students might expect fellow students to neither stand up to the bully nor support the victim. However, when teachers actively respond to bullying, teachers may model sensitive behavior (van der Zanden et al., 2015) and students might expect less pro-bullying behaviors (i.e., bullying, assisting, reinforcing) and less victimization in the classroom. In addition, students might expect more fellow students to defend victims and less fellow students to stay outsiders.

While researchers have referred to student social cognitions that could be predicted by teacher responses (e.g., Troop-Gordon and Quenette, 2010), to date, only one study has tested this experimentally (Demol et al., in revision). This vignette study in the fourth to sixth grade of elementary school investigated whether responses of an hypothetical teacher to a bullying incident affected students' own bullying attitudes, their empathy toward victims, their ideas of the teacher's bullying attitudes and their evaluations of teacher responses. Students' own bullying attitudes and empathy toward victims were not impacted by teacher responses. However, students' ideas of the teacher's attitudes toward bullying and their evaluations of the teacher responses differed among the teacher responses. A combination of confronting the bully and supporting the victim was evaluated as the most appropriate response. Further, when the bully was confronted, students perceived more anti-bullying attitudes in the teacher compared to when the victim was supported. Students perceived the least strong anti-bullying attitudes when the teacher did not respond and non-response was also judged to be the least appropriate response.

Although there is no previous research available, individual characteristics of students can be expected to moderate the effect of teacher responses on their cognitions. For instance, students' own typical responses in bullying situations (their participant role behaviors) may predict their perceptions of teacher responses. It is possible that for relatively higher levels of victimization and defending, the effect of teacher response is stronger. Students who are more victimized or who defend more can be expected to be more tuned to teacher responses and interpret them more strongly. As a result, their cognitions can be expected to be more strongly affected by teacher responses. For instance, teacher's non-response may yield even less willingness to report bullying to the teacher. Conversely, teacher's active responses may yield even more willingness to report bullying. Contrarily, for relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, and reinforcing), the effect of teacher response may be less strong as these behaviors may be related to lower caring about how teachers respond to bullying.

Current Study

Scholars have suggested that teachers' responses to bullying incidents may impact their students' social cognitions related with bullying processes (Troop-Gordon and Quenette, 2010; Menesini, 2019). However, to date, (experimental) research investigating the effects of teacher responses on students' social cognitions is very scarce. The current experimental vignette study aims at further unraveling how teacher responses can impact bullying. This study investigates the effects of four teacher responses on four student cognitions that are expected to be explanatory mechanisms in the association between teacher responses and bullying.

Inspired by the work of Campaert et al. (2017), this study focuses on four immediate teacher responses to bullying, i.e., Non-response, Comforting the Victim, Correcting the Bully, and a combination of Comforting the Victim and Correcting the Bully. Further, building on available evidence, this study focuses on four student cognitions: (1) perceived teacher attitudes toward bullying, (2) perceived teacher moral disengagement regarding bullying, (3) student willingness to report bullying to the teacher, and (4) student expectations regarding participant role behaviors in the classroom.

Building on social cognitive theory (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014), it is expected that when teachers actively respond to bullying (i.e., by Comforting the Victim, Correcting the Bully, or combining Comforting the Victim and Correcting the Bully) students will perceive stronger anti-bullying attitudes and less moral disengagement

in the teacher. Also, it is hypothesized that active teacher responses predict more student willingness to report bullying to the teacher. Further, students are hypothesized to expect less victimization, more defending, less pro-bullying behaviors and less outsider behaviors in the classroom following active response. Non-response is hypothesized to have a negative effect, i.e., predict less strong perceived teacher anti-bullying attitudes and more teacher moral disengagement, less student willingness to report bullying, more expected victimization, less expected defending, more expected pro-bullying behaviors and more expected outsider behaviors. Further, based on theory (Bandura, 1986; Veenstra et al., 2014) and the findings of Demol et al. (in revision), teachers are expected to show more disapproval of bullying when responses are directed to bullies. Therefore, perceived teacher anti-bullying attitudes are expected to be stronger and perceived moral disengagement to be lower when the teacher corrects the bully (with or without comforting the victim). Also, students willingness to report bullying to teachers might be higher when teachers directed responses to bullies as this more explicitly shows that they tried to stop the bullying (Veenstra et al., 2014; Blomqvist et al., 2020). Other differences between the active responses (i.e., Comforting the Victim, Correcting the Bully, and both Comforting the Victim and Correcting the Bully) will be explored as theory and research regarding this topic is very limited.

Finally, this study will explore whether and how students' own levels of different participant role behaviors in actual bullying moderate the effect of teacher responses on their cognitions. As there is no previous research available, it is difficult to formulate hypotheses. However, it can be tentatively expected that for relatively higher levels of victimization and defending, the effect of teacher response will be stronger. Contrarily, for relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, and reinforcing), the effect of teacher response may be less strong.

MATERIALS AND METHODS

Sample

The data of this study are part of the Teachers4Victims project that investigates the role of teachers in bullying and victimization in the fourth to sixth grade of elementary school by means of a longitudinal and experimental study. Ethical approval for the project was acquired from The Social and Societal Ethics Committee (SMEC) of KU Leuven. The current study uses data from the third wave of the longitudinal study, and the experimental study (conducted about 2 weeks after the third wave). The experimental data were collected from 910 students (55 classes, 11 elementary schools, 47% boys, M_{age} = 11.04 years, SD = 0.91, range: 9.27–13.95) with active parental consent (consent rate: 81%). Of these students, 31.2% were in grade 4, 35.7% in grade 5, and 33.1% in grade 6. Most students were born in Belgium (92.1%) and spoke Dutch at home (86.8%). The other students were born in several other countries of which most in the Netherlands, Poland, Romania, and Spain. Most other languages spoken at home were French, Arabic, English, and Turkish. Of the 910 students that participated to the experimental study, 890 students also participated to the third wave of the longitudinal study.

Procedure

Master and doctoral students at the faculty of Psychology and Educational Sciences of KU Leuven visited the schools to collect the data. The third wave of the longitudinal study took place about 2 weeks before the experimental study (May 2019). At the beginning of both data collections, the researchers explained bullying by reading aloud a description based on definition of Olweus (1993). Students were asked to follow by simultaneously reading the description on their own copy in silence. Students could reread the description at any time during data collection. At the third wave of the longitudinal study, students individually completed questionnaires about, for instance, participant role behaviors in bullying. At the experimental study, students first read a vignette with a story about a bullying incident that only differed regarding the teacher's response to it and the gender of the hypothetical bully and victim. A between-subjects 4x2 design (teacher response × gender bully and victim) with random assignment within classes was used (112–116 students in each condition). After reading the story, students completed questionnaires about the story. Afterward, they responded to questions for manipulation checks and questions about the credibility and recognizability of the story. At the end, a debriefing was given by the researchers. At both data collections, students could ask questions to the researchers at any time.

Vignettes

The vignettes, including the instructions, were similar to those developed by Demol et al. (in revision) inspired by Bauman and Del Rio (2006), with the exception that the description of the actual bullying incident was somewhat shortened. Eight versions of the vignette (four teacher responses × two gender bully and victim) were created and each participant read one vignette. The vignettes only differed regarding the teacher response (four: Non-response, Comforting Victim, Correcting Bully, and Comforting Victim and Correcting Bully) and the gender of the bully and victim (two: both either boys or girls). The bully and victim's gender were manipulated to counteract for possible gender effects. Mixed-gender versions were not developed as more versions would result in lower power and same gender bullying occurs more frequently (Baldry, 2004). The gender of the teacher could not be deduced from the story.

The vignette started with the instruction that students had to imagine having moved to a new school. Then, it was stated that, since the beginning of the school year, one classmate from the new class had been bullied by another. Next, a bullying situation between these classmates at the playground during a break was described. The bullying met definition of Olweus (1993), and consisted of verbal, physical, and relational bullying (Bauman and Del Rio, 2006):

> "Imagine that you have changed schools. You have been in a new class since the beginning of this school year.

> *Name victim* and *name bully* are two students from your new class. Since the beginning of the school year, *name victim* has been bullied by *name bully*. Today you see the next thing happen during playtime. *Name bully* tells *name victim* that *he/she* cannot play along with the group. This makes *name victim* sad and *he/she* gets tears in *his/her* eyes. *Name bully* sees this and says: "What a cry baby you are!" Before *name victim* can run away, *name bully* gives *him/her* a push and shouts: "Go cry a little harder!""

Then, the vignette stated that the teacher of their new class was supervising the playground and had seen everything that happened. Next, the teacher's response to the incident was presented. In the Non-response Condition, it was stated that the teacher did not respond to what happened. The teacher approached another group of students and asked them which game they were playing. In the active response conditions, the teacher either called *name victim* and comforted *him/her* (Comforting the Victim) or called *name bully* and made it clear to *him/her* that bullying is not allowed (Correcting the Bully). The teacher said that there will soon be a conversation in which will be decided what the bullying student must do to make up with *name victim*. In the last condition, the teacher first comforted the victim and then corrected the bully as in the Comforting the Victim and Correcting the Bully conditions, respectively.

Measures

Students' Social Cognitions

Perceived Teacher Bullying Attitudes

Students' ideas of the hypothetical teacher's bullying attitudes were measured by two validated questionnaires that were adapted to fit with the purpose of this study. First, the perceived general attitude of the hypothetical teacher toward bullying was measured by applying the item from Saarento et al. (2013) to the story: "What do you think the teacher in the story thinks of bullying?" Students responded on a five-point scale (1: "good" to 5: "totally wrong"). Support for the construct validity of the original item has been provided by previous studies (e.g., Saarento et al., 2015a). Second, the validated attitude questionnaire of Salmivalli and Voeten (2004) was adapted to measure students' ideas of the hypothetical teacher's bullying attitudes instead of students' own bullying attitudes. Prior to data collection, three items were omitted as they fitted less with the professional role of teachers (i.e., "Bullying may be fun sometimes."; "Bullying is stupid."; "It is funny when someone ridicules a classmate over and over again."). The revised scale consisted of seven items (two reverse coded) measured on a four-point scale (1: "not true" to 4: "true"; e.g., "The teacher from the story thinks that joining in bullying is a wrong thing to do."; "The teacher from the story thinks that bullying makes the victim feel bad."). A confirmatory factor analysis (CFA) supported the one-factor structure of the scale. Following current guidelines (Hu and Bentler, 1999; Kline, 2005; Weston and Gore, 2006), model fit was evaluated by the Chi-square test, Root Mean Square Error of Approximation (RMSEA) (including the 90% CI), the Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), and the Tucker-Lewis index (TLI). Indices showed good model fit [$\chi^2(14) = 51.32$, $p < 0.01$; RMSEA = 0.07, RMSEA 90% CI = (0.05–0.08), SRMR = 0.03, CFI = 0.97; TLI = 0.95]. Standardized loadings ranged from 0.44 to 0.85. Cronbach's alpha was 0.88. For each student, an average score was calculated. Higher scores reflect stronger perceived anti-bullying attitudes in the teacher.

Perceived Teacher Moral Disengagement Regarding Bullying

Students' ideas of the hypothetical teacher's moral disengagement regarding bullying were measured by adapting the questionnaire of Thornberg and Jungert (2013) to make students report about the hypothetical teacher instead of about themselves. The scale consisted of six items (e.g., "Bullying is okay in certain cases."; "Bullying is not so bad… something you have to put up with.") and measured to what extent students perceived that the hypothetical teacher reasoned in ways that justify bullying, blame the victim, and undermine the seriousness of bullying (Thornberg and Jungert, 2013). Students responded on a four-point scale (1: "not true" to 4: "true"). A CFA confirmed the one-factor structure of the scale. Indices showed good model fit [$\chi^2(9) = 31.05$, $p < 0.01$; RMSEA = 0.06, RMSEA 90% CI = (0.04–0.09), SRMR = 0.02, CFI = 0.98; TLI = 0.97]. Standardized loadings ranged from 0.67 to 0.91. Cronbach's alpha was 0.94. For each student, an average score was calculated. Higher scores reflect stronger perceived teacher moral disengagement.

Willingness to Report Bullying to the Teacher

Students' willingness to report bullying to the hypothetical teacher was measured by one item developed for the purpose of this study: "When I witness bullying, I would tell the teacher from the story about this." Students responded on four-point scale (1: "not true" to 4: "true").

Expectations Regarding Participant Role Behaviors in Bullying

Students' ideas regarding participant role behaviors in bullying in the vignette's class were measured by six items developed for the purpose of this study. Five items were based on the participant role questionnaire of Salmivalli and Voeten (2004) [i.e., bully, reinforcer, assistant, defender, and outsider; e.g., "In the class of the story, other students will bully."; "In the class of the story, students will stand up for *name victim* (for example, by comforting *him/her* or by telling *name bully* to stop bullying)."]. One item was added to measure victimization (i.e., "In the class of the story, other students will be bullied."). Students responded on four-point scale (1: "not true" to 4: "true"). An exploratory factor analysis was executed to explore whether the pro-bullying items (i.e., bully, reinforcer, and assistant) could be taken together. Factor loadings were high (0.70, 0.73, and 0.86, respectively). Additionally, the intercorrelations ranged from 0.51 to 0.63 and Cronbach's alpha was 0.80. Thus, based on students' scores on the bully, reinforcer,

and assistant role, for each student, an average score representing their expectations regarding pro-bullying behavior was calculated. Higher scores reflect higher expectations regarding the participant role behaviors (i.e., pro-bullying behavior, defending, outsider behavior, and victimization) in the vignette's class.

Students' Own Participant Role Behaviors in Actual Bullying

Data regarding students' own levels of different participant role behaviors in actual bullying were collected in the third wave of the longitudinal study. Peer nominations were used and five items were developed based on the participant role questionnaire of Salmivalli and Voeten (2004) (i.e., bully, reinforcer, assistant, defender, and outsider). Each item combined the descriptions of the participant role behaviors as formulated by Salmivalli and Voeten (2004) (e.g., "Which classmates bully other students at school? These are classmates who either start bullying, make others join in the bullying, always find new ways of harassing someone or do several of these actions."). As in the study of Kärnä et al. (2010), a question to measure victimization was added: "Which classmates are bullied at school by other students?" An unlimited number of nominations was allowed (Marks et al., 2013), except for self-nominations. To ensure reliability, at least 60% of the classmates had to participate in the peer nomination procedure (Marks et al., 2013). For this reason, four classes were excluded from the analyses. Proportion scores were calculated by dividing the number of received nominations by the total number of possible nominations. An exploratory factor analysis was executed to explore whether the pro-bullying participant roles (i.e., bully, reinforcer, and assistant) could be taken together. Factor loadings were high (0.87, 0.84, and 0.82, respectively), the intercorrelations ranged from 0.67 to 0.73 and Cronbach's alpha was 0.88. Thus, for the pro-bullying participant role behaviors, an average proportion score was calculated for each student.

Manipulation, Credibility, and Recognizability Checks

After completing the questionnaires measuring social cognitions and handing in the vignette, students completed three manipulation checks in a second set of questionnaires. The items measured whether students (1) perceived the situation as a bullying incident between classmates ("In the story, a student was bullied by a classmate.", true/not true), (2) identified the correct character as the victim and bully ("In the story, *name victim* was bullied by *name bully*.", true/not true), and (3) correctly identified the teacher response ("How did the teacher from the story respond to what had happened in the story? Choose one of the four teacher responses.", options corresponded to the responses in the vignettes).

After completing the manipulation checks, students completed two credibility and two recognizability checks. The credibility checks measured whether students perceived the bullying incident and the teacher's response as credible: "The bullying from the story could happen the same way in real life."; "A real teacher could respond to bullying the same way as the teacher from the story." Response options were "Yes, that is possible." and "No, that is not possible" (coded as 1 and 0, respectively). The recognizability checks measured whether students were familiar with the bullying incident and the teacher's response: "I have already seen bullying in real life that resembles the bullying from the story."; "I have already seen the teacher's response from the story (or a similar response) with a real teacher." Students could respond with "yes" or "no" (coded as 1 and 0, respectively).

Statistical Analyses

Preliminary Analyses

First, the distribution of students across conditions was inspected. Students (N = 910) were almost equally distributed across conditions (teacher response: N_1 = 228, N_2 = 227, N_3 = 228; N_4 = 227; gender of bully and victim: N_{boys} = 456, N_{girls} = 454) and Pearson's χ^2 tests revealed no significant differences between conditions regarding students' grade [$\chi^2(6) = 0.58$, $p = 0.997$] and gender [$\chi^2(3) = 0.63$, $p = 0.890$].

Second, students' responses to the manipulation checks were inspected. Students were excluded from all analyses when they did not answer correctly to the manipulation checks or had one or more missing values on these checks. Almost all students perceived the incident as bullying and correctly identified the victim and bully (97.4 and 95.7%, respectively). However, less students correctly identified the teacher's response (84.4%). In particular, students confused the single responses (Comforting Victim and Correcting Bully) with the combined response (Comforting Victim and Correcting Bully). As a result, 186 of the 910 students (20.4%) were excluded from all analyses.

Third, in the remaining sample of students who were not excluded from the analyses based on their responses to the manipulation checks (N = 724), students who possibly provided unreliable responses were identified using two indicators. To begin with, students of which their actual teachers had indicated that they had language difficulties (N = 79) were identified as having possibly provided unreliable responses. Next, students who did not indicate that they read the instructions and the vignette thoroughly (N = 12) were identified as having possibly provided unreliable responses. As five students met both criteria, in the end, a total of 86 students (11.9%) who possibly gave unreliable responses were identified. The total sample comprised 724 students and the subsample (i.e., the total sample without students who possibly provided unreliable responses) 638 students. All further analyses were executed on the total sample and subsample. In case of similar results, only the results from the analyses on the subsample are reported. Differences in results are reported in section Sensitivity Analyses.

Fourth, the responses to the credibility and recognizability checks were inspected. Across conditions, almost all students reported that the bullying incident and teacher's response were credible (95.9 and 90.9%, respectively). One third of the students (34.3%) were familiar with the bullying from the story and 44.4% of students were familiar with the teacher's response. **Table 1** presents the means and standard deviations across

TABLE 1 | Means and SD of credibility and recognizability checks across and within conditions.

Condition		Total				Non-response				Comforting victim				Correcting bully				Comforting victim + Correcting bully			
		boys		girls		boys		girls		boys		girls		boys		girls		boys		girls	
Variable		*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*	*N*	*M (SD)*
Credibility of bullying incident[a]		308	0.95 (0.22)	330	0.97 (0.18)	85	0.93 (0.26)	91	0.93 (0.25)	82	0.98 (0.16)	85	0.98 (0.15)	69	0.94 (0.24)	75	0.97 (0.16)	72	0.96 (0.20)	79	0.99 (0.11)
Credibility of teacher response[b]		307	0.93 (0.26)	330	0.90 (0.30)	84	0.81 (0.40)	91	0.69 (0.46)	82	0.95 (0.22)	85	0.95 (0.21)	69	0.99 (0.12)	75	0.99 (0.12)	72	0.97 (0.17)	79	0.99 (0.11)
Recognizability of bullying incident[a]		306	0.35 (0.48)	330	0.34 (0.47)	84	0.29 (0.45)	91	0.29 (0.45)	82	0.43 (0.50)	85	0.38 (0.49)	68	0.31 (0.47)	75	0.27 (0.45)	72	0.38 (0.49)	79	0.43 (0.50)
Recognizability of teacher response[b]		307	0.50 (0.50)	330	0.40 (0.49)	85	0.16 (0.37)	91	0.15 (0.36)	82	0.57 (0.50)	85	0.47 (0.50)	68	0.69 (0.47)	75	0.49 (0.50)	72	0.61 (0.49)	79	0.51 (0.50)

[a]*ANOVA showed no significant differences between conditions.*

[b]*ANOVA showed significant differences between conditions and post hoc comparisons were executed (see* ***Tables 2, 3****).*

and within conditions. ANOVA indicated that students in all eight conditions (4 teacher's response × 2 gender victim and bully) perceived the incident as equally credible and recognizable [resp. $F(7, 637) = 1.02$, $p = 0.42$; $F(7, 635) = 1.55$, $p = 0.15$]. However, significant differences between conditions appeared regarding the perceived credibility and recognizability of the teacher's response [resp. $F(7, 636) = 14.12$, $p < 0.001$; $F(7, 636) = 14.90$, $p < 0.001$]. *Post hoc* comparisons with the Games-Howell procedure were conducted to observe which conditions significantly differed from each other regarding students' scores on the perceived credibility and recognizability of the teacher's response. Overall, students almost always reported significant lower credibility and recognizability scores in the non-response conditions as compared to the active response conditions (see **Tables 2, 3**). No other significant differences appeared.

Main Analyses

IBM SPSS Statistics 26 was used to examine the effects of students' perceptions of teacher responses to bullying on their social cognitions. Mplus 8 (Muthén and Muthén, 1998-2017) was used to conduct the factor analyses (see section Measures). In the CFA's, maximum likelihood estimation with robust standard errors (MLR estimator) combined with the "complex analysis" feature was used to deal with item-level missingness, non-normality and non-independence of the observations (Muthén and Muthén, 1998-2017; Newman, 2014). Mplus 8 was also used to estimate the intraclass correlations (ICC's) and design effects at the level of the classroom. These statistics showed that for all outcomes little variance was explained by class (range ICC's: <0.01–0.02) and that the effects of dependence on standard error estimates were small (range design effects: 1.00–1.25; Peugh, 2010). Therefore, multilevel modeling was not needed (Peugh, 2010) and analysis of covariance (ANCOVA) could be used.

TABLE 2 | *Post hoc* comparisons of credibility of the teacher's response across conditions.

		Non-response – boys	Non-response – girls
		***M* = 0.81**	***M* = 0.69**
Comforting victim – boys	$M = 0.95$	$\Delta M = -0.14$, $SE = 0.05$	$\Delta M = -0.26^{**}$, $SE = 0.05$
Comforting victim – girls	$M = 0.95$	$\Delta M = -0.14$, $SE = 0.05$	$\Delta M = -0.26^{**}$, $SE = 0.05$
Correcting bully – boys	$M = 0.99$	$\Delta M = -0.18^{*}$, $SE = 0.05$	$\Delta M = -0.29^{**}$, $SE = 0.05$
Correcting bully – girls	$M = 0.99$	$\Delta M = -0.18^{*}$, $SE = 0.05$	$\Delta M = -0.29^{**}$, $SE = 0.05$
Comforting victim + Correcting bully – boys	$M = 0.97$	$\Delta M = -0.16$, $SE = 0.05$	$\Delta M = -0.28^{**}$, $SE = 0.05$
Comforting victim + Correcting bully – girls	$M = 0.99$	$\Delta M = -0.18^{*}$, $SE = 0.05$	$\Delta M = -0.30^{**}$, $SE = 0.05$

Mean differences regarding the credibility of the teacher's response between the non-response conditions and the active response conditions are presented. Other post hoc comparisons revealed no significant differences. $^{*}p < 0.010$; $^{**}p < 0.001$.

TABLE 3 | *Post hoc* comparisons of recognizability of the teacher's response across conditions.

		Non-response – boys	Non-response – girls
		M **= 0.16**	***M*** **= 0.15**
Comforting victim – boys	$M = 0.57$	$\Delta M = -0.41^{**}$, $SE = 0.07$	$\Delta M = -0.42^{**}$, $SE = 0.07$
Comforting victim – girls	$M = 0.47$	$\Delta M = -0.31^{**}$, $SE = 0.07$	$\Delta M = -0.32^{**}$, $SE = 0.07$
Correcting bully – boys	$M = 0.69$	$\Delta M = -0.53^{**}$, $SE = 0.07$	$\Delta M = -0.54^{**}$, $SE = 0.07$
Correcting bully – girls	$M = 0.49$	$\Delta M = -0.33^{**}$, $SE = 0.07$	$\Delta M = -0.34^{**}$, $SE = 0.07$
Comforting victim + Correcting bully – boys	$M = 0.61$	$\Delta M = -0.45^{**}$, $SE = 0.07$	$\Delta M = -0.46^{**}$, $SE = 0.07$
Comforting victim + Correcting bully – girls	$M = 0.51$	$\Delta M = -0.34^{**}$, $SE = 0.07$	$\Delta M = -0.35^{**}$, $SE = 0.07$

Mean differences regarding the recognizability of the teacher's response between the non-response conditions and the active response conditions are presented. Other post hoc comparisons revealed no significant differences.$^{**}p < 0.001$.

In step 1 of the analyses, the effects of relevant background variables (i.e., students' age and gender) and gender of bully and victim on the outcomes were examined. Variables that significantly predicted the respective outcomes were added as control variables to the models of these outcomes in steps 2 and 3. In step 2, the effect of teacher responses on the outcomes was examined, while controlling for the identified control variables. If the effect of teacher responses was significant, either planned or *post hoc* comparisons were executed depending on whether or not hypotheses had been formulated prior to the analyses. Regarding the planned comparisons, bootstrapping was used and the results of the contrasts not assuming equal variances were inspected (Field, 2017). For the effect size, Cohen's *d* for unequal-n design was calculated (Rosnow et al., 2000) with $d = 0.20$, 0.50, and 0.80 representing a small, medium, and large effect, respectively. Regarding the *post hoc* comparisons, the Games-Howell procedure with significance level 0.01 was used as the sample sizes and the variances were not equal in the different conditions. In step 3, the interactions between teacher responses and students' own levels of participant role behaviors in bullying were examined, while controlling for their main effects and the identified control variables. To control for multiple testing in the ANCOVA and planned comparison analyses, Bonferroni correction was used (Field, 2017). As 26 tests were carried out (step 2: 8 ANCOVA, 10 planned comparisons; step 3: 8 ANCOVA), the correction resulted in an alpha of 0.002.

All analyses were executed on the total sample and the subsample (i.e., without students who possibly provided unreliable responses). As the results regarding the validity and reliability of the measures, the credibility and recognizability checks and the descriptives were similar, only the results of the analyses on the subsample are reported. However, some differences in results concerning the main analyses appeared and are reported (see section Sensitivity Analyses). Also, as heterogeneity of variance could have affected the results, parameter estimates with robust standard errors (HC4) were inspected for the analyses on the subsample and the total sample (Field, 2017). All significant effects remained significant when robust standard errors were used.

RESULTS

Table 4 displays the descriptive statistics of the dependent variables, Across and within conditions. Extreme outliers ($| z | > 3.29$) within conditions were identified (see **Table 4**; Field, 2017). As the amount of extreme outliers was limited, they were not excluded from the analyses.

Control Variables

ANOVA revealed that, in general, girls were more willing to report bullying to the hypothetical teacher [$F(1, 631) = 7.01$, $p = 0.008$; $M_{girls} = 3.74$, $SE = 0.56$, $M_{boys} = 3.61$, $SE = 0.71$]. Also, girls generally expected more outsider behaviors in the vignette's classroom [$F(1, 630) = 8.58$, $p = 0.004$; $M_{girls} = 2.54$, $SE = 0.93$, $M_{boys} = 2.32$, $SE = 0.91$]. Boys, on the other hand, expected more pro-bullying behaviors and victimization in the vignette's classroom [respectively, $F(1, 633) = 5.83$, $p = 0.016$; $M_{girls} = 1.83$, $SE = 0.74$, $M_{boys} = 1.98$, $SE = 0.79$; $F(1, 629) = 4.77$, $p = 0.029$; $M_{girls} = 1.91$, $SE = 0.90$, $M_{boys} = 2.08$, $SE = 0.97$]. Further, with increasing age, more pro-bullying behaviors and less defending were expected in the vignette's classroom [$F(1, 633) = 14.14$, $p < 0.001$; $F(1, 632) = 6.64$, $p = 0.01$]. Finally, more defending was expected in the vignette's classroom when the hypothetical bully and victim were girls [$F(1, 632) = 4.38$, $p = 0.037$; $M_{hypo.girls} = 2.90$, $SE = 0.94$, $M_{hypo.boys} = 3.04$, $SE = 0.90$]. No other significant effects at alpha ≤ 0.05 were observed regarding the control variables. The variables that were found to significantly predict the respective outcomes were included in further analyses of these outcomes as a control variable.

Effects of Teacher Responses

First, *perceived teacher bullying attitudes* and *perceived teacher moral disengagement* were significantly affected by the teacher's response to bullying [general attitude: $F(3, 610) = 712.05$, $p < 0.001$, $\eta_p^2 = 0.78$; attitudes: $F(3, 634) = 321.73$, $p < 0.001$, $\eta_p^2 = 0.60$; moral disengagement: $F(3, 633) = 625.54$, $p < 0.001$, $\eta_p^2 = 0.75$]. Planned comparisons revealed that weaker anti-bullying attitudes and more moral disengagement were perceived for the teacher in the Non-response Condition compared to the active response conditions [either Correcting the Bully, Comforting the Victim, or a combination of Correcting the Bully and Comforting the Victim; general attitude: $t(270.89) = 43.52$, $p = 0.001$, $d = 4.17$; attitudes: $t(233.22) = 25.84$, $p = 0.001$, $d = 2.68$; moral disengagement: $t(195.84) = -31.19$, $p = 0.001$, $d = -3.53$]. The sizes of these effects were very large. Further, planned comparisons revealed that the teacher's general attitude toward bullying was perceived to be less negative in the Comforting the Victim Condition compared to the Correcting the Bully

TABLE 4 | Descriptive statistics of dependent variables across and within conditions.

Condition	Total		Non-response		Comforting victim		Correcting bully		Comforting victim + Correcting bully	
Variable	***N***	***M* (*SD*)**	***N* (*Out.*)**	***M* (*SD*)**	***N* (*Out.*)**	***M* (*SD*)**	***N* (*Out.*)**	***M* (*SD*)**	***N* (*Out.*)**	***M* (*SD*)**
General attitude of teacher	614	3.89 (1.25)	171 (4)	2.16^{a} (0.64)	161 (1)	$4.19^{b,c}$ (0.75)	135	$4.77^{b,d}$ (0.42)	147 (1)	$4.77^{b,d}$ (0.44)
Attitudes of teacher	638	3.22 (0.76)	176	2.27^{a} (0.63)	167 (2)	3.52^{b} (0.44)	144 (1)	3.59^{b} (0.41)	151 (2)	3.65^{b} (0.37)
Moral disengagement of teacher	637	1.59 (0.80)	175	2.71^{a} (0.64)	167 (1)	$1.26^{b,c}$ (0.34)	144 (4)	$1.12^{b,d}$ (0.20)	151 (4)	$1.12^{b,d}$ (0.22)
Willingness to report bullying	636	3.68 (0.64)	175 (4)	3.69 (0.66)	166	3.52^{a} (0.80)	144	3.74^{b} (0.53)	151 (3)	3.79^{b} (0.46)
Pro-bullying behaviors	638	1.90 (0.77)	176	2.43^{a} (0.77)	167	$1.85^{b,c}$ (0.73)	144 (1)	1.65^{b} (0.64)	151 (1)	$1.58^{b,d}$ (0.56)
Defending	637	2.97 (0.92)	176	2.62^{a} (0.95)	167	3.02^{b} (0.85)	144	3.06^{b} (0.93)	150	3.21^{b} (0.85)
Victimization	634	1.99 (0.93)	175	2.39^{a} (1.03)	165	1.99^{b} (0.87)	144	1.74^{b} (0.82)	150	1.75^{b} (0.82)
Outsider behaviors	635	2.44 (0.93)	175	2.39 (0.96)	166	2.43 (0.90)	143	2.47 (0.98)	151	2.48 (0.87)

For each outcome, superscript lowercase letters a, b, c, d, show which means significantly differ from each other based on planned or post hoc comparisons. 1 = perceived general attitude toward bullying of the hypothetical teacher; 2 = perceived attitudes toward bullying of the hypothetical teacher; 3 = perceived moral disengagement regarding bullying of the hypothetical teacher; 4 = willingness to report bullying to the hypothetical teacher; 5 = expectations regarding pro-bullying behaviors in the vignette's class; 6 = expectations regarding defending in the vignette's class; 7 = expectations regarding victimization in the vignette's class; and 8 = expectations regarding outsider behaviors in the vignette's class; Out, outliers.

Conditions [with and without Comforting the Victim; $t(221.15) = 9.03$, $p = 0.001$, $d = 1.03$]. Additionally, more moral disengagement was perceived in the Comforting the Victim Condition compared to the Correcting the Bully Conditions [with and without Comforting the Victim; $t(238.82) = -4.72$, $p = 0.001$, $d = -0.52$]. These effects were large and medium in size. No significant differences regarding perceived teacher bullying attitudes and perceived teacher moral disengagement were observed between only Correcting the Bully and the combined response of Correcting the Bully and Comforting the Victim.

Second, *students' willingness to report bullying to the teacher* was significantly affected by the teacher's response [$F(3, 631) = 5.30$, $p = 0.001$, $\eta_p^2 = 0.03$]. Planned comparisons showed no significant differences between the Non-response Condition and the active response conditions (either Correcting, Comforting or Both). However, in the Correcting the Bully Conditions (with and without Comforting the Victim), students were more willing to report bullying to the teacher compared to students in the Comforting the Victim Condition [$t(237.39) = 3.48$, $p = 0.002$, $d = 0.38$]. This effect was small in size. No significant difference was observed between only Correcting the Bully and the combined response of Correcting the Bully and Comforting the Victim.

Third, *students' expectations regarding pro-bullying behaviors*, *defending* and *victimization* in the vignette's class were predicted by the teacher's response [pro-bullying: $F(3, 631) = 53.24$, $p < 0.001$, $\eta_p^2 = 0.20$; defending: $F(3, 630) = 12.56$, $p < 0.001$, $\eta_p^2 = 0.06$; victimization: $F(3, 629) = 19.94$, $p < 0.001$, $\eta_p^2 = 0.09$]. *Students' expectations regarding outsider behaviors* in the vignette's classroom were not significantly predicted by the teacher's response. Planned comparison revealed that less pro-bullying behaviors, more defending and less victimization were expected in the active response conditions compared to the Non-response Condition [pro-bullying: $t(273.24) = -11.24$, $p = 0.001$, $d = -1.08$; defending: $t(294.22) = 5.72$, $p = 0.001$, $d = 0.53$; victimization: $t(266.57) = -6.56$, $p = 0.001$, $d = -0.64$]. These effects were medium to large. Further, *post hoc* comparisons with the Games-Howell procedure revealed that less pro-bullying behaviors were expected in the condition where the teacher both Comforted the Victim and Corrected the Bully compared to the condition in which only the Victim was Comforted [$\Delta M = -0.27$, $SE = 0.07$, $p = 0.002$, 99% CI = $(-0.49, -0.04)$]. Regarding *students' expectations for defending* and *victimization*, *post hoc* comparisons with the Games-Howell procedure revealed no significant differences between the active responses.

No interaction effects between the teacher's response and students' own participant role behaviors in bullying were significant at the Bonferonni corrected alpha level ($\alpha = 0.002$).

Sensitivity Analyses

When the results based on the total sample were compared with the results based on the subsample, two differences were observed. First, in the total sample, the gender of the bully and victim did not significantly affect students' expectations regarding defending in the vignette's classroom [$F(1, 716) = 3.82$,

$p = 0.051$; $M_{hypo.girls} = 2.88$, $SE = 0.95$, $M_{hypo.boys} = 3.00$, $SE = 0.95$]. Second, in the total sample, students did not expect significantly (at alpha 0.002) less pro-bullying behaviors in the condition where the teacher both Comforted the Victim and Corrected the Bully compared to the condition in which only the Victim was Comforted [$\Delta M = -0.25$, $SE = 0.07$, $p = 0.003$, 99% CI = $(-0.47, -0.03)$].

DISCUSSION

Bullying affects students worldwide and is associated with a wide range of short- and long-term difficulties, especially for victims (Arseneault, 2018). As bullying is often embedded in classrooms, teachers are considered to be key figures in bullying intervention (Brendgen and Troop-Gordon, 2015). A limited number of studies have shown that by their responses to bullying incidents, teachers can affect bullying levels in their classrooms (e.g., van der Zanden et al., 2015; Campaert et al., 2017). To get further insight in how teacher responses predict bullying, scholars have pointed to different student social cognitions related with bullying processes that could be impacted by teacher responses (Troop-Gordon and Quenette, 2010; Menesini, 2019). However, thus far, only a few studies, of which most are correlational, have examined effects of teacher responses on student cognitions. This study aimed to fill this gap and to provide insight in whether and how teacher responses to bullying influence students' cognitions, which, in turn, can be assumed to explain students' bullying-related behaviors. Experimental vignettes were used to investigate the effects of four teacher responses to a same bullying incident (Non-response, Comforting Victim, Correcting Bully, and a combination of Comforting Victim and Correcting Bully) on four student social cognitions: (1) perceived teacher attitudes toward bullying, (2) perceived teacher moral disengagement regarding bullying, (3) student willingness to report bullying to the teacher, and (4) expectations regarding bullying participant role behaviors in the vignette's classroom.

Based on socio-cognitive theory (Bandura, 1986), students were expected to cognitively process teacher responses to bullying and to take different cues from them. First, students were expected to make interpretations regarding the *teacher's attitudes toward bullying*. Building on theory and previous research (Veenstra et al., 2014; van der Zanden et al., 2015; Demol et al., in revision), it was hypothesized that students would perceive stronger anti-bullying attitudes when the hypothetical teacher actively responded to the bullying. Further, it was hypothesized that even stronger anti-bullying attitudes would be perceived when the teacher corrected the bully. The results confirmed the hypotheses and provided further support for previous findings. Our findings suggest that when teachers actively respond to bullying and especially when they confront bullies, students perceive stronger teacher anti-bullying attitudes. Conversely, when teachers do not respond, students may get the impression that teachers condone bullying or that they do not care about it. Based on social learning theory (Bandura, 1977), perceived teacher attitudes can be assumed to inform students about teachers' expectations regarding acceptable behavior in class which may predict students' own behavior. This is in line with previous research showing that students' perceptions of teachers' bullying attitudes were longitudinally related with bullying levels (Saarento et al., 2015a) and concurrently with victimization levels (Saarento et al., 2013; Cortes and Kochenderfer-Ladd, 2014). Additionally, weaker teacher anti-bullying attitudes as perceived by victims might be associated with more victimization as victims are less inclined to seek help from these teachers (Blomqvist et al., 2020).

A second cue that students were expected to take concerned *teacher's moral disengagement regarding bullying*. No previous studies were available, but based on the expectations regarding perceived teacher attitudes, students were expected to perceive less moral disengagement in the hypothetical teacher who actively responded. This effect was also expected to be stronger when the bully was corrected. These hypotheses were confirmed and complement the findings of Campaert et al. (2017) who showed that teacher responses are predictive for students' own levels of moral disengagement in bullying. Based on social learning theory (Bandura, 1977), it can be expected that when students perceive from teacher responses that teachers justify bullying, blame victims, or undermine the seriousness of bullying, students could reason about bullying the same way. This is problematic as research has shown students' moral disengagement regarding bullying is significantly related with aggressive behavior (Gini et al., 2014). Instead, when students understand moral principles and know that there is no valid justification for bullying, they can be protected from bullying (Zych et al., 2017). Therefore, teachers should model behavior that promotes social, emotional, and moral competencies in students (Zych et al., 2017).

Third, based on previous research (e.g., Aceves et al., 2010; Blomqvist et al., 2020), students' willingness to report bullying to the hypothetical teacher was expected to be higher when the teacher actively responded to the bullying. This effect was also expected to be stronger when the teacher corrected the bully (Veenstra et al., 2014; Blomqvist et al., 2020). We found that students' willingness to report bullying to the teacher was high in all four conditions. It seems that most students, as bystanders, considered it as their duty to report bullying to teachers, regardless of the teacher's response in the vignette. It is a positive finding that students' telling about bullying was high as this has been found to be an important predictor of teacher involvement in bullying (Novick and Isaacs, 2010) and as classrooms with higher willingness to report bullying have lower levels of victimization (Cortes and Kochenderfer-Ladd, 2014). However, students' responses to this outcome might have been influenced by social desirability as the social norm is to stand up in case of aggression. Although, unexpectedly, willingness to report bullying was not higher when the teacher actively responded compared to non-response, differences between the active responses confirmed that students would be more willing to report bullying when the teacher corrected the bully than when only the victim was comforted. When teachers

confront bullies, they explicitly show that they try to stop bullying (Veenstra et al., 2014) and that might be key for students willing to report. However, it is important to consider that bystanders' intentions to report bullying were investigated. Findings could be different for victims. For instance, fear of retaliation, which could be particularly pronounced in victims, could predict less willingness to report bullying to teachers especially when they direct responses to bullies (Yoon and Barton, 2008).

The fourth and last investigated cognition was *students' expectations regarding participant role behaviors in bullying in the vignette's class*. Based on previous research, Yoon and Bauman (2014) argued that by their responses to bullying, teachers can set expectations for potential bullies, victims, and other students' future behaviors and the relational climate in class. Therefore, it was hypothesized that when the teacher actively responded, students would expect less pro-bullying behaviors, more defending, less victimization, and less outsider behaviors. Due to the unavailability of previous research, differences between the active responses were explored. In line with the hypotheses, students expected less pro-bullying behaviors, more defending and less victimization in the classroom when the teacher actively responded. For outsider behaviors, there were no significant differences between any responses. Further, there were no significant differences between the active responses regarding expectations for defending and victimization. Less pro-bullying behaviors were expected when the teacher both comforted the victim and corrected the bully vs. when only the victim was comforted, but this difference was not significant in the analyses on the total sample. Together these findings indicate that students do think that active teacher responses have beneficial effects on bullying processes in classrooms. Students do expect less bullying, more defending and less victimization following active teacher responses. This is in line with the findings from Campaert et al. (2017) showing that non-response predicted higher bullying and victimization, and disciplinary sanctions and victim support predicted less bullying and victimization respectively.

Finally, it was explored whether students' own levels of different participant role behaviors moderated the effect of teacher responses on their cognitions. Due to the unavailability of previous research, it was only tentatively expected that for relatively higher levels of victimization and defending, the effect of teacher response would be stronger. For relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, and reinforcing), the effect of teacher response was expected to be less strong. These expectations were not confirmed. Although, in this study, no moderating effects of students' own bullying participant role behaviors on their cognitions were found, it is possible that students' cognitions about actual teacher responses are affected by individual characteristics such as their bullying-related behaviors and beliefs.

To conclude, first, the results of the current study are in line with social cognitive (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014) and confirm findings by Demol et al. (in revision) showing that students can deduce beliefs from an imaginary teacher's behavior. Second, in the current study, non-response was also found to have important effects on students' beliefs indicating that it should actually be considered as a response. Our findings indicate that students believe that a non-responding teacher thinks less negatively about bullying and justifies it more. In addition, our study suggests that students believe that non-response, compared to active responses, would have adverse effects on bullying processes in the classroom (i.e., more bullying and victimization, less defending). Third, a confronting response directed to the bully (correcting) had a stronger effect on students' cognitions than a supporting response directed to the victim (comforting). Students perceived even stronger anti-bullying attitudes and even less moral disengagement when the teacher corrected the bully. Further, when the teacher corrected the bully, students were more willing to report bullying to the teacher. Overall, this study found clear evidence for effects of teacher responses on student perceptions about the teacher and about classroom dynamics. However, evidence regarding effects on students themselves, more specifically on their willingness to report bullying, was less clear.

Strengths, Limitations, and Suggestions for Future Research

The current study used experimental vignettes to investigate whether and how teacher responses to bullying influence different bullying-related student cognitions in a large sample of upper elementary school students. The design, including the use of a vignette, permitted to manipulate teacher responses without interfering in reality and to draw causal conclusions. The statistical analyses took into account several characteristics of the data (e.g., Cohen's *d* for unequal-n design, *post hoc* comparisons with Games-Howell procedure), controlled for multiple testing and sensitivity analyses largely confirmed the findings. However, the study also has a number of limitations that are worth noticing. First, as hypothetical stories were used, students' cognitions should also be interpreted as hypothetical reactions. It is not certain that students' cognitions following actual bullying and actual teacher responses would be similar. This study included credibility and recognizability checks to verify whether the bullying incident and teacher's response were credible and recognizable for students. If so, the likelihood that the cognitions would reflect real life cognitions would be higher. Almost all students perceived the bullying incident as credible, but the teacher's non-response was perceived to be less credible than the active responses. Additionally, non-response was less recognizable to the students. As a result, students' cognitions following non-response could be less realistic. Although the use of experimental vignettes has several merits, observational studies, preferably longitudinal, are needed to confirm findings in actual classrooms.

Second, as students were randomly assigned to conditions, the risks that individual- and class-level factors influenced the findings were reduced. However, in future research, it could be interesting to investigate main and moderating effects of these factors on students' cognitions (e.g., students' own attitudes

toward bullying, classroom bullying levels, actual teacher's responses to bullying).

Third, although the investigated teacher responses were carefully selected based on previous studies, the study is limited in that only four different immediate teacher responses were investigated. The results of this study should be interpreted in relation to these specific responses and should not be generalized to other responses. Future studies could focus on other responses (e.g., involving others, mediation) or investigate responses in a more differentiated way (e.g., different responses targeting the bully; see Garandeau et al., 2016).

Practical Implications

First, it is important for teachers to realize that students can deduce beliefs from their observations of teacher responses to bullying. These beliefs or student cognitions, in turn, can affect bullying processes in the classroom for better or worse. For instance, when students perceive from teachers' non-response that their teachers do not disapprove of bullying, they can be more likely to engage in bullying (Saarento et al., 2013).

Second, the present findings further emphasize the importance of active teacher responses to bullying and especially responses that explicitly show that bullying is not tolerated. Teacher responses are an important part of bullying intervention (Yoon and Bauman, 2014). However, previous research has indicated that sometimes teachers do not intervene and that they are often ill-prepared to effectively deal with bullying (Yoon and Bauman, 2014). Teacher training could focus on several aspects that have been found to increase chances of teacher intervention such as recognizing bullying situations and teacher's self-efficacy beliefs (for an overview, see Newman et al., 2010).

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Social and Societal Ethics Committee (SMEC) of KU Leuven. Written informed consent to participate in this study was provided by the participants' legal guardian/ next of kin.

AUTHOR CONTRIBUTIONS

KD conceived of the study, coordinated the data collection, constructed the hypotheses, performed the statistical analyses, interpreted the results, and drafted the manuscript. KV conceived of the study, constructed the hypotheses, interpreted the results, and drafted the manuscript. CS conceived of the study, constructed the hypotheses, interpreted the results, and drafted the manuscript. HC conceived of the study, supervised the data collection, constructed the hypotheses, interpreted the results, and drafted the manuscript. All authors contributed to the article and approved the submitted version.

FUNDING

This study was funded by the Research Foundation Flanders (G071317N). Academische Stichting Leuven (2018/125) funded an international research stay of KD at the institute of CS.

ACKNOWLEDGMENTS

We thank the teachers and the students who participated in the study. Also, we are grateful to the master and doctoral students who assisted in the data collection. Finally, we thank CS's researcher team for their useful suggestions in the preparation of the study.

REFERENCES

Aceves, M. J., Hinshaw, S. P., Mendoza-Denton, R., and Page-Gould, E. (2010). Seek help from teachers or fight back? Student perceptions of teachers' actions during conflicts and responses to peer victimization. *J. Youth Adolesc.* 39, 658–669. doi: 10.1007/s10964-009-9441-9

Arseneault, L. (2018). Annual research review: the persistent and pervasive impact of being bullied in childhood and adolescence: implications for policy and practice. *J. Child Psychol. Psychiatry* 59, 405–421. doi: 10.1111/jcpp.12841

Baldry, A. C. (2004). 'What about bullying?' An experimental field study to understand students' attitudes towards bullying and victimisation in Italian middle schools. *Br. J. Educ. Psychol.* 74, 583–598. doi: 10.1348/00070990 42376391

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A., Barbaranelli, C., and Caprara, G. V. (1996). Mechanisms of moral disengagement in the exercise of moral agency. *J. Pers. Soc. Psychol.* 71, 364–374. doi: 10.1037/0022-3514.71.2.364

Bauman, S., and Del Rio, A. (2006). Preservice teachers' responses to bullying scenarios: comparing physical, verbal, and relational bullying. *J. Educ. Psychol.* 98, 219–231. doi: 10.1037/0022-0663.98.1.219

Blomqvist, K., Saarento-Zaprudin, S., and Salmivalli, C. (2020). Telling adults about one's plight as a victim of bullying: student- and context-related factors predicting disclosure. *Scand. J. Psychol.* 61, 151–159. doi: 10.1111/sjop.12521

Brendgen, M., and Troop-Gordon, W. (2015). School-related factors in the development of bullying perpetration and victimization: introduction to the special section. *J. Abnorm. Child Psychol.* 43, 1–4. doi: 10.1007/s10802-014-9939-9

Campaert, K., Nocentini, A., and Menesini, E. (2017). The efficacy of teachers' responses to incidents of bullying and victimization: the mediational role of moral disengagement for bullying. *Aggress. Behav.* 43, 483–492. doi: 10.1002/ab.21706

Cortes, K. I., and Kochenderfer-Ladd, B. (2014). To tell or not to tell: what influences children's decisions to report bullying to their teachers? *Sch. Psychol. Q.* 29, 336–348. doi: 10.1037/spq0000078

Field, A. (2017). *Discovering statistics using IBM SPSS statistics*. London: Sage.

Garandeau, C., Vartio, A., Poskiparta, E., and Salmivalli, C. (2016). School bullies' intention to change behavior following teacher interventions: effects

of empathy arousal, condemning of bullying, and blaming of the perpetrator. *Prev. Sci.* 17, 1034–1043. doi: 10.1007/s11121-016-0712-x

Gini, G., Pozzoli, T., and Hymel, S. (2014). Moral disengagement among children and youth: a meta-analytic review of links to aggressive behavior. *Aggress. Behav.* 40, 56–68. doi: 10.1002/ab.21502

Hu, L. -T., and Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equ. Model.* 6, 1–55. doi: 10.1080/10705519909540118

Inchley, J., Currie, D., Budisavljevic, S., Torsheim, T., Jastad, A., Cosma, A., et al. (2020). "*Spotlight on adolescent health and well-being. Findings from the 2017/2018 health behavior in school-aged children (HBSC) survey in Europe and Canada. International report. Volume 1. Key findings*." Copenhagen: WHO Regional Office for Europe.

Kärnä, A., Voeten, M., Poskiparta, E., and Salmivalli, C. (2010). Vulnerable children in varying classroom contexts: bystanders' behaviors moderate the effects of risk factors on victimization. *Merrill-Palmer Q.* 56, 261–282. doi: 10.1353/mpq.0.0052

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Kochenderfer-Ladd, B., and Pelletier, M. E. (2008). Teachers' views and beliefs about bullying: influences on classroom management strategies and students' coping with peer victimization. *J. Sch. Psychol.* 46, 431–453. doi: 10.1016/j.jsp.2007.07.005

Lindenberg, S. (2013). "Social rationality, self-regulation, and well-being: The regulatory significance of needs, goals, and the self" in *The handbook of rational choice social research*. eds. R. Wittek, T. A. B. Snijders and V. Nee (Stanford, CA: Stanford University Press), 72–112.

Marks, P. E. L., Babcock, B., Cillessen, A. H. N., and Crick, N. R. (2013). The effects of participation rate on the internal reliability of peer nomination measures. *Soc. Dev.* 22, 609–622. doi: 10.1111/j.1467-9507.2012.00661.x

Menesini, E. (2019). Translating knowledge into interventions: an 'individual by context' approach to bullying. *Eur. J. Dev. Psychol.* 22, 1–23. doi: 10.1080/17405629.2018.1564273

Moore, S. E., Norman, R. E., Suetani, S., Thomas, H. J., Sly, P. D., and Scott, J. G. (2017). Consequences of bullying victimization in childhood and adolescence: a systematic review and meta-analysis. *World J. Psychiatry* 7, 60–76. doi: 10.5498/wjp.v7.i1.60

Muthén, L. K., and Muthén, B. O. (1998-2017). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.

Newman, D. A. (2014). Missing data: five practical guidelines. *Organ. Res. Methods* 17, 372–411. doi: 10.1177/1094428114548590

Newman, J. B., Frey, K. S., and Jones, D. C. (2010). "Factors influencing teacher interventions in bullying situations" in *Handbook of youth prevention science*. eds. B. Doll, W. Pfohl and J. Yoon (New York, NY: Routledge), 218–237.

Novick, R. M., and Isaacs, J. (2010). Telling is compelling: the impact of student reports of bullying on teacher intervention. *Educational Psychol.* 30, 283–296. doi: 10.1080/01443410903573123

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Oxford: Blackwell Publishing Ltd.

Peugh, J. L. (2010). A practical guide to multilevel modeling. *J. Sch. Psychol.* 48, 85–112. doi: 10.1016/j.jsp.2009.09.002

Rosnow, R. L., Rosenthal, R., and Rubin, D. B. (2000). Contrasts and correlations in effect-size estimation. *Psychol. Sci.* 11, 446–453. doi: 10.1111/1467-9280.00287

Saarento, S., Boulton, A. J., and Salmivalli, C. (2015a). Reducing bullying and victimization: student- and classroom-level mechanisms of change. *J. Abnorm. Child Psychol.* 43, 61–76. doi: 10.1007/s10802-013-9841-x

Saarento, S., Garandeau, C. F., and Salmivalli, C. (2015b). Classroom- and school-level contributions to bullying and victimization: a review. *J. Community Appl. Soc. Psychol.* 25, 204–218. doi: 10.1002/casp.2207

Saarento, S., Kärnä, A., Hodges, E. V. E., and Salmivalli, C. (2013). Student-, classroom-, and school-level risk factors for victimization. *J. Sch. Psychol.* 51, 421–434. doi: 10.1016/j.jsp.2013.02.002

Salmivalli, C., Lagerspetz, K., Björkqvist, K., Österman, K., and Kaukiainen, A. (1996). Bullying as a group process: participant roles and their relations to social status within the group. *Aggress. Behav.* 22, 1–15. doi: 10.1002/(SICI)1098-2337(1996)22:1<1::AID-AB1>3.0.CO;2-T

Salmivalli, C., and Voeten, M. (2004). Connections between attitudes, group norms, and behaviour in bullying situations. *Int. J. Behav. Dev.* 28, 246–258. doi: 10.1080/01650250344000488

Thornberg, R., and Jungert, T. (2013). Bystander behavior in bullying situations: basic moral sensitivity, moral disengagement and defender self-efficacy. *J. Adolesc.* 36, 475–483. doi: 10.1016/j.adolescence.2013.02.003

Troop-Gordon, W., and Ladd, G. (2015). Teachers' victimization-related beliefs and strategies: associations with students' aggressive behavior and peer victimization. *J. Abnorm. Child Psychol.* 43, 45–60. doi: 10.1007/s10802-013-9840-y

Troop-Gordon, W., and Quenette, A. (2010). Children's perceptions of their teacher's responses to students' peer harassment: moderators of victimization-adjustment linkages. *Merrill-Palmer Q.* 56, 333–360. doi: 10.1353/mpq.0.0056

van der Zanden, P. J., Denessen, E. J., and Scholte, R. H. (2015). The effects of general interpersonal and bullying-specific teacher behaviors on pupils' bullying behaviors at school. *Sch. Psychol. Int.* 36, 467–481. doi: 10.1177/0143034315592754

veenstra, R., Lindenberg, S., Huitsing, G., Sainio, M., and Salmivalli, C. (2014). The role of teachers in bullying: the relation between antibullying attitudes, efficacy, and efforts to reduce bullying. *J. Educ. Psychol.* 106, 1135–1143. doi: 10.1037/a0036110

Wachs, S., Bilz, L., Niproschke, S., and Schubarth, W. (2018). Bullying intervention in schools: a multilevel analysis of teachers' success in handling bullying from the students' perspective. *J. Early Adolesc.* 39, 642–668. doi: 10.1177/0272431618780423

Weston, R., and Gore, P. A. (2006). A brief guide to structural equation modeling. *Couns. Psychol.* 34, 719–751. doi: 10.1177/0011000006286345

Wolke, D., and Lereya, S. T. (2015). Long-term effects of bullying. *Arch. Dis. Child.* 100, 879–885. doi: 10.1136/archdischild-2014-306667

Yoon, J. S., and Barton, E. (2008). "The role of teachers in school violence and bullying prevention" in *School violence and primary prevention*. ed. T. W. Miller (New York, NY: Springer), 249–275.

Yoon, J. S., and Bauman, S. (2014). Teachers: a critical but overlooked component of bullying prevention and intervention. *Theor. Pract.* 53, 308–314. doi: 10.1080/00405841.2014.947226

Zych, I., Farrington, D. P., Llorent, V. J., and Ttofi, M. M. (2017). *Protecting children against bullying and its consequences*. Cham: Springer International Publishing AG.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

ORIGINAL RESEARCH
published: 04 December 2020
doi: 10.3389/feduc.2020.586962

German Pre-service Teachers' Evaluations of and Reactions to Interethnic Social Exclusion Scenarios

Hanna Beißert[1,2]* *and Meike Bonefeld*[2,3]

[1] Department of Education and Human Development, DIPF | Leibniz Institute for Research and Information in Education, Frankfurt am Main, Germany, [2] Center for Research on Individual Development and Adaptive Education of Children at Risk (IDeA), Frankfurt am Main, Germany, [3] Quality of Instruction in Heterogeneous Contexts, Department of Social Sciences, University of Mannheim, Mannheim, Germany

This study investigated pre-service teachers' evaluations, reactions, and interventions with regard to interethnic exclusion scenarios in Germany. More specifically, we focused on pre-service teachers (N = 145, 99 female, M_{age}= 21.34) in the role of observers of exclusion among students. Using hypothetical scenarios in which either a German or a Turkish boy was excluded by other children of his class, we assessed teachers' evaluations of this exclusion behavior. This included evaluating how likely teachers were to intervene in the situation and what they would specifically do. The aim of this research was to examine whether the origin of an excluded student represents a relevant category for teachers' evaluations of and reactions to social exclusion. In addition, we aimed to determine whether teachers include aspects related to group functioning in their considerations. The analyses demonstrated that teachers generally reject social exclusion, with female participants rejecting exclusion even more than male participants. Further, participants evaluated the exclusion of a Turkish protagonist as more reprehensible than the exclusion of a German protagonist. Regarding the likelihood of intervention, the origin of the excluded person was only relevant for male participants; i.e., they were less likely to intervene when the excluded person was German than when the excluded person was Turkish. Analyses of teachers' reasoning revealed their strong focus on inclusion as a social norm, especially in cases of interethnic exclusion. That is, when participants reasoned about the exclusion of the Turkish protagonist, they referred to the social norm of inclusion much more than when talking about the German protagonist. In contrast, aspects related to group functioning were scarcely of importance. In terms of the specific actions that participants would undertake as a reaction to the exclusion situation, no differences related to the origin of the excluded person were found. Hence, the origin of the excluded person factored into both the evaluation of the exclusion and the likelihood of intervention, but once the decision to intervene was made, there were no differences in the specific actions. The results are discussed in light of practical implications and teacher training as well as in terms of implications for future research.

Keywords: social exclusion, interethnic exclusion, intergroup exclusion, teacher reactions, teacher evaluations, intergroup processes

OPEN ACCESS

Edited by:
Luciano Gasser, University of Teacher Education Lucerne, Switzerland

Reviewed by:
Sue Walker, Queensland University of Technology, Australia
Irina Rosa Kumschick, Pädagogische Hochschule Luzern, Switzerland

***Correspondence:**
Hanna Beißert
beissert@dipf.de

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *24 July 2020*
Accepted: *09 November 2020*
Published: *04 December 2020*

Citation:
Beißert H and Bonefeld M (2020) German Pre-service Teachers' Evaluations of and Reactions to Interethnic Social Exclusion Scenarios. Front. Educ. 5:586962. doi: 10.3389/feduc.2020.586962

INTRODUCTION

The German educational system—as many others in Western Europe and the United States—has a student population with very heterogeneous cultural backgrounds. Germany has been an immigration country for at least half a century (Oltmer, 2017). As a result, the general population and, thus, the student body are characterized by considerable cultural diversity. Unfortunately, Germany has not been overly successful in achieving integration and educational equality so far. Even though some positive development has been noted in recent years, research has extensively demonstrated that students from ethnic minorities experience various disadvantages in the educational system (Müller and Ehmke, 2016; Weis et al., 2019). For instance, they are overrepresented in lower school tracks and underrepresented in higher school tracks (Baumert and Schümer, 2002; Kristen and Granato, 2007); they drop out of school more often (Rumberger, 1995); they are recommended for lower school tracks more often (Glock et al., 2015), and their academic achievement tends to be lower than that of their native peers (Walter, 2009; Klieme et al., 2010). While a seminal body of research has focused on achievement-related disparities, little is known about the social situation of immigrants in the educational system. For instance, do students from ethnic minorities face more social exclusion in peer interactions than their native peers? Are they socially well integrated into their peer group? And what roles do teachers play in this context?

While the study of interethnic friendships has a somewhat longer tradition (Reinders, 2004; Schacht et al., 2014), in recent years, research has started to investigate exclusion behavior among students in the context of interethnic group processes. As a result, research from Germany has recurrently shown that students are much more likely to choose peers of the same race as a friend than peers from another race (e.g., Kalter and Kruse, 2015; Schachner et al., 2016). This holds especially for close friendships (Winkler et al., 2011) and is particularly evident for children of Turkish origin (Schachner et al., 2016; Carol and Leszczensky, 2019). In addition, it has been shown that social exclusion often happens based on group memberships such as race or ethnicity (Killen and Stangor, 2001; Killen et al., 2010; Abrams and Killen, 2014; Hitti and Killen, 2015). Additionally, minority groups are especially likely to be confronted with stereotypical mindsets and behavior, which can also result in the exclusion of students from ethnic minorities (Killen et al., 2013). In line with these findings, belonging to an ethnic minority has been identified as a risk factor for exclusion among peers. Plenty and Jonsson (2017), for instance, investigated social exclusion among adolescents and found that students from ethnic minorities were rejected more than majority youth.

What remains unclear is the role of teachers in this context. In general, teachers can have a strong impact on their students' attitudes and behavior. For instance, they establish rules that indicate which behaviors are acceptable in class and which are not. They are important role models for their students, especially when it comes to ethnic topics (Evans, 1992). Thus, how they interact with their students is particularly important. With the way teachers behave, they transmit their attitudes and beliefs (Muntoni and Retelsdorf, 2020). Through their behavior they transmit both explicit and implicit messages about their attitudes related to the importance of inclusion and diversity in schools (Cooley et al., 2016). In this way, teachers' reactions and responses to interethnic social exclusion can have an impact on their students' attitudes and behavior. For instance, in a study that Verkuyten and Thijs (2002b) conducted in the Netherlands with students aged between 10 and 13 years old, youth from ethnic minorities reported less exclusion and dismissive behavior when they believed that they could confide in their teacher and when they believed that their teacher would take action if they told him or her that they had been treated unfairly. Thus, it can be assumed that teachers' commitment to addressing intergroup exclusion issues and their engagement in explicit discussions about the importance of inclusion have positive effects on their students' intergroup attitudes and behavioral tendencies related to inclusion or exclusion (Cooley et al., 2016). That is, the way teachers react to interethnic exclusion situations forms and impacts their students' attitudes and behavior in a subtle way. In this way, teachers can contribute to students' moral development and help them understand moral norms such as equality, fairness, and inclusion (Cooley et al., 2016). As teachers play such an important role in their class's social system, especially in the context of interethnic group processes, and as their behaviors can contribute to positive or negative intergroup dynamics, research is needed on teachers' responses to interethnic exclusion (i.e., social exclusion including students from different ethnicities) in order to better understand the social climate in classrooms.

Although there is only little research on teachers' reactions to exclusion, there are some studies that focus on teachers' responses to bullying which include exclusion behavior (Yoon and Kerber, 2003; Bauman and Del Rio, 2006; Shur, 2006). However, we are not aware of any research that has examined teachers' reactions to interethnic exclusion among students. Therefore, many open questions remain: How do teachers evaluate interethnic exclusion and how do they deal with it? Are their evaluations of exclusion biased depending on the ethnic origin of the excluded person? Do such biases influence their behavioral tendencies?

Teachers' Evaluations of Students

A considerable part of a teacher's work involves evaluating students. In the context of achievement-related evaluations, it has been shown that teachers' judgments are often biased by irrelevant aspects related to their students (Glock, 2016; Holder and Kessels, 2017). Although teachers use relevant information about their students, their judgments or evaluations are often biased by information that, in fact, should be irrelevant for the respective judgment, such as a student's ethnicity (McCombs and Gay, 1988; Parks and Kennedy, 2007; Bonefeld et al., 2017). This has been shown for pre-service teachers as well as for in-service teachers (Glock et al., 2015; Bonefeld and Dickhäuser, 2018; Bonefeld and Karst, 2020; Bonefeld et al., 2020). Whereas, teachers' biased evaluations have been intensively investigated in the context of grading or other achievement-related aspects, it remains unclear whether ethnic origin is also relevant for teachers' judgments about social interactions, particularly in the context of social exclusion. Little is known about how teachers

perceive, evaluate, and react to interethnic exclusion. As reactions to social exclusion might already be an important topic in teacher training, the current study investigates pre-service teachers' reactions to interethnic exclusion scenarios in Germany.

Although teachers' evaluations of their students are affected by the characteristics of the students, their own characteristics can also be important in this context (Südkamp et al., 2017). For example, a teacher's gender might be a relevant characteristic which has an impact on the evaluation of social exclusion. Previous research has shown that females (children, adolescents, and adults) tend to oppose exclusion more strongly than males (e.g., Killen and Stangor, 2001; Horn, 2003; Beißert et al., 2019). One reason for this could be gender-specific socialization. Typically, girls' socialization has a stronger focus on harmony, caring behavior, and the avoidance of interpersonal struggles (Cross and Madson, 1997; Zahn-Waxler, 2000). Further, parents have been shown to address the harmful consequences of aggressive behavior much more in the education of girls than that of boys, leading to enhanced empathy in girls compared to boys (Smetana, 1989). Based on these gender-specific socialization aspects, females might feel a stronger need to prevent exclusion and promote inclusion and, thus, might also be more likely to intervene in exclusion situations. In the current study, we want to examine whether these gender effects can also be found in teachers' reactions to social exclusion among students.

Further, a teacher's own immigration history might be particularly relevant for their evaluation of interethnic social exclusion. Prior research on teachers' attitudes has shown that teachers' own immigration history influences their evaluations regarding students of different ethnicities (Kleen et al., 2019). In terms of social exclusion, having an immigration history in the family might, for instance, enhance a teacher's empathy with an excluded student who is from an ethnic minority. Thus, research on interethnic exclusion should always take into account the participants' own immigration history.

Intergroup Processes and Social Exclusion

It is in the nature of humans to organize the social world into categories (Brewer, 2001). Just as we classify plants and animals into taxonomies based on their typical characteristics, we classify people into groups. Categories help us to simplify and organize our complex world. This process of classifying people into groups is called social categorization. Whenever we perform such categorizations, we also differentiate between ingroup (a group to which we psychologically identify as being a member) and outgroup (a group with which we do not identify). According to social identity theory, people define their social identity based on group memberships (Tajfel, 1978; Tajfel and Turner, 1979). Against this background and with a view to achieving a positive social identity, people desire to identify with and belong to social groups seen as superior to others (Tajfel, 1982). Group members compare their ingroup to outgroups and positively define their ingroup to maintain their status (Tajfel, 1974; Tajfel and Turner, 1986). This preference for the ingroup is called ingroup favoritism or ingroup bias; it results in preferences that favor or promote the ingroup's status, often at the expense of other groups (Turner et al., 1979). Given this general tendency to prefer ingroup members and depreciate outgroup members, it is not surprising that exclusion is often based on group memberships such as race or ethnicity, and that ingroup-outgroup processes affect the evaluation of exclusion situations (Dovidio et al., 2005; Hitti et al., 2011; Killen et al., 2013). Furthermore, when children and adolescents have to justify exclusion, they often cite reasons related to smooth group functioning (Hitti et al., 2011; Mulvey, 2016). Hence, it is not only "raw" ingroup favoritism that promotes the exclusion of outgroup members. In many instances, children and adolescents expect outgroup members to have a negative impact on the group functioning within their ingroup.

There is extensive research demonstrating the role of ingroup-outgroup processes and group functioning for exclusion among children and adolescents. However, it remains unclear whether teachers' evaluations of student exclusion are also affected by intergroup processes such as ingroup favoritism. Furthermore, it is unclear whether teachers, as observers, also consider group functioning aspects when evaluating interethnic social exclusion among their students.

Current Study

The current study investigated German pre-service teachers' reactions to interethnic exclusion scenarios. More precisely, we focused on pre-service teachers in the role of observers of exclusion among students and examined their evaluations of these situations as well as their hypothetical interventions. The study aimed to shed light on the question of whether teachers' evaluations of interethnic exclusion situations are biased by ingroup-outgroup processes based on ethnicity. More specifically, we analyzed whether the ethnic origin of an excluded student represents a relevant category for teachers' evaluations and reactions, and whether they include group functioning aspects in their considerations. In our study, we focused on students with Turkish roots because they are the largest ethnic minority in Germany (DESTATIS, 2016). Further, Turkish students are a very important group because research has shown that negative attitudes about Turkish people are widespread in Germany (Glock et al., 2013; Glock and Karbach, 2015; Bonefeld and Karst, 2020). In order to examine the aforementioned issues, the current study used hypothetical exclusion scenarios in which the excluded protagonist was either a Turkish student or a German student. We assessed how pre-service teachers evaluated the exclusion scenario as well as how likely they would intervene in such a situation and how they would specifically react.

Hypotheses and Research Questions

Evaluation of Exclusion

Given that the need to belong and be accepted by others is a fundamental human need (Baumeister and Leary, 1995), it is not surprising that children, adolescents (Killen and Rutland, 2011), and adults (Beißert et al., 2019) typically reject exclusion. Thus, we expected a strong general tendency to reject exclusion (right-skewed distribution) across both protagonists. However, given the importance of intergroup processes—more precisely ingroup favoritism—in social situations, we assumed that the participants would evaluate the exclusion of a German protagonist (ingroup

member) as more reprehensible than the exclusion of a Turkish protagonist (outgroup member). Further, based on prior research with children and adolescents as well as on considerations related to gender-specific socialization, we expected females to generally reject exclusion more strongly—independently of the origin of the protagonist.

Likelihood of Intervention

It was an open question as to whether participants would differ in their reactions to the exclusion scenario depending on the respective protagonist (German vs. Turkish). For instance, were they more or less likely to intervene in situations with one protagonist or with the other? And when they decided to intervene or not, would their considerations differ depending on the excluded person?

Specific Actions

Our ultimate objective was to explore how exactly pre-service teachers would react to the exclusion situation and whether their specific actions would differ based on the origin of the excluded protagonist.

METHODS

Participants

The study included 145 pre-service teachers (99 female, M_{age} = 21.34, SD = 2.13) from various school tracks who were students at a university in the southwest of Germany. Within this sample, 58% of the participants had completed a school teaching internship as a mandatory part of their program. Sixteen of the participants had an immigration history in their family (i.e., at least one parent was born in a country other than Germany), but all participants were born in Germany. Three participants were excluded from the analyses because they had a Turkish background and, thus, the outgroup manipulation in the scenarios would not have worked for them. Participation was voluntary and informed consent was obtained from all participants.

Design and Procedures

The study was conducted in a research lab at the participants' university. The participants were recruited personally on campus. Additionally, flyers and posters advertising the study were distributed on campus. After arriving in the lab, the participants were seated in front of a computer screen. They were informed that they were participating in a study about social issues in school. Before the assessments started, they were informed of their data protection rights and learned that participation in the study was anonymous and voluntary, and that there were no disadvantages if they decided not to participate or leave the study early without completing it. Participants had to confirm that they understood the information and were willing to participate in the study. The study took approximately 10 min per person, and the participants were given a cupcake as an incentive for participation.

The participants completed a computer-based survey including a questionnaire collecting demographical information and were then presented with a hypothetical scenario in which one student was excluded from a learning group by his classmates. The excluded protagonist had either a typical German or a typical Turkish name. The names used in the scenario had been pretested in a former study by Bonefeld and Dickhäuser (2018). The exact wording of the scenario was as follows: "*While packing up after class (grade 7*[1]*), you observe some students making an appointment to study together. Max/Murat would like to join the learning group. The other students tell him that he can't join.*"

The study used a between-subjects design, and the participants were randomly assigned to the experimental conditions (71 were assigned the version with the German protagonist, 74 the version with the Turkish protagonist).

Measures

The participants' evaluations of the exclusion scenario were assessed with a scale consisting of three items on a seven-point Likert-type scale. The participants were asked to indicate how (1) not okay/okay, (2) unfair/fair, and (3) unjustifiable/justifiable they evaluated the scenario. A score was created indicating a participant's evaluation of the exclusion based on these three items (Cronbach's alpha = 0.84). High numbers indicate high acceptability of exclusion; low numbers indicate strong rejection of exclusion.

Additionally, participants were asked how likely it was that they would intervene in the situation if it happened in their class. This was also assessed using a seven-point Likert-type scale (very unlikely to very likely). Further, they were asked to justify their decision and to indicate what specifically they would have done (open-ended questions).

Coding of Open-Ended Questions

The coding systems for the open-ended questions (justification of likelihood of intervention, specific actions) were inductively developed from the surveys themselves (see **Tables 1**, **2** for an overview and examples). To prevent a loss of important information, coders were allowed to code up to three relevant justifications for each statement (if necessary). Coding was completed by two independent coders. On the basis of 25% of the interviews, interrater reliability was high, with Cohen's kappa = 0.85 for the justifications of the likelihood of intervention, and kappa = 0.95 for the specific actions. We included the most-used categories (all of which were used by more than 10% of the participants) in the analyses here.

RESULTS

Data Analyses

Univariate ANOVAs were used to test for differences in the evaluation of exclusion and the likelihood of intervention between the two different experimental conditions (German protagonist vs. Turkish protagonist). Repeated-measures ANOVAs were used for analyses on the justifications of the decisions and on the specific actions. In order to test for

[1]In Germany, students in seventh grade are typically around thirteen years of age.

TABLE 1 | Coding system for justifications of likelihood of intervention and frequencies for each category.

Category	Example	*N*
Need for information	*"I would intervene in order to find out why they didn't let him join the group."*	22
Children's autonomy	*"It's the children's' choice who to include or not"*	20
Group functioning	*"If they don't like him, studying together wouldn't work well."*	11
Empathy for the victim	*"I would intervene because the excluded person would be very sad."*	17
Social norm of inclusion	*"Because exclusion is generally not ok!", "Everybody should get a chance to participate."*	65
Class-oriented perspective	*"It is better for the sense of community to impede exclusion."*	10
Other	Meaningful, but single statements	7
Undifferentiated	Meaningless statements	21

N = number of cases.

TABLE 2 | Coding system for specific actions and frequencies for each category.

Category	Example	*N*
Ask for reasons	*"I would ask them why they excluded the student."*	80
Help to find inclusion-oriented solution	*"I would talk with the group and help them find a common solution."*	30
Explain norm of inclusion	*"I would explain to them that it is not ok to exclude others."*	16
Find alternative solution for excluded student	*"I would stand by the student and help him find another group."*	53
Class-based intervention	*"I would have a general conversation about inclusion and exclusion with the whole class without blaming anyone directly."*	15
Other	Meaningful, but single statements	7
Undifferentiated	Meaningless statements	1

N = number of cases.

differences between male and female teachers, the variable gender was included in all analyses. As participants' own ethnic background might influence their responses and reactions, their family immigration history was included in all analyses as a control variable.

Evaluation of Exclusion

As expected, we found a general tendency to reject exclusion across both protagonists, i.e., a right-skewed distribution on the evaluation scale with a skewness of 1.43 ($SE = 0.20$), a mean of 1.95 ($SD = 1.08$), mode = 1.0, and median = 1.67. See **Figure 1**, for the distribution of the means of the evaluation scale.

In order to test for differences in the evaluation of exclusion between the two protagonists, a 2 (protagonist: German, Turkish) × 2 (gender: male, female) univariate ANOVA was conducted with the participants' immigration history as a covariate. The results revealed a main effect of the protagonist, $F(1, 141) = 19.72$, $p < 0.001$, $\eta_p^2 = 0.12$; see **Figure 2**. In contrast to our expectations, the participants evaluated the exclusion of the Turkish protagonist as more reprehensible ($M = 1.64$, $SD = 0.78$) than the exclusion of the German protagonist ($M = 2.28$, $SD = 1.24$). Further, as expected, a main effect of the participants' gender was found, $F(1, 141) = 14.71$, $p = 0.001$, $\eta_p^2 = 0.10$, revealing that female participants rejected exclusion generally more strongly ($M = 1.76$, $SD = 0.94$) than male participants ($M = 2.36$, $SD = 1.23$). No effects of participants' immigration history were found. No interaction effects were found.

Likelihood of Intervention

In a next step, we analyzed differences in the participants' likelihood to intervene in such a situation by conducting a 2 (protagonist: German, Turkish) × 2 (gender: male, female) univariate ANOVA with participants' immigration history as a covariate. No main effects were revealed. However, a significant interaction of participants' gender and the protagonist was revealed, $F(1, 140) = 4.39$, $p = 0.038$, $\eta_p^2 = 0.03$. Specifically, male participants were less likely to intervene in the condition with the German protagonist than in the condition with the Turkish protagonist ($p = 0.024$), whereas female participants did not differ between the two conditions ($p = 0.710$); see **Figure 2**.

Justification of Likelihood of Intervention

Analyses were conducted on the participants' reasoning based on the proportional use of the targeted justification codes (all of which were used by more than 10% of the participants). The resulting codes were: "social norm of inclusion," "empathy for the victim," "need for information," and "children's autonomy." ANOVAs provide appropriate frameworks for performing repeated-measures reasoning analyses because they are robust to the problem of empty cells, whereas other data analytical procedures require cumbersome data manipulation to adjust for empty cells [see Posada and Wainryb (2008), for a more extensive explanation and justification of this data analytical approach].

In order to test for differences in participants' justifications based on the origin of the protagonist, a 2 (protagonist: German, Turkish) × 4 (justification: social norm of inclusion, empathy for the victim, need for information, children's autonomy,) × 2 (gender: male, female) ANOVA was run with repeated measures on the factor "justification" and with participants' immigration history as a covariate.

We found a main effect of justification $F(2.50, 342.96) = 12.23$, $p < 0.001$, $\eta_p^2 = 0.08$. The Greenhouse-Geisser adjustment method was used to correct violations of sphericity. The analyses revealed that justifications referring to the social norm of inclusion were used much more frequently than any other type of justification ($ps \leq 0.001$). This main effect was qualified by a

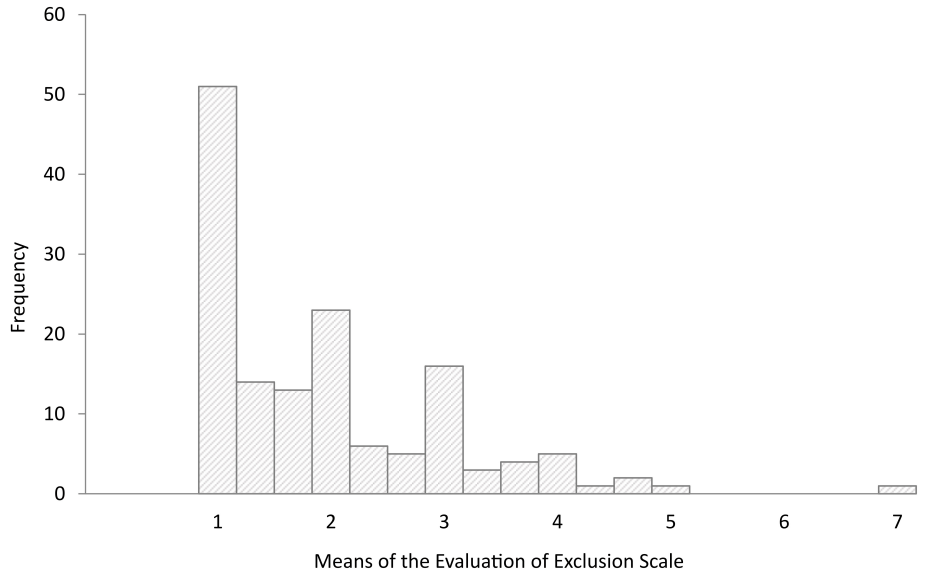

FIGURE 1 | Distribution of the means of the evaluation scale. Note: The scale was created by combining the three evaluation items (not okay/okay, unfair/fair, unjustifiable/justifiable) indicating a participant's evaluation of the exclusion. High numbers indicate high acceptability of exclusion; low numbers indicate strong rejection of exclusion.

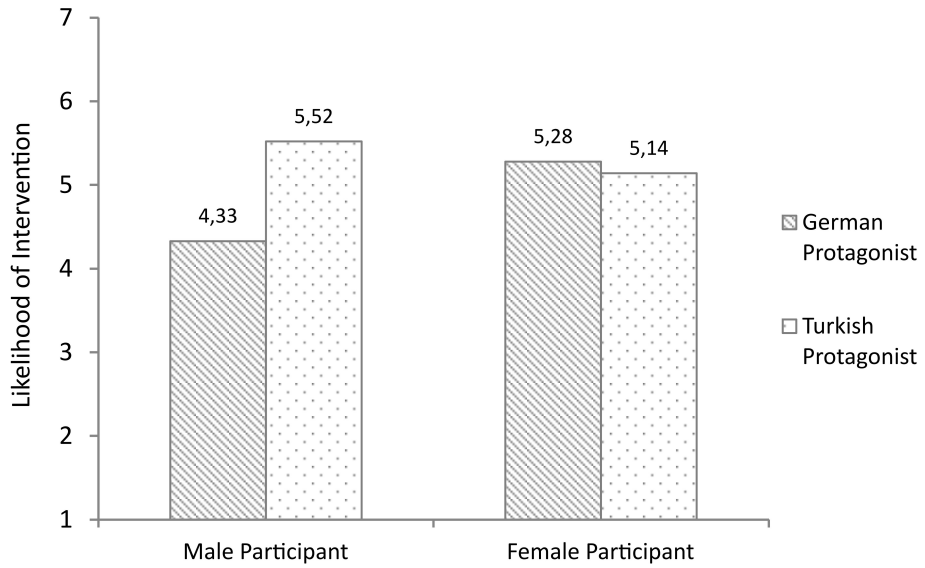

FIGURE 2 | Likelihood of intervention as a function of participants' gender and origin of the protagonist. Note: High numbers indicate a high likelihood to intervene into the situation.

significant interaction effect of justification and the protagonist, $F(2.50, 342.96) = 3.02$, $p = 0.039$, $\eta_p^2 = 0.02$. This meant that this justification was used more often than any of the other types of justifications only when referring to the Turkish protagonist, $p < 0.001$. When the participants referred to the German protagonist, there were no differences in the use of justifications. Additionally, comparisons revealed that this type of justification was used considerably more often when referring to the Turkish protagonist ($M = 0.50$, $SD = 0.48$), than when referring to the German protagonist ($M = 0.31$, $SD = 0.44$), $p = 0.018$.

Further, there was an interaction effect of gender and justification, $F(2.50, 342.96) = 6.09$, $p = 0.001$, $\eta_p^2 = 0.04$, revealing that female participants ($M = 0.48$, $SD = 0.47$) used justifications referring to the social norm of inclusion much more often than male participants ($M = 0.24$, $SD =$

TABLE 3 | Proportional use of justifications for likelihood of intervention.

Reasoning type	German protagonist *M* (*SD*)		Turkish protagonist *M* (*SD*)		Total *M* (*SD*)
	Females	Males	Females	Males	
Need for information	0.14 (0.34)	0.10 (0.26)	0.06 (0.22)	0.26 (0.46)	0.13 (0.32)
Children's autonomy	0.10 (0.29)	0.19 (0.37)	0.07 (0.23)	0.08 (0.24)	0.10 (0.28)
Empathy for the victim	0.08 (0.24)	0.14 (0.36)	0.04 (0.20)	0.15 (0.34)	0.09 (0.27)
Social norm of inclusion	0.38 (0.45)	0.14 (0.36)	0.59 (0.46)	0.31 (0.45)	0.40 (0.46)

M = mean, SD = standard deviation.

0.42), $p = 0.002$). See **Table 3** for all means and standard deviations. No effects of the participants' immigration history were found.

Specific Actions

We also asked the participants what exactly they would have done if they had intervened in the exclusion situation. To analyze these specific interventions, we conducted analyses on the proportional use of the mentioned actions (all of which were referred to by more than 10% of the participants). The resulting categories were "ask for reasons," "help to find inclusion-oriented solution," "explain norm of inclusion," "find alternative solution for excluded student," and "class-based intervention." In order to test for differences in the participants' specific actions, a 2 (protagonist: German, Turkish) × 5 (action: ask for reasons, help to find inclusion-oriented solution, explain norm of inclusion, find alternative solution for excluded student, class-based intervention) × 2 (gender: male, female) ANOVA was run with repeated measures on the factor "action" and with the participants' immigration history as a covariate.

There was a main effect of action, $F(3.28, 449.22) = 17.78$, $p < 0.001$, $\eta_p^2 = 0.12$. The Greenhouse-Geisser adjustment method was used to correct violations of sphericity. More specifically, participants stated they would ask for reasons ($M = 0.37$, $SD = 0.38$) and try to find an alternative solution for the excluded student ($M = 0.24$, $SD = 0.38$) more than they would help to find an inclusion-oriented solution ($M = 0.13$, $SD = 0.28$), explain the norm of inclusion ($M = 0.06$, $SD = 0.19$), or aim for a class-based intervention ($M = 0.08$, $SD = 0.26$), all $ps < 0.05$.

There were neither main effects of the protagonist or of the participants' immigration history nor any interaction effects.

DISCUSSION

The current study investigated pre-service teachers' reactions to interethnic exclusion scenarios in Germany. More specifically, we focused on pre-service teachers in the role of observers of exclusion among students. Using hypothetical scenarios in which either a German or a Turkish boy was excluded by other children in his class, we assessed teachers' evaluations of this exclusion behavior as well as the likelihood that they would intervene in the situation, and the specific action they would take. The aim of this research was to examine whether the origin of an excluded student represents a relevant category for teachers when responding to social exclusion.

Generally and regardless of the origin of the protagonists, we found a strong tendency to reject exclusion, with female participants rejecting exclusion even more strongly than male participants. However, the origin of the excluded student represented a relevant category for participants' evaluations of the exclusion scenario. Interestingly, the effect confounded our expectations: Contrary to our anticipations, the participants evaluated the exclusion of a Turkish protagonist as more reprehensible than the exclusion of a German protagonist. Therefore, origin affected teachers' evaluations, but in contrast to our expectations, not in the sense of ingroup bias (i.e., the tendency to favor ingroup members over outgroup members).

Regarding the likelihood of intervention, the origin of the excluded person was only relevant for male participants. They were less likely to intervene when the excluded person was German than when the excluded person was Turkish. For female participants, there was no difference; i.e., they were very likely to intervene independently of the origin of the protagonist.

The origin of the protagonist was also relevant for teachers' justifications of their decisions to intervene or not. Namely, an interesting interaction was found between the origin of the excluded student and the type of justification. When the participants reasoned about the exclusion of the Turkish protagonist, they referred to a general social norm of inclusion much more than when talking about the German protagonist. In addition, when speaking about the Turkish protagonist, they referred to the social norm of inclusion more often than to any other reason. In other words, the general norm of social inclusion seems to be particularly salient when ethnic minorities are involved and an important issue for teachers. Interestingly, female participants named the social norm of inclusion even more often than male participants–for both protagonist groups.

In line with our expectations, female pre-service teachers seem to value social inclusion even more than their male counterparts. They focus more strongly on social inclusion as a general norm, reject exclusion more strongly, and are very likely to intervene in exclusion situations in order to promote inclusion. Extending previous research that typically focused on exclusion in symmetrical relationships between peers, the current data showed that these gender differences also hold for pre-service teachers as observers of student exclusion. As females have been found to be more inclusive than males at various ages and in

very different kinds of relationships or situations, this seems to be something deeply rooted in the minds of girls and women. This might indicate that these differences are based on gender-specific socialization. As a consequence, a possible way of enhancing males' inclusivity would be a stronger focus on inclusion and community during their early education and socialization.

In terms of the specific actions potentially taken by participants as a reaction to the exclusion situation, we found no differences related to the origin of the excluded person. Regardless of the origin, the vast majority of the participants would have asked the group to name the reasons why it was excluding the student, and also a large number of the participants would have tried to find an inclusion-oriented solution or an alternative solution for the excluded student. Thus, origin mattered for both the evaluation of the exclusion situation and the likelihood of intervention, but once the decision to intervene was made, there were no differences in the specific actions.

All in all, we found evidence that the origin of an excluded person is a relevant category for teachers' reactions to social exclusion. The origin of the excluded student affected teachers' evaluations of the exclusion scenario and, for males, also their likelihood to intervene or not. Additionally, their underlying considerations differed based on the origin of the excluded person. However, although these differences were significant, it is important to emphasize that our participants predominantly rejected exclusion for both protagonists, and the differences were not very big. Further, the teachers in our study did not exhibit ingroup bias. In contrast, they evaluated the exclusion of the student from an ethnic minority (outgroup member) as even more reprehensible than the exclusion of a German protagonist and referred to the value of social inclusion more often when talking about the minority student.

We found it highly encouraging that pre-service teachers generally reject interethnic exclusion and show no discrimination of children with Turkish origin. Moreover, pre-service teachers reject the exclusion of a Turkish protagonist even more than for a German student. This could be due to the official educational mission and protection mandates regarding minorities, which include the integration of ethnic minorities at school (Ungern-Sternberg, 2008). Given the huge heterogeneity in German schools, this mandate might be particularly salient in teachers' minds. This is also in line with the finding that our participants referred to the general norm of inclusion much more often when reasoning about the exclusion of a Turkish student. Further, this might indicate that pre-service teachers are sensitive to the fact that exclusion based on origin is an issue in schools, and that it is important to promote inclusion as a general norm in class. Due to the strong human need to belong, social exclusion can have severe implications for health and well-being (Buhs and Ladd, 2001; Rutland and Killen, 2015). For students from ethnic minorities, exclusion can have a particularly strong impact (Ward et al., 2001; Verkuyten and Thijs, 2002a). This makes it even worse that social exclusion among children and adolescents is often based on group memberships such as ethnicity (Killen and Stangor, 2001; Abrams and Killen, 2014). Thus, it is very promising that the pre-service teachers in our study attached great importance to the norm of social inclusion in class and did not succumb to ingroup bias.

However, the question arises: What makes interethnic social exclusion different from other issues that teachers have to evaluate or react to? As described above, in Germany, children with an immigration history are disadvantaged in educational settings in many ways. Especially when performing achievement-related evaluations (e.g., grading), teachers seem to be biased by their students' ethnic origin (Bonefeld et al., 2017; Bonefeld and Dickhäuser, 2018). One possible explanation for this discrepancy between our findings regarding social exclusion and the findings of many prior studies on teacher bias in achievement evaluations is provided by the dual process models of information processing and judgment formation (Brewer, 1988; Fiske and Neuberg, 1990; Fiske et al., 1999). Such models assume that we typically process information via two routes when we make judgments about other persons: a more automatic route where we rely on obvious—but often irrelevant—cues such as social categories (in our context, for instance, the ethnic origin of a student) and a more controlled, integrating route where we review all information that might be relevant for the judgment. The automatic route is typically used for judgments related to routine tasks whereas the controlled route is typically used for non-routine activities or judgments that are considered as particularly important. In prior research it was often assumed that achievement-related judgments are, to a great extent, made via the automatized route (Glock and Krolak-Schwerdt, 2013). This is plausible because achievement-related judgments represent routine tasks in teachers' daily lives. Dealing with (interethnic) social exclusion in class, on the other hand, is something less routine and an issue that we would expect to be considered as very important given the severe consequences it can have. When integrating all relevant information in order to make a judgment using the controlled route, teachers make more accurate judgments (i.e., judgments that are less biased by social categories such as ethnicity). Therefore, this could be one reason why social exclusion is less affected by the ethnic origin of students.

Another interesting finding of this study is that group functioning aspects played only a very minor role in pre-service teachers' considerations. Previous research with children and adolescents has shown group functioning to be an important justification for interethnic exclusion (Hitti et al., 2011; Mulvey, 2016). On the other hand, in our study, only a very small number of participants (8%) mentioned aspects related to group functioning. However, teachers might not have had enough information to name group functioning as an underlying motive in the presented situations. Many of the participants stated that they would intervene in order to ask for reasons. This indicates that pre-service teachers do not want to judge the situation superficially. They want to understand the underlying motives why the student is excluded. Of course, exclusion is always harmful for the excluded person. However, some reasons might be more appropriate justifications for excluding a certain person in a certain situation than others. Smooth group functioning might be one of the more appropriate reasons to justify social exclusion. Also, prior negative behavior of a student or interpersonal struggles might be rather valid justifications for

excluding someone from a certain situation, without representing a strong moral transgression in contrast to exclusion solely based on someone's origin. Many participants in our study stated explicitly that it was hard for them to evaluate the scenario and to say whether they would intervene or not, because they were provided with so little background information regarding the situation or the relationship of the protagonists. Obviously, teachers want to understand the situation more completely when making decisions about how to react appropriately. In real life, teachers typically have more knowledge about their students and know who is friend with whom, etc. This might limit the external validity of our results. However, our approach has clear benefits: The experimental approach allowed us to analyze the sole effect of the protagonists' origin, isolated from other aspects which in real life might bias teachers' evaluations or reactions. Additionally, the situations described in our scenarios are not too disconnected from everyday life. Although teachers typically know their students, they do not have knowledge about all things that happen in class and are often supposed to make instant evaluations or decisions without having additional information. However, further research should address this issue and systematically vary the background information about the situation and the excluded student.

One important restriction of our study is that our data were collected using hypothetical scenarios and self-reports which might be biased by social desirability. However, Turiel (2008) demonstrated that reasoning and evaluations by children and adolescents in hypothetical situations correspond to those in real-life situations and thus are comparable. In addition, research using a similar paradigm as the current study demonstrated that, for children, self-reports correspond with actual behavior (Mulvey et al., 2018). However, this has not been proven for adults yet. Therefore, it would be of interest for future research to connect self-report data with behavioral observations in order to determine the extent to which self-reports correspond with actual behavior. As social desirability is especially relevant regarding explicit measures of intergroup attitudes (Nesdale and Durkin, 1998; Rutland et al., 2005), it would also be interesting to see whether implicit measures of intergroup attitudes reveal different results.

Moreover, future research should also focus on in-service teachers because they already work with students and have an impact on their development and behavior. It would be interesting to see whether studies with in-service teachers replicate our findings or lead to different results. However, both research with pre-service teachers and in-service teachers can produce essential findings and have important implications for teacher training with the objective of placing well-trained staff in schools right from the start of their careers.

Further, it would be very interesting to compare different contexts of exclusion or to focus on additional ethnicities. Prior research has demonstrated that the context of exclusion (e.g., leisure time activities vs. achievement-related activities) affects judgments about peer exclusion (Horn, 2003; Tenenbaum et al., 2018; Beißert et al., 2019). But does this also hold for teachers when they evaluate social exclusion among students? And will the current findings be replicated for protagonists from other ethnicities or with a different immigration status, such as refugees? Are aspects related to group functioning possibly more relevant in some contexts or for some target persons than for others? Future studies should address these issues and systematically investigate teachers' reactions to social exclusion and include different methodical paradigms, different types of teachers, different target groups, and different contexts.

Nevertheless, in summary, our study revealed important findings regarding teachers' reactions to social exclusion in interethnic interactions. Encouragingly, pre-service teachers do not seem to underlie ingroup bias when evaluating interethnic social exclusion. In contrast they value the social norm of inclusion even more when the excluded student is an outgroup member. These findings imply that the inclusion of ethnic minorities in class be promoted by teachers. Teachers are important role models for their students, especially when it comes to ethnic topics. Thus, it is a very positive sign that they resist ingroup bias and try to establish inclusive class norms. With this, they have the potential to contribute to their students' moral development by promoting equality and social inclusion as a norm in class. Accordingly, future research should also focus on the development and thorough evaluation of prevention and intervention programs based on the current findings. Such programs should aim at raising students' and teachers' awareness of exclusion of ethnic minority students in the classroom, and teachers should be trained to successfully contribute to students' moral development and help them understand and internalize moral norms such as equality, fairness, and inclusion.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

Both authors contributed meaningfully to the paper. Both authors developed the idea and the design of the study together. Both authors analyzed and interpreted the data. The first author made a first draft of the manuscript which was revised by the second author. Both authors have approved the final version to be published and agree to be accountable for all aspects of the work and ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

FUNDING

This research was funded by a grant for young researches provided by IDeA Center Frankfurt.

ACKNOWLEDGMENTS

We would like to thank the IDeA Center for funding and Julia Karbach for sharing her labs with us for this study. We thank the undergraduate research assistants Maurice Wendel, Ewelina Miczka, and Lena Bauer. We thank Amanda Habbershaw for her thorough language check. And we are grateful to all participants who supported this study.

REFERENCES

Abrams, D., and Killen, M. (2014). Social exclusion of children: developmental origins of prejudice. *J. Soc. Issues* 70, 1–11. doi: 10.1111/josi.12043

Bauman, S., and Del Rio, A. (2006). Preservice teachers' responses to bullying scenarios: comparing physical, verbal, and relational bullying. *J. Educ. Psychol.* 98, 219–231. doi: 10.1037/0022-0663.98.1.219

Baumeister, R. F., and Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychol. Bull.* 117, 497–529. doi: 10.1037/0033-2909.117.3.497

Baumert, J., and Schümer, G. (2002). "Familiäre Lebensverhältnisse, Bildungsbeteiligung und Kompetenzerwerb im nationalen Vergleich [Family living conditions, participation in education and aquisition of competencies in the national comparison]," in *PISA 2000 - Die Länder der Bundesrepublik Deutschland im Vergleich*, eds J. Baumert, C. Artelt, E. Klieme, M. Neubrand, M. Prenzel, U. Schiefelepp, et al. (Wiesbaden: VS Verlag für Sozialwissenschaften), 159–202. doi: 10.1007/978-3-663-11042-2_6

Beißert, H., Bonefeld, M., Schulz, I., and Studenroth, K. (2019). "*Beurteilung sozialer Ausgrenzung unter Erwachsenen: Die Rolle des Geschlechts [Evaluation of social exclusion among adults: The role of gender]*," in *Poster presented at the Conference on Morality* (Mannheim).

Bonefeld, M., and Dickhäuser, O. (2018). (Biased) grading of students' performance: students' names, performance level, and implicit attitudes. *Front. Psychol.* 9:481. doi: 10.3389/fpsyg.2018.00481

Bonefeld, M., Dickhäuser, O., Janke, S., Praetorius, A.-K., and Dresel, M. (2017). Migrationsbedingte Disparitäten in der Notenvergabe nach dem Übergang auf das Gymnasium [Student Grading According to Migration Background]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie* 49, 11–23. doi: 10.1026/0049-8637/a000163

Bonefeld, M., Dickhäuser, O., and Karst, K. (2020). Do preservice teachers' judgments and judgment accuracy depend on students' characteristics? The effect of gender and immigration background. *Soc. Psychol. Educ.* 23, 189–216. doi: 10.1007/s11218-019-09533-2

Bonefeld, M., and Karst, K. (2020). "Döner vs. Schweinebraten – Stereotype von (angehenden) Lehrkräften über Personen deutscher und türkischer Herkunft im Vergleich [Stereotypes of (prospective) teachers about people of German and Turkish origin in comparative terms]," in *Stereotype in der Schule, 1st Edn*, eds S. Glock and H. Kleen (Wiesbaden: Springer VS), 159–190. doi: 10.1007/978-3-658-27275-3_6

Brewer, M. B. (1988). "A dual process model of impression formation," in *Advances in Social Cognition*, eds R. S. Wyer and T. K. Srull (Hillsdale, NJ: Erlbaum), 1–36.

Brewer, M. B. (2001). "Ingroup identification and intergroup conflict: When does ingroup love become outgroup hate?," in *Rutgers Series on Self and Social Identity*, Vol. 3, eds R. D. Ashmore, L. J. Jussim, and D. Wilder (Oxford: Oxford University Press), 17–41.

Buhs, E. S., and Ladd, G. W. (2001). Peer rejection as antecedent of young children's school adjustment: an examination of mediating processes. *Dev. Psychol.* 37, 550–560. doi: 10.1037/0012-1649.37.4.550

Carol, S., and Leszczensky, L. (2019). "Soziale Integration. Interethnische Freund- und Partnerschaften und ihre Determinanten [Social integration. Interethnic friendships and partnerships and their determinnants]," in *Handbuch Integration [Handbook Integration]*, eds G. Pickel, O. Decker, S. Kailitz, A. Röder, and J. Schulze Wessel (Wiesbaden: Springer VS), 1–14. doi: 10.1007/978-3-658-21570-5_77-1

Cooley, S., Elenbaas, L., and Killen, M. (2016). "Chapter Four: Social exclusion based on group membership is a form of prejudice," in *Advances in Child Development and Behavior: Volume 51. Equity and Justice in Developmental Science. Implications for Young People, Families, and Communities*, eds S. S. Horn, M. D. Ruck, and L. S. Liben (New York, NY: Academic Press Inc), 103–129. doi: 10.1016/bs.acdb.2016.04.004

Cross, S. E., and Madson, L. (1997). Models of the self: self-construals and gender. *Psychol. Bull.* 122, 5–37. doi: 10.1037/0033-2909.122.1.5

DESTATIS (2016). *Bevölkerung und Erwerbstätigkeit: Bevölkerung mit Migrationshintergrund - Ergebnisse des Mikrozensus 2015 [Population and employment: Population with migrant background - results of the micro census 2015]*. Available online at: https://www.destatis.de/DE/Service/Bibliothek/_publikationen-fachserienliste-1.html (accessed July 20, 2020).

Dovidio, J. F., Gaertner, S. L., Hodson, G., and Houlette, M. A. (2005). "Social inclusion and exclusion: recategorization and the perception of intergroup boundaries," in *The Social Psychology of Inclusion and Exclusion*, eds D. Abrams, J. Marques, and M. A. Hogg (New York, NY: Psychology Press), 263–282.

Evans, M. O. (1992). An estimate of race and gender role-model effects in teaching high school. *J. Econ. Educ.* 23, 209–217. doi: 10.1080/00220485.1992.10844754

Fiske, S. T., Lin, M., and Neuberg, S. L. (1999). "The continuum model. Ten years later," in *Dual Process Theories in Social Psychology,* eds S. Chaiken and Y. Trope (New York, NY: Guilford Press), 231–254.

Fiske, S. T., and Neuberg, S. L. (1990). A continuum of impression formation from category-based to individuating processes: influences of information and motivation on attention and interpretation. *Advances in Experimental Social Psychology, Vol. 23*, ed M. P. Zanna (New York, NY: Academic Press), 1–74. doi: 10.1016/S0065-2601(08)60317-2

Glock, S. (2016). Stop talking out of turn: the influence of students' gender and ethnicity on preservice teachers' intervention strategies for student misbehavior. *Teach. Teach. Educ.* 56, 106–114. doi: 10.1016/j.tate.2016.02.012

Glock, S., and Karbach, J. (2015). Preservice teachers' implicit attitudes toward racial minority students: evidence from three implicit measures. *Stud. Educ. Evaluation* 45, 55–61. doi: 10.1016/j.stueduc.2015.03.006

Glock, S., Kneer, J., and Kovacs, C. (2013). Preservice teachers' implicit attitudes toward students with and without immigration background: a pilot study. *Stud. Educ. Evaluation* 39, 204–210. doi: 10.1016/j.stueduc.2013.09.003

Glock, S., and Krolak-Schwerdt, S. (2013). Does nationality matter? The impact of stereotypical expectations on student teachers' judgments. *Soc. Psychol. Educ.* 16, 111–127. doi: 10.1007/s11218-012-9197-z

Glock, S., Krolak-Schwerdt, S., and Pit-ten Cate, I. M. (2015). Are school placement recommendations accurate? The effect of students' ethnicity on teachers' judgments and recognition memory. *Eur. J. Psychol. Educ.* 30, 169–188. doi: 10.1007/s10212-014-0237-2

Hitti, A., and Killen, M. (2015). Expectations about ethnic peer group inclusivity: the role of shared interests, group norms, and stereotypes. *Child Dev.* 86, 1522–1537. doi: 10.1111/cdev.12393

Hitti, A., Mulvey, K. L., and Killen, M. (2011). Social exclusion and culture: the role of group norms, group identity and fairness. *Anales de Psicología* 27, 587–599.

Holder, K., and Kessels, U. (2017). Gender and ethnic stereotypes in student teachers' judgments: a new look from a shifting standards perspective. *Soc. Psychol. Educ.* 20, 471–490. doi: 10.1007/s11218-017-9384-z

Horn, S. S. (2003). Adolescents' reasoning about exclusion from social groups. *Dev. Psychol.* 39, 71–84. doi: 10.1037/0012-1649.39.1.71

Kalter, F., and Kruse, H. (2015). "Ethnic diversity, homophily, and network cohesion in European classrooms," in *Social Cohesion and Immigration in Europe and North America: Mechanisms, Conditions, and Causality*, eds R. Koopmans, B. Lancee, and M. Schaeffer (London: Routledge), 187–207.

Killen, M., Clark Kelly, M., Richardson, C., Crystal, D., and Ruck, M. (2010). European American children's and adolescents' evaluations of interracial exclusion. *Group Process. Intergroup Relat.* 13, 283–300. doi: 10.1177/1368430209346700

Killen, M., Mulvey, K. L., and Hitti, A. (2013). Social exclusion in childhood: a developmental intergroup perspective. *Child Dev.* 84, 772–790. doi: 10.1111/cdev.12012

Killen, M., and Rutland, A. (2011). *Children and Social Exclusion: Morality, Prejudice, and Group Identity*. New York, NY: Wiley-Blackwell. doi: 10.1002/9781444396317

Killen, M., and Stangor, C. (2001). Children's social reasoning about inclusion and exclusion in gender and race peer group contexts. *Child Dev*. 72, 174–186. doi: 10.1111/1467-8624.00272

Kleen, H., Bonefeld, M., Glock, S., and Dickhäuser, O. (2019). Implicit and explicit attitudes toward Turkish students in Germany as a function of teachers' ethnicity. *Soc. Psychol. Educ*. 22, 883–899. doi: 10.1007/s11218-019-09502-9

Klieme, E., Artelt, C., Hartig, J., Jude, N., Köller, O., Prenzel, M., et al. (2010). *PISA 2009: Bilanz nach einem Jahrzehnt [PISA 2009: Status quo one decade later]*. Münster: Waxmann. Available online at: http://nbn-resolving.de/urn:nbn:de:0111-opus-35393 (accessed July 20, 2020).

Kristen, C., and Granato, N. (2007). The educational attainment of the second generation in Germany: social origins and ethnic inequality. *Ethnicities* 7, 343–366. doi: 10.1177/1468796807080233

McCombs, R. C., and Gay, J. (1988). Effects of race, class, and IQ information on judgments of parochial grade school teachers. *J. Soc. Psychol*. 128, 647–652. doi: 10.1080/00224545.1988.9922918

Müller, K., and Ehmke, T. (2016). "Soziale Herkunft und Kompetenzerwerb [Social background and acquisition of competencies]," in *PISA 2015. Eine Studie zwischen Kontinuität und Innovation*, eds K. Reiss, C. Sälzer, A. Schiepe-Tiska, E. Klieme, and O. Köller (Münster: Waxmann), 285–316.

Mulvey, K. L. (2016). Children's reasoning about social exclusion: balancing many factors. *Child Dev. Perspect*. 10, 22–27. doi: 10.1111/cdep.12157

Mulvey, K. L., Boswell, C., and Niehaus, K. (2018). You don't need to talk to throw a ball! Children's inclusion of language-outgroup members in behavioral and hypothetical scenarios. *Dev. Psychol*. 54, 1372–1380. doi: 10.1037/dev0000531

Muntoni, F., and Retelsdorf, J. (2020). "Geschlechterstereotype in der Schule [Gender stereotypes at school]," in *Stereotype in der Schule, 1st Edn*, eds S. Glock and H. Kleen (Wiesbaden: Springer VS), 71–97. doi: 10.1007/978-3-658-27275-3_3

Nesdale, D., and Durkin, K. (1998). "Stereotypes and attitudes: implicit and explicit processes," in *Implicit and Explicit Mental Processes*, eds K. Kirsner, C. Speelman, M. Maybery, A. O'Brien-Malone, M. Anderson, and C. MacLeod (Mahwah, NJ: Lawrence Erlbaum Associates), 219–232.

Oltmer, J. (2017). "Einwanderungsland Bundesrepublik Deutschland [Germany as an immigration country]," in *Deutschland Einwanderungsland. Begriffe - Fakten - Kontroversen*, eds K.-H. Meier-Braun and R. Weber (Bonn: Zentralen für politische Bildung ZpB), 225–226.

Parks, F. R., and Kennedy, J. H. (2007). The impact of race, physical attractiveness, and gender on education majors' and teachers' perceptions of students. *J. Black Stud*. 16, 936–943. doi: 10.1177/0021934705285955

Plenty, S., and Jonsson, J. O. (2017). Social exclusion among peers: the role of immigrant status and classroom immigrant density. *J. Youth Adolesc*. 46, 1275–1288. doi: 10.1007/s10964-016-0564-5

Posada, R., and Wainryb, C. (2008). Moral development in a violent society: Colombian children's judgments in the context of survival and revenge. *Child Dev*. 79, 882–898. doi: 10.1111/j.1467-8624.2008.01165.x

Reinders, H. (2004). Entstehungskontexte interethnischer Freundschaften in der Adoleszenz [Developmental contexts for inter-ethnic friendships in adolescence]. *Zeitschrift für Erziehungswissenschaft* 7, 121–145. doi: 10.1007/s11618-004-0009-x

Rumberger, R. W. (1995). Dropping out of middle school: a multilevel analysis of students and schools. *Am. Educ. Res. J.* 32, 583–625. doi: 10.3102/00028312032003583

Rutland, A., Cameron, L., Milne, A., and McGeorge, P. (2005). Social norms and self-presentation: children's implicit and explicit intergroup attitudes. *Child Dev*. 76, 451–466. doi: 10.1111/j.1467-8624.2005.00856.x

Rutland, A., and Killen, M. (2015). A developmental science approach to reducing prejudice and social exclusion: intergroup processes, social-cognitive development, and moral reasoning. *Soc. Issues Policy Rev*. 9, 121–154. doi: 10.1111/sipr.12012

Schachner, M. K., Van de Vijver, F. J. R., Brenick, A., and Noack, P. (2016). "Who is friends with whom? Patterns of inter- and intraethnic friendships of mainstream and immigrant early adolescents in Germany," in *Unity, Diversity and Culture*, eds C. Roland-Lévy, P. Denoux, B. Voyer, P. Boski, and W. K. Gabrenya Jr. (Reims: International Association of Cross-Cultural Psychology), 237–244.

Schacht, D., Kristen, C., and Tucci, I. (2014). Interethnische Freundschaften in Deutschland [Inter-ethnic friendships in Germany]. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie* 66, 445–458. doi: 10.1007/s11577-014-0280-7

Shur, K. A. (2006). *Teacher responses to children's verbal bullying and social exclusion*. Unpublished doctoral thesis. Pennsylvania State University, USA.

Smetana, J. G. (1989). Toddlers' social interactions in the context of moral and conventional transgressions in the home. *Dev. Psychol*. 25, 499–508. doi: 10.1037/0012-1649.25.4.499

Südkamp, A., Kaiser, J., and Möller, J. (2017). "Ein heuristisches Modell der Akkuratheit diagnostischer Urteile von Lehrkräften," in *Diagnostische Kompetenz von Lehrkräften. Theoretische und methodische Weiterentwicklungen*, eds A. Südkamp and A.-K. Praetorius (Münster: Waxmann), 33–38.

Tajfel, H. (1974). Social identity and intergroup behaviour. *Information* 13, 65–93. doi: 10.1177/053901847401300204

Tajfel, H. (1978). "The achievement of inter-group differentiation," in *European Monographs in Social Psychology: Vol. 14. Differentiation between Social Groups. Studies in the Social Psychology of Intergroup Relations*, ed H. Tajfel (London: Academic Press [for] European Association of Experimental Social Psychology), 77–100.

Tajfel, H. (1982). Social psychology of intergroup relations. *Annu. Rev. Psychol*. 33, 1–39. doi: 10.1146/annurev.ps.33.020182.000245

Tajfel, H., and Turner, J. C. (1979). "An integrative theory of inter-group conflict," in *The Social Psychology of Intergroup Relations*, eds W. G. Austin and S. Worchel (Monterey, CA: Brooks/Cole Pub. Co), 33–47.

Tajfel, H., and Turner, J. C. (1986). "The social identity theory of intergroup behaviour," in *Psychology of Intergroup Relation*, eds S. Worchel and W. G. Austin (Chicago: Hall Publishers), 7–24.

Tenenbaum, H. R., Leman, P. J., Aznar, A., Duthie, R., and Killen, M. (2018). Young people's reasoning about exclusion in novel groups. *J. Exp. Child Psychol*. 175, 1–16. doi: 10.1016/j.jecp.2018.05.014

Turiel, E. (2008). Thought about actions in social domains: morality, social conventions, and social interactions. *Cogn. Dev*. 23, 136–154. doi: 10.1016/j.cogdev.2007.04.001

Turner, J. C., Brown, R. J., and Tajfel, H. (1979). Social comparison and group interest ingroup favouritism. *Eur. J. Soc. Psychol*. 9, 187–204. doi: 10.1002/ejsp.2420090207

Ungern-Sternberg, A. von. (2008). *Religionsfreiheit in Europa: Die Freiheit individueller Religionsausübung in Großbritannien, Frankreich und Deutschland - ein Vergleich [Religious freedom in Europe: The liberty to engage in individual religion in Great Britain, France and Germany – a comparison]. Jus Ecclesiasticum: Vol. 86*. Tübingen: Mohr Siebeck.

Verkuyten, M., and Thijs, J. (2002a). Multiculturalism among minority and majority adolescents in the Netherlands. *Int. J. Intercult. Relat*. 26, 91–108. doi: 10.1016/S0147-1767(01)00039-6

Verkuyten, M., and Thijs, J. (2002b). Racist victimization among children in The Netherlands: the effect of ethnic group and school. *Ethn. Racial Stud*. 25, 310–331. doi: 10.1080/01419870120109502

Walter, O. (2009). "Herkunftsassoziierte Disparitäten im Lesen, der Mathematik und den Naturwissenschaften: ein Vergleich zwischen PISA 2000, PISA 2003 und PISA 2006 [Disparities in reading, mathematics and science associated with immigrant background – A comparison between PISA 2000, PISA 2003, and PISA 2006]," in *Zeitschrift für Erziehungswissenschaft Sonderheft: Vol. 10. Vertiefende Analysen zu PISA 2006. Zeitschrift für Erziehungswissenschaft*, eds M. Prenzel and J. Baumertpp (Wiesbaden: VS Verlag für Sozialwissenschaften/GWV Fachverlage GmbH Wiesbaden), 149–168. doi: 10.1007/978-3-531-91815-0_8

Ward, C. A., Bochner, S., Furnham, A., and Furnham, A. (2001). *The Psychology of Culture Shock, 2nd Edn*. Hove: Routledge.

Weis, M., Müller, K., Mang, J., Heine, J. H., Mahler, N., and Reiss, K. (2019). "Soziale Herkunft, Zuwanderungshintergrund und Lesekompetenz

[Social status, immigrant background and reading skills]," in *PISA 2018. Grundbildung im internationalen Vergleich, 1st Edn*, eds K. Reiss, M. Weis, E. Klieme, and O. Köller (Münster: Waxmann), 129–162.

Winkler, N., Zentarra, A., and Windzio, M. (2011). Homophilie unter guten Freunden: Starke und schwache Freundschaften zwischen Kindern mit Migrationshintergrund und einheimischen Peers. *Soziale Welt* 62, 25–43. doi: 10.5771/0038-6073-2011-1-25

Yoon, J. S., and Kerber, K. (2003). Bullying: elementary teachers' attitudes and intervention strategies. *Res. Educ.* 69, 27–35. doi: 10.7227/RIE.69.3

Zahn-Waxler, C. (2000). "The development of empathy, guilt, and internalization of distress: Implications for gender differences in internalizing and externalizing problems," in *Wisconsin Symposium on Emotion: Anxiety, Depression, and Emotion, Vol. 1*, ed R. Davidson (Oxford: Oxford University Press), 222–265. doi: 10.1093/acprof:oso/9780195133585.003.0011

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Psychology

ORIGINAL RESEARCH
published: 17 December 2020
doi: 10.3389/fpsyg.2020.587170

Influence of Teachers' Grouping Strategies on Children's Peer Social Experiences in Early Elementary Classrooms

Saetbyul Kim[1], Tzu-Jung Lin[1], Jing Chen[2], Jessica Logan[1], Kelly M. Purtell[3] and Laura M. Justice[1]*

[1] Department of Educational Studies, The Ohio State University, Columbus, OH, United States, [2] Graduate School of Education, Shanghai Jiao Tong University, Shanghai, China, [3] Department of Human Sciences, The Ohio State University, Columbus, OH, United States

Most children experience some form of grouping in the classroom every day. Understanding how teachers make grouping decisions and their impacts on children's social development can shed light on effective teacher practices for promoting positive social dynamics in the classroom. This study examined the influence of teachers' grouping strategies on changes in young children's social experiences with peers across an academic year. A total of 1,463 children (51% girls, M_{age} = 6.79, SD_{age} = 1.22) and 79 teachers from kindergarten to third-grade classrooms participated in this study. Teachers rated children's behavioral problems as the most important consideration when creating seating charts or assigning children to small groups. Promoting existing or new friendships was rated as the least important consideration. Heterogeneous ability grouping, rated as somewhat important by the teachers, was associated with a decrease in children's friendships and yet also a decrease in girls' experience with peer conflicts. Our findings begin to fill in the gaps in the literature on the social impacts of ability grouping for young children.

Keywords: teacher grouping strategies, friendship, peer conflict, early elementary classrooms, peer social experiences

OPEN ACCESS

Edited by:
Antonius H. N. Cillessen, Radboud University Nijmegen, Netherlands

Reviewed by:
Juan De Dios Benítez Sillero, University of Córdoba, Spain
Fabián Román, Costa University Corporation, Colombia

****Correspondence:***
Saetbyul Kim
kim.7287@osu.edu

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Psychology

Received: *25 July 2020*
Accepted: *24 November 2020*
Published: *17 December 2020*

Citation:
Kim S, Lin T-J, Chen J, Logan J, Purtell KM and Justice LM (2020) Influence of Teachers' Grouping Strategies on Children's Peer Social Experiences in Early Elementary Classrooms. Front. Psychol. 11:587170. doi: 10.3389/fpsyg.2020.587170

INTRODUCTION

The classroom is a primary social context in which school-age children experience various social interactions and relationships with peers. These peer social experiences have valence and can lead to long-term impacts on children's social and academic development (Coplan and Arbeau, 2009; Oberle et al., 2010; Bulotsky-Shearer et al., 2012; Lin et al., 2016). As teachers are the key social agents with whom children spend the majority of their time in the classroom, they inevitably mediate children's peer social experiences. This occurs in part through their daily instructional decisions or classroom management, such as determining classroom physical layout, governing with whom children collaborate, and maximizing cross-gender or cross-ethnic interactions through heterogeneous grouping (Gremmen et al., 2018). These teacher practices change the immediate social environment for children and their peers, which then shapes the social integration of the classrooms.

Despite the importance of teacher practices in children's peer social experiences in classrooms (Gremmen et al., 2016), empirical evidence supporting the social influence of teachers' practices

remains scarce (Hallinan and Sørensen, 1985; Gest and Rodkin, 2011). Particularly, little attention has been paid to the social impacts of teachers' grouping strategies, which refer to the ways by which teachers assign students in groups within classrooms for learning and instruction. This issue is important because children experience some forms of grouping by the teacher each day (Baines et al., 2003). These grouping practices mediate the physical proximity between dyads of children, which then alter their perception and interactions with one another (Van den Berg et al., 2012). To date, studies on teachers' grouping strategies have primarily focused on how grouping affords teachers the opportunity to tailor instruction based on different children's academic needs (see Saleh et al., 2007; Savanur et al., 2007; Nomi, 2009; Hong et al., 2012; Marks, 2014; Steenbergen-hu et al., 2016), with a few exceptions that examined the role of teachers' grouping strategies in promoting more mixing or socially inclusive peer interactions and relationships (Gest and Rodkin, 2011; Van den Berg et al., 2012; McKeown et al., 2016).

To fill in this research gap, the purpose of this study was to examine the role of teachers' grouping strategies in shaping children's peer social experiences across the academic year in early elementary classrooms. Specifically, we focused on children's friendship and peer conflicts because these social experiences emerge early in child development and together signify level of social inclusion in the classroom (Juvonen et al., 2019). Considering that boys and girls tend to show distinct profiles of socially competent behavior (Underwood, 2007; Card et al., 2008; Godinet et al., 2014; Shin, 2017), we further examined whether teachers' grouping strategies have differential impact on boys' and girls' friendship and conflict experiences.

LITERATURE REVIEW

Peer Social Experiences in Early Childhood Classrooms

Children begin to form positive and negative experiences with their classroom peers as young as preschool age (Ladd and Price, 1987; Howes, 1988; Ladd, 1990). These experiences with peers have shown long-term influences on children's social and academic development (Boulton and Smith, 1994; Coplan and Arbeau, 2009; Oberle et al., 2010; Bulotsky-Shearer et al., 2012; Lin et al., 2016). Positive experiences such as friendships can provide a context for cooperation and negotiation (Carter and Nutbrown, 2016) and ease children's adjustment to school life (Margetts, 2002; Corsaro, 2003; Peters, 2003). Meanwhile, negative peer experiences such as conflict or aggression can hinder children's self-worth, social competence, and school engagement (Kamper-DeMarco and Ostrov, 2019), leading to loneliness, depression, and school dropout (Buhs et al., 2006; Meyer and Ostrosky, 2018).

While classroom peer experiences can involve various relational aspects, in this study we focus on children's friendship and peer conflicts, both of which are the most prevalent peer experiences in young children, and can lead to a wide range of socioemotional and academic difficulties across the life span, such as school failure and dropout (Coie and Dodge, 1998; Chang, 2003; Kutnick and Kington, 2005; Shin, 2017; Kamper-DeMarco and Ostrov, 2019). Research shows that as young as preschoolers, at least 83 percent of children in the classroom were engaged in friendships (Quinn and Hennessy, 2010), and the number of friends that a child makes increases as they transition to first grade (Hartup, 1992). Friendships are 'egalitarian in nature' (Schaffer, 1996, p.312), providing a relational context for children to practice social integration with others (e.g., conflict resolution, empathy, negotiation, Cillessen and Marks, 2017). In this aspect, friendship relationships are key to promoting an inclusive and supportive classroom atmosphere (Division for Early Childhood, and National Association for the Education for Young Children, 2009).

Peer conflicts, often revealed in the form of physical aggression or verbal dispute in young children, is normative and tend to occur at high rates in the classroom (Odgers et al., 2008). It occurs when children have incompatible needs, wishes, or goals with one another (Hay, 1984). In a study based on the Early Childhood Longitudinal Study, Kindergarten Class of 1988-99 (ECLS-K), at least 10% of children in kindergarten experienced frequent arguments and fights with peers (West et al., 2001). One in every four to six children (15–23%) are victims of aggression in primary school settings (Robers et al., 2012). It is crucial for children to experience peer conflict as it provides children opportunities to practice perspective taking, conflict mitigation, and social-emotional regulation (Eisenberg and Garvey, 1981; Rende and Killen, 1992; Malloy and McMurray, 1996; Miller et al., 2004). However, escalated conflicts in the classroom can cause negative emotion and stress, damage social relationships, and hinder children's school adjustment (Blair, 2002).

Together, friendships and peer conflicts comprise children's important social experiences that can have significant impacts on their social, emotional, and academic development from the early phase of lives through later developmental stages (Bulotsky-Shearer et al., 2012; Kamper-DeMarco and Ostrov, 2019). It is critical to identify key contextual factors that would hinder or promote children's peer social experiences. By this, we examined teachers' grouping strategies.

Teachers' Grouping Strategies and Children's Peer Social Experiences

Putting children in groups is one of the everyday teacher practices in the classroom. Grouping can take place in various forms and structures (e.g., small groups, dyads, and classroom seating positions) and varies by teachers' purposes and strategies. For instance, teachers may assign children to work with their same-ability peers with the goal of tailoring instruction based on children's different academic needs (Patrick, 2020). Teachers may form groups of children with diverse skills with the aim at stimulating diverse thinking (Murphy et al., 2017) or promoting social inclusion and equity (Cohen et al., 1999). When making a seating chart, teachers may take into account children's existing peer relationships or social behavior with the goals of maintaining classroom order and social cohesion (Gest and Rodkin, 2011). It stands to reason that teachers' attitudes toward grouping strategies may reflect

their instructional priority and beliefs about peer influence in the classroom.

Among various grouping strategies, ability grouping is the most common and yet controversial grouping strategy (Slavin, 1987; Hallam and Parsons, 2013). One reason is that children's academic achievement is often a correlate of social status in early childhood years (Rubin et al., 2006). Grouping children by ability levels may either increase or flatten the social hierarchy in the classroom, which then shape their social experiences with peers. To date, however, ability grouping has mostly been associated with students' academic performance (Sørensen and Hallinan, 1986; Slavin, 1987; Dreeben and Barr, 1988; Wilkinson, 1989). Research that examined the effects of ability grouping on children's social experiences is relatively scarce, most of which focused on children's self-esteem, self-concepts if not academic attainment (e.g., Oakes, 1985; Gamoran and Berends, 1987; Kulik and Kulik, 1992; Ireson et al., 2001; Suk Wai Wong and Watkins, 2001; Ireson and Hallam, 2005, 2009).

There are two contrasting ability grouping strategies. *Homogeneous ability grouping* is known for its positive impacts on children's achievement (MacIntyre and Ireson, 2002). In addition, working with like-minded classmates may increase children's sense of belonging (Riley and White, 2016) and support teachers' instructional differentiation (Patrick, 2020). It is criticized, however, for its potential harmful effects on the self-concepts and well-being of children with lower abilities (Marsh, 1984; Oakes, 1985). *Heterogeneous ability grouping* is assumed to enhance learning and interdependence because working with peers with diverse skills may allow children to recognize gaps in their own thinking and to foster a sense-making process when more competent children provide explanations and support to less competent peers (Wilkinson et al., 2010). However, there is always a concern about sacrificing high-ability children's learning opportunity in heterogeneous ability grouping (Mashburn et al., 2009).

Other teacher grouping strategies consider children's existing or potential peer relationships based on the assumption that sitting or working with classmates in close proximity allows children to learn about each other better, which then change their relationships with one another (Pettigrew, 1998). Research on seating assignment demonstrates that by manipulating children's seating positions, children who did not like each other at the beginning of the school year showed higher likability with each other as a result of close proximity (Van den Berg et al., 2012). This influence of near-seated peers has been examined in both classroom and small groups settings (Webb, 1989; Barth et al., 2004; Burke and Sass, 2013; Gremmen et al., 2018). The findings suggest that physical proximity likely increases the likelihood of interaction between children; the increased interaction help children recognize their similarity and develop positive sentiments to each other (Homan, 1974). On the contrary, the absence of proximity may create barriers for friendship formation (Hallinan and Tuma, 1978).

Another common grouping strategy draws attention to children's behavioral problems. Children's behavioral problems have been noted as one of the prominent factors that disrupt classroom learning and instruction in early childhood classrooms (Rimm-Kaufman et al., 2000; Gutman et al., 2003). Findings have been mixed regarding whether managing children's behavioral problems (e.g., fights, quarrel, and aggression) can have a positive influence on children's social development (Singer and Hännikäinen, 2002; Spivak, 2016). For instance, Gest and Rodkin (2011) showed that teachers who placed strong emphasis toward separating children with behavioral problems had students who expressed a stronger liking to each other and reported denser friendship networks. Other research showed that intervening in peer conflicts by directly separating the conflict children as opposed to helping children develop mutually agreed upon solutions can lead to negative conflict outcomes (Myrtil et al., unpublished).

Taken together, the existing literature suggests that teachers make grouping strategies based upon various factors, including children's ability level, peer relationships, and problem behaviors. Yet, findings are far from conclusive regarding how these grouping strategies impact children's social experiences with peers. The current study aimed to address this research gap.

Gender Effects in Peer Social Experiences

Ample theories and research highlight the importance of gender in children's peer social experiences. A substantial body of research has shown that boys tend to show more externalizing behaviors (e.g., physical aggression) and have more frequent conflicts with peers than girls (Hamre and Pianta, 2001; Saft and Pianta, 2001; Crick et al., 2006; Graves and Howes, 2011). On the contrary, girls have been found to demonstrate more prosocial behaviors and intimate friendships than boys (Berndt and Perry, 1986; Chung and Asher, 1996; Rose and Asher, 2004; Van Leeuwen et al., 2006). Other studies show that boys value independence and social dominance while girls place more emphasis on harmonious relationships (see Rose and Rudolph, 2006).

Given the gender differences in peer interactions and relationships, teachers' grouping strategies may have differential effects on boys' and girls' peer social experiences in the classroom. It is likely that teachers may knowingly or unknowingly treat boys and girls differently when applying the same grouping strategy in the classroom (Troop-Gordon and Ladd, 2015). For instance, teachers may separate more boys than girls because boys' conflicts or aggressive behaviors are more frequent and salient than girls' conflicts. Research shows that the average rate at which teacher react to children's aggressive behavior was over three times higher for boys compared to girls (Serbin et al., 1973). Alternatively, boys and girls may react to teachers' grouping strategies differently, leading to different social experiences with peers. For instance, when working with classmates in heterogeneous groups, boys may be less coordinated, more impulsive, and show more disruptive behaviors than girls (Serbin et al., 1973) and therefore benefit less from working with peers with diverse skills.

The Current Study

This study was part of a large-scale, federally funded project designed to understand the classroom ecology in preschool

to third-grade classrooms. The data were collected from two large, suburban school districts in a midwestern city in the United States, including 2090 students from 96 classrooms in 33 schools. The two school districts are representative of the socio-economic and racial diversity of adjacent suburban communities. This study excluded the preschool sample based on the consideration that teachers' grouping practices in preschool classrooms might be fundamentally different from those in early elementary classrooms due to more focuses on free play and non-academic learning (Justice et al., 2020). In addition, preschoolers might not have developed the same level of ability to reliably report their social experiences compared to other older children in this study (Chen et al., 2020).

Children's peer social experiences in the classroom was assessed using a sociometric method in which children were asked to nominate an unlimited number of classmates who fit certain selection criteria. Peers are key informants of children's social experiences because they spend a significant amount of time with children under various social situations (Rubin and Cohen, 1986; Coie and Dodge, 1988). Gathering classroom peers' perceptions of a child's social experiences provides higher level of objectivity than the self-report or parent report (Clark and Ladd, 2000). We employed the unlimited nomination approach because research suggests that unlimited nominations can capture children's social relationships more comprehensively and reliably than the limited nominations approach (Cillessen and Mayeux, 2004; Cillessen and Borch, 2006; Cillessen and Marks, 2017).

Teachers' grouping strategies were assessed based on the teacher-reported measure developed by Gest and Rodkin (2011). In their study, first to fifth grade teachers were asked to rate the importance of five different grouping strategies when they created a seating chart or assigned children in groups: (a) reinforcing existing friendships, (b) promoting new friendships, (c) ability grouping with homogeneous skill levels, (d) ability grouping with diverse skill levels, and (e) separating students with behavioral problems. They found that teachers generally considered separating students with behavioral problems as the most important grouping strategy, followed by promoting academic diversity and new friendships. Teachers did not place a strong consideration on forming academic homogeneity or reinforcing existing friendships. Furthermore, classrooms tended to have a higher ratio of liking to disliking and a higher density of friendships if the teachers reported that separating students with behavior problems was a major consideration in creating seating charts and small groups. In this study, we considered teacher-reported grouping strategies as a proxy of teachers' actual grouping practices because previous research suggests that teachers' attitudes and beliefs drive their instructional decisions (Fang, 1996; Vartuli, 1999; Muijs and Reynolds, 2002; Missett et al., 2014).

In all, three research questions are addressed in this study: (1) How do teachers from kindergarten to third grade incorporate grouping strategies in their daily instruction? Based on the pioneering study conducted by Gest and Rodkin (2011), we hypothesize that early elementary teachers might consider separating students with behavioral problems the most important grouping strategy for creating a seat chart of forming students in groups. Teachers may pay the least attention to reinforcing existing friendships. (2) Are teachers' grouping strategies associated with changes in children's peer social experiences across the academic year? We hypothesize that grouping strategies that are rated as more important by the teachers would be more associated with changes in children's peer social experiences. (3) Are the associations between teachers' grouping strategies and changes in children's peer experiences moderated by gender? Based on the literature, we hypothesize that gender can have a significant moderation effect on the association between teachers' grouping strategies and children's peer experiences.

To address these research questions, we controlled for children's gender, disability status, dual language status, and maternal education based on previous findings suggesting that friendships and peer conflicts can vary by these demographic characteristics. Research shows that girls are more likely to have best friends than boys (Sebanc et al., 2007). Boys tend to exhibit more physical aggression (Crick et al., 2006; Juliano et al., 2006) while girls are more relationally aggressive than boys (Crick et al., 2004; Ostrov et al., 2004). Older children tend to have more friends than younger children (Sebanc et al., 2007). Children with lower socioeconomic status (Bradley et al., 2001; Raver and Knitzer, 2002), different linguistic backgrounds (Eslea and Mukhtar, 2000), and disabilities (Hemmeter et al., 2006; Odom et al., 2006) are more at risk for negative peer social experiences. Finally, we controlled for teachers' years of teaching and self-efficacy for managing peer relationships (e.g., How much can you help students make friends at school?) in the classroom because both have been found to associate with classroom quality (Swanson et al., 1990; Brophy, 2006; Watson, 2006; Nahal, 2010; Gebbie et al., 2012; Ryan et al., 2015).

MATERIALS AND METHODS

Participants

The sample includes 1,463 children and 79 teachers from 20 public elementary schools located in two suburban districts in a midwestern city. This was after removing the preschool sample and one kindergarten teacher and her students because the teacher did not fill out the teacher survey. Children [girls = 51% (Kindergarten: 42.9%, Grade 1: 18.1%, Grade 2: 22.3%, Grade 3: 16.7%)] with an average age of 6.79 years (SD = 1.22). About 14.8% of children were dual language learners and a total of 7.8% were in individualized education plan (IEP). Many children were White (61.1%). The distribution of other race and ethnicity categories were Black (4.5%), Asian (8.5%), Multi-racial (6.2%), and Other (2.0%). Teachers were mostly female (98.7%) and White (92.4%). About 73.4% of teachers had a master's degree, followed by 19.0% with bachelor's degree, 2.5% with other degrees, and 5.1% who did not report their education level. Years of teaching experience ranged from 2 to 35 years (mean = 14.21).

Measure

Peer Social Experiences

The peer nomination approach (Parkhurst and Asher, 1992; Chen et al., 2020) was used to assess children's peer social experiences.

In the fall and spring, children received individual interviews with field assessors to nominate unlimited number of children in class who fit the nomination descriptions. Children were given a class roster containing pictures of classmates in order to reduce the cognitive need to recall names for nominations. Two items were used in this study to assess three aspects of peer social experiences: (a) conflicts: "In your classroom, who gets into fights with other kids?," and (b) friendship: "In your classroom, who are your best friends?" Previous studies show that using single peer nomination item to assess a unique aspect of social experiences can yield satisfactory psychometric property (van den Berg and Cillessen, 2013; Babcock et al., 2014). Even for children as young as preschoolers, their peer nominations yield congruent representations of peer social experiences with teachers' reports and researchers' observations (Chen et al., 2020). The number of nominations each child received from their classmates was calculated and used to indicate the degree with which each child experienced peer conflicts and developed friendships in their classroom. In the current study, number of nominations children received in the fall was significantly correlated with those in the spring (rs = 0.56 and 0.51, ps < 0.01 for peer conflicts and friendships, respectively).

Teachers' Grouping Strategies

Adapted from Gest and Rodkin's (2011) scale, teachers reported the extent to which five grouping strategies were important as they created the seating chart and assigning students to a small group: (a) reinforcing existing friendships, (b) promoting new friendships, (c) ability grouping with homogeneous skill levels, (d) ability grouping with diverse skill levels, and (e) separating students with behavioral problems. Teachers reported their grouping strategies based on a 3-point Likert scale (0 = not at all important, 1 = somewhat important, 2 = very important). The ratings under two different settings (creating a seat chart, small grouping) were average for each grouping strategy.

Procedure

Teachers completed surveys about their instructional practices and beliefs, perceptions of children in the classrooms and demographic information online *via* the Qualtrics platform or on paper (based on their preference) during the spring semester of the school year. Paper surveys were converted to digital forms via a Teleform system. Trained research staff conducted quality assurance checks of scanned data, conducting a mandatory visual check of each scanned form for accuracy. In addition, data were checked to ensure data were all within the potential observable range for each variable, examined data for consistency between item and sum or total scores. Children's classroom peer experience was collected by trained project staff in the fall and spring of the year. Children were interviewed in quiet areas of the hallway by trained research staff and responses were recorded in accordance with the study protocols.

Data Analysis

To examine whether teachers' grouping strategies were associated with changes in children's peer experience in the classroom, hierarchical generalized linear models were performed in which each type of peer social experiences was the dependent variable predicted by teachers' grouping strategies. Peer nominations of friendships and conflicts followed the Poisson distribution. As children were nested within classrooms (Level 1: child; Level 2: class), a random effect of intercept was specified in each model. To examine the gender moderation effect, the interaction of gender with each grouping strategy was examined.

Missing Data

Due to the non-negligible proportion of missing values (∼25%) in participants' demographic information (i.e., IEP, DLL), additional testing was performed to determine if data were missing completely at random (MCAR) using Little's MCAR test. Aside from IEP and DLL, percentage of missing ranged from 0.2% (gender) to 17.8% (ethnicity). The IEP and DLL variables were missing at 23 and 26%, respectively. Based on Little's MCAR test, the pattern of missingness was not completely at random and therefore, listwise deletion would not be appropriate (Graham, 2012). We performed multilevel multiple imputation using a fully conditional specification (FCS) imputation approach in Blimp (Enders et al., 2018). Variables included in the multiple imputations were all the study variables as well as auxiliary variables that were related to missingness (Schafer and Olsen, 1998). Twenty imputed datasets were generated and analyzed using Proc Glimmix in SAS. Proc Mianalyze was used to combine statistical results and generate valid statistical inferences about each parameter.

RESULTS

Exploratory Analyses

Table 1 presents the child-level descriptive statistics of the variables used in the current study. On average, children received 1.01 nomination from classmates for engaging in peer conflicts at the beginning of the academic year. The number of nominations increased to 1.64 at the end of the year. Children's friendship nomination was 2.93 on average at the beginning of the year and decreased to 2.79 at the end of the year. Paired t-tests based on the imputed data set showed that children were perceived by peers as being more aggressive in the spring compared to that in the fall ($t = 3.11$, $p < 0.01$). Meanwhile, children received fewer friendship nominations in the spring than in the fall ($t = -2.73$, $p < 0.01$).

Analysis of Variance (ANOVA) tests were conducted to explore if the patterns of change differed by children's gender. The conflict nominations received by children at the beginning of the year were 1.49 for boys, and 0.56 for girls, and this difference was statistically significant [$t = 10.10$, $p < 0.001$]. At the end of the academic year, boys continued to receive more physical aggression nominations than girls [$M_{boy} = 1.65$, $M_{girl} = 0.70$; $t = 9.07$, $p < 0.001$]. Children's friendship showed the opposite trend. Girls received more friendship nominations than boys in the fall [$M_{boy} = 2.83$, $M_{girl} = 3.04$; $t = -1.98$, $p < 0.05$], but this difference was not statistically significant in the spring [$M_{boy} = 2.71$, $M_{girl} = 2.87$; $t = -1.49$, $p < 0.14$].

Among the 79 teachers, 89.9% answered 'yes' to a survey question about whether they created a seating chart in the classrooms (the other 10.1% did not respond to this question);

TABLE 1 | Child-related descriptive analysis.

	% Missing	%	Min	Max	Mean	SD
Gender (0 = Boys, 1 = Girls)	0.2	51.1	0.0	1.0		
Age in years	0.3		4.3	9.5	6.79	1.22
Ethnicity	17.8					
White		61.4				
Black		4.5				
Asian		8.5				
Other		2.0				
Multi-racial		6.2				
Grade	0.0		0.0	4.0		
Kindergarten		42.9				
Grade 1		18.1				
Grade 2		22.3				
Grade 3		16.7				
IEP (0 = No, 1 = Yes)	23.0	10.1	0.0	1.0		
DLL (0 = No, 1 = Yes)	25.8	20.0	0.0	1.0		
Maternal Education	17.6		0.0	4.0		
<high school		3.3				
high school		17.8				
associate		9.4				
bachelor's		28.2				
Graduate or professional		23.6				
Peer social experiences						
Peer conflicts (fall)	1.6		0.0	13	1.01	1.80
Friendship (fall)	1.6		0.0	13	2.96	2.03
Peer conflicts (spring)	0.0		0.0	14	1.16	2.06
Friendship (spring)	0.0		0.0	11	2.79	2.02

IEP, individualized education plan; DLL, dual language learner.

88.6% teachers answered 'yes' to a survey question about whether they let students work in small groups (the other 11.4% did not respond to this question).

Teacher-Reported Importance of Grouping Strategies

Table 2 shows the descriptive statistics and the correlations between teachers' grouping strategies based on teachers' reports. In response to the first research question, teachers rated separating behavioral problems as most important (M = 1.91 out of the maximum value of 2.00), followed by heterogeneous ability grouping (M = 1.42) and homogeneous grouping (M = 1.20). On average, teachers regarded reinforcing existing friendships the least important (M = 0.61). Promoting new friendships was rated slightly higher than reinforcing existing friendships (M = 1.17).

Reinforcing existing friendship was moderately correlated with promoting new friendships (r = 0.35), homogeneously ability grouping (r = 0.34), and heterogeneous ability grouping (r = 0.23). Promoting new friendships was moderately correlated with homogeneous ability grouping (r = 0.24). Homogeneous ability grouping was moderately correlated with heterogeneous ability grouping (r = 0.31). Teacher rating of separating students with behavioral problems was not significantly correlated with any other grouping strategies, which indicates that this grouping strategy is distinct from any other grouping strategies. Overall, all of the correlations were positive, suggesting that teachers who perceived one grouping strategy as important were likely to consider another grouping strategy as important as they created seating charts or assigned groups.

TABLE 2 | Descriptive of teachers' grouping strategies.

	Mean	*SD*	1.	2.	3.	4.
1. Existing Friendship	0.61	0.52				
2. New Friendship	1.17	0.50	0.35**			
3. Homogeneous Ability Grouping	1.20	0.49	0.34**	0.24*		
4. Heterogeneous Ability Grouping	1.42	0.41	0.23*	0.17	0.31**	
5. Behavioral Problems	1.91	0.26	0.07	0.09	0.14	0.06

$^{**}p < 0.01$, $^{*}p < 0.05$.

Teachers' Grouping Strategies and Children's Peer Social Experiences

Table 3 presents fixed effects of teachers' grouping strategies on children's conflicts based on the imputed data. None of the grouping strategies significantly predicted changes in children's conflicts over the academic year, after controlling for children's demographic characteristics, years of teaching, and teachers' self-efficacy for managing peer relationships. Gender was found to significantly predict children's conflicts: Girls had lower levels

TABLE 3 | Predicting changes in peer conflicts by teachers' grouping strategies.

	Peer Conflicts				
	b	***Exp(b)***	***SE***	***t***	***95% CI***
Intercept	1.66***	5.26	0.45	3.65	[0.77, 2.55]
Gender (0 = Boys, 1 = Girls)	−0.56***	0.57	0.06	−10.07	[−0.67, −0.45]
IEP (0 = No, 1 = Yes)	0.01	1.01	0.11	0.12	[−0.20, 0.23]
DLL (0 = No, 1 = Yes)	−0.10	0.90	0.12	−0.82	[−0.33, 0.14]
Grade 1	0.20	1.22	0.12	1.63	[−0.04, 0.43]
Grade 2	0.14	1.15	0.12	1.19	[−0.09, 0.37]
Grade 3	−0.04	0.96	0.13	−0.29	[−0.29, 0.21]
Maternal Education	−0.04	0.96	0.03	−1.13	[−0.11, 0.03]
Peer conflict pre-test (Fall)	0.14***	1.15	0.01	21.8	[0.12, 0.15]
Teacher experience	−0.00	1.00	0.01	−0.52	[−0.01, 0.01]
Teacher efficacy	−0.21*	0.81	0.10	−2.17	[−0.40, −0.02]
Grouping Strategies					
Existing Friendship	−0.03	0.97	0.08	−0.38	[−0.19, 0.12]
New Friendship	0.05	0.95	0.08	0.62	[−0.11, 0.21]
Homogeneous Ability	0.01	1.01	0.09	0.11	[−0.17, 0.19]
Heterogeneous Ability	−0.03	0.97	0.11	−0.30	[−0.25, 0.18]
Behavioral Problem	−0.05	0.95	0.14	−0.34	[−0.33, 0.23]

*The reference group of Grade was Kindergarten; IEP, individualized education plan; DLL, dual language learner; Maternal education (1 = Higher than an associate degree; 0 = otherwise). ***p < 0.001, **p < 0.01, *p < 0.05.*

of conflicts than boys [$b = -0.56$, exp(b) = 0.57, $SE = 0.06$, $p < 0.001$]. Higher teacher self-efficacy for managing children's peer relationships was associated lower peer conflicts [$b = -0.21$, exp(b) = 0.81, $SE = 0.10$, $p < 0.05$].

Table 4 demonstrates the fixed effects of teachers' grouping strategies on children's friendships. After controlling for the covariates, heterogeneous ability grouping negatively predicted children's friendships [$b = -0.14$, exp(b) = 0.87, $SE = 0.07$, $p < 0.05$]. Keeping everything else constant, with one unit of increase in teacher-reported importance of heterogeneous ability grouping, children's friendship nominations would decrease by 13%. Children who were in IEP showed lower levels of friendships than typically developing children [$b = -0.23$, exp(b) = 0.79, $SE = 0.08$, $p < 0.01$].

Gender Effects in the Relationship Between Teachers' Grouping Strategies and Peer Social Experiences

As shown in **Table 5**, children's gender was found to interact with heterogeneous ability grouping in predicting children's conflicts [$b = -0.30$, exp(b) = 0.74, $SE = 0.15$, $p < 0.05$]. Specifically, heterogeneous ability grouping strategies negatively lowered girls' conflicts but not boys'. The effect of teacher-efficacy for managing children's peer relationships remained significant [$b = -0.21$, exp(b) = 0.81, $SE = 0.10$, $p < 0.05$].

Table 6 shows a negative main effect of heterogeneous ability grouping on changes in children's friendships [$b = -0.21$, exp(b) = 0.81, $SE = 0.08$, $p < 0.05$]. None of the other interaction effects was significant. The effect of IEP remained significant [$b = -0.23$, exp(b) = 0.79, $SE = 0.08$, $p < 0.01$].

DISCUSSION

This study sought to deepen our understanding of teachers' grouping strategies and their roles in children's peer social experiences in early elementary classrooms. Based on classroom peers' observations, children in this study experienced a decreasing trend of friendship development and an increasing rate of peer conflicts across the academic year. Changes in these peer social experiences were predicted by teacher-reported importance of heterogeneous ability grouping. Specifically, children experienced greater loss in friendships in the classroom if their teachers viewed heterogeneous ability grouping as an important grouping strategy. Contrary to its negative influence on friendship development, teacher-reported importance of heterogeneous ability grouping was found to alleviate girls' but not boys' peer conflicts. Overall, our findings partially support the hypothesis that teachers can mediate children's peer social experiences through various grouping strategies. The social impacts of grouping strategies seem to operate in more indirect and implicit ways.

Consistent with Gest and Rodkin's (2011) findings, teachers in this study reported viewing strategies for separating students with behavior problems as more important than ability grouping or strategies for forming existing or new friendships strategies when they create seating charts or form small groups. This finding is also aligned with the conflict intervention literature showing that early childhood teachers tend to intervene in peer conflicts mainly when the conflicts escalate (Myrtil et al., unpublished); when the teachers intervene, they tend to use more cessation strategies (e.g., directly separating conflict peers) than mediation strategies (e.g., guiding students to resolve

TABLE 4 | Predicting changes in friendships by teachers' grouping strategies.

	Friendships				
	b	***Exp(b)***	***SE***	***t***	***95% CI***
Intercept	1.31***	3.71	0.31	4.22	[0.70, 1.93]
Gender (0 = Boys, 1 = Girls)	0.02	1.02	0.03	0.47	[−0.05, 0.08]
IEP (0 = No, 1 = Yes)	−0.23**	0.79	0.08	−2.75	[−0.40, −0.06]
DLL (0 = No, 1 = Yes)	−0.09	0.91	0.06	−1.59	[−0.20, 0.02]
Grade 1	0.03	1.03	0.08	0.39	[−0.12, 0.18]
Grade 2	0.02	1.02	0.07	0.31	[−0.12, 0.17]
Grade 3	−0.12	0.89	0.08	−1.46	[−0.27, 0.04]
Maternal Education	0.02	1.02	0.02	0.84	[−0.02, 0.06]
Friendship pre-test (Fall)	0.13***	1.14	0.01	13.91	[0.11, 0.15]
Teacher experience	0.00	1.00	0.00	1.06	[−0.00, 0.01]
Teacher efficacy	−0.10	0.90	0.06	−1.56	[−0.23, 0.03]
Grouping Strategies					
Existing Friendship	0.02	1.02	0.05	0.30	[−0.09, 0.12]
New Friendship	0.06	1.06	0.05	1.07	[−0.05, 0.16]
Homogeneous Ability	0.03	1.03	0.06	0.59	[−0.08, 0.15]
Heterogeneous Ability	−0.14*	0.87	0.07	−1.98	[−0.27, −0.00]
Behavioral Problem	−0.01	0.99	0.09	−0.06	[−0.19, 0.18]

*The reference group of Grade was Kindergarten; IEP, individualized education plan; DLL, dual language learner; Maternal education (1 = Higher than an associate degree; 0 = otherwise). ***p < 0.001, **p < 0.01, *p < 0.05.*

TABLE 5 | Interactive effects of gender and teachers' grouping strategies on changes in peer conflicts across the academic year.

	Peer Conflicts				
	b	***Exp(b)***	***SE***	***t***	***95% CI***
Intercept	1.66***	5.26	0.48	3.47	[0.72, 2.59]
Gender (0 = Boys, 1 = Girls)	−0.55	0.58	0.43	−1.29	[−0.14, 0.28]
IEP (0 = No, 1 = Yes)	0.02	1.02	0.11	0.20	[−0.19, 0.24]
DLL (0 = No, 1 = Yes)	−0.10	0.90	0.12	−0.86	[−0.34, 0.14]
Grade 1	0.20	1.22	0.12	1.64	[−0.04, 0.44]
Grade 2	0.14	1.15	0.12	1.15	[−0.10, 0.37]
Grade 3	−0.04	0.96	0.13	−0.28	[−0.29, 0.22]
Maternal Education	−0.04	0.96	0.04	−1.07	[−0.11, 0.03]
Peer conflict pre-test (Fall)	0.14***	1.15	0.01	21.76	[0.12, 0.15]
Teacher experience	−0.00	1.00	0.01	−0.51	[−0.01, 0.01]
Teacher efficacy	−0.21*	0.81	0.10	−2.19	[−0.41, −0.02]
Grouping Strategies					
Existing Friendship	−0.07	0.93	0.09	−0.79	[−0.24, 0.10]
New Friendship	0.11	1.12	0.09	1.23	[−0.07, 0.28]
Homogeneous Ability	−0.02	0.98	0.10	−0.19	[−0.22, 0.18]
Heterogeneous Ability	0.06	1.06	0.12	0.52	[−0.17, 0.29]
Behavioral Problem	−0.12	0.89	0.16	−0.75	[−0.43, 0.19]
Gender × Grouping Strategies					
Gender × Existing Friendship	0.13	1.14	0.11	1.14	[−0.09, 0.35]
Gender × New Friendship	−0.21	0.81	0.11	−1.87	[−0.43, 0.01]
Gender × Homogeneous Ability	0.09	1.09	0.12	0.73	[−0.15, 0.33]
Gender × Heterogeneous Ability	−0.30*	0.74	0.15	−2.06	[−0.59, −0.01]
Gender × Behavioral Problem	0.25	1.28	0.21	1.20	[−0.16, 0.65]

*The reference group of Grade was Kindergarten; IEP, individualized education plan; DLL, dual language learner; Maternal education (1 = Higher than an associate degree; 0 = otherwise). ***p < 0.001, **p < 0.01, *p < 0.05.*

TABLE 6 | Interactive effects of gender and teachers' grouping strategies on changes in friendships across the academic year.

	Friendships				
	b	***Exp(b)***	***SE***	***t***	***95% CI***
Intercept	1.38***	3.97	0.34	4.04	[0.71, 2.05]
Gender (0 = Boys, 1 = Girls)	−0.14	0.87	0.25	−0.58	[−0.63, 0.34]
IEP (0 = No, 1 = Yes)	−0.23**	0.79	0.08	−2.75	[−0.40, −0.06]
DLL (0 = No, 1 = Yes)	−0.09	0.91	0.06	−1.59	[−0.20, 0.02]
Grade 1	0.03	1.03	0.08	0.37	[−0.12, 0.18]
Grade 2	0.02	1.02	0.07	0.31	[−0.12, 0.17]
Grade 3	−0.12	0.89	0.08	−1.48	[−0.28, 0.04]
Maternal Education	0.02	1.02	0.02	0.90	[−0.02, 0.06]
Friendship pre-test (Fall)	0.13***	1.14	0.01	13.95	[0.11, 0.15]
Teacher experience	0.00	1.00	0.00	1.07	[−0.00, 0.01]
Teacher efficacy	−0.10	0.90	0.06	−1.51	[−0.22, 0.03]
Grouping Strategies					
Existing Friendship	0.02	1.02	0.06	0.32	[−0.11, 0.15]
New Friendship	0.07	1.07	0.06	1.14	[−0.05, 0.20]
Homogeneous Ability	0.10	1.11	0.07	1.46	[−0.03, 0.24]
Heterogeneous Ability	−0.21*	0.81	0.08	−2.48	[−0.37, −0.04]
Behavioral Problem	−0.05	0.95	0.12	−0.44	[−0.28, 0.18]
Gender × Grouping Strategies					
Gender × Existing Friendship	−0.01	0.99	0.07	−0.12	[−0.15, 0.13]
Gender × New Friendship	−0.03	0.97	0.06	−0.54	[−0.16, 0.09]
Gender × Homogeneous Ability	−0.13	0.88	0.07	−1.74	[−0.27, 0.02]
Gender × Heterogeneous Ability	0.13	1.14	0.08	1.54	[−0.04, 0.30]
Gender × Behavioral Problem	0.09	1.09	0.12	0.79	[−0.14, 0.33]

*The reference group of Grade was Kindergarten; IEP, individualized education plan; DLL, dual language learner; Maternal education (1 = Higher than an associate degree; 0 = otherwise). ***p < 0.001, **p < 0.01, *p < 0.05.*

conflicts via negotiation, Spivak, 2016). Contrary to the positive association between separating behavioral problems and peer liking documented in Gest and Rodkin's study with first, third, and fifth grade students, separating behavioral problems did not predict changes in children's friendships or peer conflicts in our study. This seems to suggest that early elementary teachers tend to base their grouping decisions on children's overt, salient characteristics. Teachers' attunement to children's behavioral problems may be at the expense of other factors might be more directly linked to children's peer social experiences. The non-significant associations between the separating behavioral problems strategy and the other grouping strategies support this explanation.

Another major finding of this study is the negative influence of teacher-reported heterogeneous ability grouping on children's friendship development. A rich body of social network research has documented that children tend to befriends peers with whom they share similar characteristics, such as gender, age, or ability levels, called the homophily phenomenon (Brechwald and Prinstein, 2011; Hafen et al., 2011; Ojanen et al., 2013). By assigning children of diverse ability into the same groups, which also means to break similar peers apart, teachers might be working against children's tendency to form homophily in their friendship networks. The friendship literature suggests that similarity is what contributes to the sense of security and intimacy between friends (Newcomb and Bagwell, 1995). If similarity is the prerequisite for friendship building, it might take mixed-ability dyads longer to develop some level of similarity than same-ability dyads before they form friendships with each other. Same-ability dyads who were already friends might also have fewer opportunities to interact in the classroom due to the heterogeneous grouping practice, which might cause their friendship relationships to be weakened over time.

Consistent with the previous literature (Card et al., 2008; Sebanc et al., 2007; Underwood, 2007), boys showed a greater tendency than girls to engage in peer conflicts, whereas girls were likely to have more friends than boys. Moreover, a significant gender moderation effect was found in the relation between teachers' heterogeneous ability grouping and children's peer conflicts. Girls were found to engage in fewer peer conflicts if their teachers highly valued the heterogeneous ability grouping strategy, whereas boys' experience with peer conflicts did not seem to be affected by this grouping strategy. Working with a diverse group of peers might require more advanced social skills (e.g., such as perspective taking, negotiation, or prosocial skills) than working with same-ability groups. Girls may already have possessed more social skills than boys (Van der Graaff et al., 2014; Jenkins and Nickerson, 2019) to avoid unconstructive conflicts with their peers.

It is surprising that maintaining existing friendships and forming new friendships did not show significant effects on changes in children's friendships or peer conflicts. The null

effects of these relationship-based grouping strategies counter against the physical proximity assumption (Homan, 1974) that children who are seated next to each other or work in the same group can know each other better, which then facilitate relationship building. One possible explanation is that teachers did not consider these grouping strategies important (see **Table 2**) and therefore did not utilize these strategies frequently enough to make an impact on children's peer social experiences in the classroom. Alternatively, our finding might suggest that the link between physical proximity and relationship building may not be linear. The literature of seating charts supports this conjecture. It has shown that by placing children with a negative relationship in closer proximity for an extended period of time, even though rejected children became more liked by their peers (Van den Berg et al., 2012), the intervention classroom exhibited more aggression and less cooperation among classmates than their control counterparts (Braun et al., 2020). Future research should further examine other factors that may potentially alter the direction of influence of physical proximity, such as children's characteristics, social climate, and different types of relationships.

It is important to note that the effects of teachers' grouping strategies were examined by controlling for teachers' self-efficacy for managing peer relationships. Ryan et al. (2015) showed that teachers with higher self-efficacy for creating a positive social climate, facilitating students' friendship, and handling social problems were more likely to provide better instructional supports for students. Controlling for individual difference in managing peer relationships allows us to be more precise about identifying the social impacts of teachers' grouping strategies.

Limitations and Directions for Future Research

Despite the significance of the current study, we acknowledge several study limitations. First, teachers' attitude toward grouping strategies might be in part contingent on the salience of child characteristics associated with those grouping strategies. For example, behavioral problems are highly noticeable than children's friendship patterns, and many teachers have shown a poor understanding of their children's friendship patterns in classrooms (Gest, 2006; Pearl et al., 2007). This may explain why teachers rated the separating behavioral problems strategy higher than the friendship building strategies. Qualitative or mixed methods approaches can be implemented in the future to further understand teacher beliefs of these grouping strategies.

Second, the current study measured grouping strategies based on teachers' report instead of their actual grouping practices in the classroom. It is possible that even if teachers rated high on a grouping strategy, this rating may or may not be in alignment with their actual grouping practices. We chose to rely on teacher report in part because of the methodological challenge in observing teachers' actual grouping practices in relation to their knowledge of children's behavioral problems, ability level, and particularly existing relationships. However, future efforts in this area should continue to explore valid approaches to examining the connections between teachers' attitude toward grouping strategies and their actual grouping practices.

Third, in this study we examined children's friendship development based on the number of peer nominations that a child received. In this way, children's friendship patterns were measured by perceptions from their classroom peers, which assured some level of reliability and objectivity. However, we acknowledge that other dimensions of friendship relationships can be equally important and deserve future inquiry, such as reciprocal vs. unilateral friendships and friendship quantity vs. quality. Finally, our findings on the gender moderation effect are largely exploratory without *a priori* theoretical hypotheses. Our main focus was to identify possible gender differences in the relationship between teachers' grouping strategies and peer social experiences, which we anticipate will set the stage for future inquiry.

CONCLUSION

This study documents changes in young children's peer social experiences in early elementary classrooms, reveals how these changes are related to teachers' grouping strategies, and explores whether these grouping strategies differentially mediate the social experiences of girls and boys. Since the pioneering research of teacher's grouping strategies conducted by Gest and Rodkin (2011) in first, third, and fifth grade classrooms, the current study is the first endeavor to extend the literature on younger children's peer social experiences (kindergarten to third grade), and is the first study that explores gender moderation of teacher influence. Overall, our findings show more differences than similarities with Gest and Rodkin's pioneering work, which may indicate that teacher's influence on children's peer social experiences changes along the trajectory of children's social development.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors upon request.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Ohio State University. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

SK and T-JL conceptualized the study. SK conducted data management, analyses, literature review, and writing. T-JL contributed to writing and guided SK on data analyses and literature review. JC and JL contributed to data management and statistical analysis. KP, LJ, and JC provided critical review of the manuscript. LJ, T-JL, and KP acquired the financial support for the project leading to this publication. All authors read and approved the submitted version of the manuscript.

FUNDING

The research reported here was supported by Institute for Education Sciences, through grant R305N160024 awarded to The Ohio State University (Justice). The opinions expressed are those of the authors and do not represent views of the Institute or National Center for Education Research.

REFERENCES

Babcock, B., Marks, P. E., Crick, N. R., and Cillessen, A. H. (2014). Limited nomination reliability using single-and multiple-item measures. *Soc. Dev.* 23, 518–536. doi: 10.1111/sode.12056

Baines, E., Blatchford, P., and Kutnick, P. (2003). Changes in grouping practices over primary and secondary school. *Int. J. Educ. Res.* 39, 9–34. doi: 10.1016/S0883-0355(03)00071-5

Barth, J. M., Dunlap, S. T., Dane, H., Lochman, J. E., and Wells, K. C. (2004). Classroom environment influences on aggression, peer relations, and academic focus. *J. Sch. Psychol.* 42, 115–133. doi: 10.1016/j.jsp.2003.11.004

Berndt, T. J., and Perry, T. B. (1986). Children's perceptions of friendships as supportive relationships. *Dev. Psychol.* 22:640. doi: 10.1037/0012-1649.22.5.640

Blair, C. (2002). School readiness: integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. *Am. Psychol.* 57, 111–127. doi: 10.1037/0003-066x.57.2.111

Boulton, M. J., and Smith, P. K. (1994). Bully/victim problems in middle-school children: stability, self-perceived competence, peer perceptions and peer acceptance. *Br. J. Dev. Psychol.* 12, 315–329. doi: 10.1111/j.2044-835x.1994.tb00637.x

Bradley, R. H., Corwyn, R. F., Burchinal, M., McAdoo, H. P., and García Coll, C. (2001). The home environments of children in the United States Part II: relations with behavioral development through age thirteen. *Child Dev.* 72, 1868–1886. doi: 10.1111/1467-8624.t01-1-00383

Braun, S. S., van den Berg, Y. H., and Cillessen, A. H. (2020). Effects of a seating chart intervention for target and nontarget students. *J. Exp. Child Psychol.* 191:104742. doi: 10.1016/j.jecp.2019.104742

Brechwald, W. A., and Prinstein, M. J. (2011). Beyond homophily: a decade of advances in understanding peer influence processes. *J. Res. Adolesc.* 21, 166–179. doi: 10.1111/j.1532-7795.2010.00721.x

Brophy, J. (2006). "History of research on classroom management," in *Handbook of Classroom Management: Research, Practice, and Contemporary Issues*, eds C. M. Evertson and C. S. Weinstein (Mahwah, NJ: Lawrence Erlbaum Associates), 17–43.

Buhs, E. S., Ladd, G. W., and Herald, S. L. (2006). Peer exclusion and victimization: processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? *J. Educ. Psychol.* 98, 1–13. doi: 10.1037/0022-0663.98.1.1

Bulotsky-Shearer, R. J., Manz, P. H., Mendez, J. L., Mcwayne, C. M., Sekino, Y., and Fantuzzo, J. W. (2012). Peer play interactions and readiness to learn: a protective influence for African American preschool children from low-income households. *Child Dev. Perspect.* 6, 225–231. doi: 10.1111/j.1750-8606.2011.00221.x

Burke, M. A., and Sass, T. R. (2013). Classroom peer effects and student achievement. *J. Labor Econ.* 31, 51–82. doi: 10.1086/666653

Card, N. A., Stucky, B. D., Sawalani, G. M., and Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: a meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Dev.* 79, 1185–1229. doi: 10.1111/j.1467-8624.2008.01184.x

Carter, C., and Nutbrown, C. (2016). A Pedagogy of Friendship: young children's friendships and how schools can support them. *Int. J. Early Years Educ.* 24, 395–413. doi: 10.1080/09669760.2016.1189813

Chang, L. (2003). Variable effects of children's aggression, social withdrawal, and prosocial leadership as functions of teacher beliefs and behaviors. *Child Dev.* 74, 535–548. doi: 10.1111/1467-8624.7402014

Chen, J., Lin, T.-J., Jiang, H., Justice, L., Purtell, K., and Logan, J. (2020). Triple alignment: congruency of perceived preschool classroom social networks among teachers, children, and researchers. *Front. Psychol.* 11:1341. doi: 10.3389/fpsyg.2020.01341

Chung, T. Y., and Asher, S. R. (1996). Children's goals and strategies in peer conflict situations. *Merrill Palmer Q.* 42, 125–147.

Cillessen, A. H., and Borch, C. (2006). Developmental trajectories of adolescent popularity: a growth curve modelling analysis. *J. Adolesc.* 29, 935–959. doi: 10.1016/j.adolescence.2006.05.005

Cillessen, A. H., and Marks, P. E. (2017). Methodological choices in peer nomination research. *New Dir. Child Adolesc. Dev.* 2017, 21–44. doi: 10.1002/cad.20206

Cillessen, A. H., and Mayeux, L. (2004). From censure to reinforcement: developmental changes in the association between aggression and social status. *Child Dev.* 75, 147–163. doi: 10.1111/j.1467-8624.2004.00660.x

Clark, K. E., and Ladd, G. W. (2000). Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. *Dev. Psychol.* 36, 485–498. doi: 10.1037/0012-1649.36.4.485

Cohen, E. G., Lotan, R. A., Scarloss, B. A., and Arellano, A. R. (1999). Complex instruction: equity in cooperative learning classrooms. *Theory Pract.* 38, 80–86. doi: 10.1080/00405849909543836

Coie, J. D., and Dodge, K. A. (1988). Multiple sources of data on social behavior and social status in the school: a cross-age comparison. *Child Dev.* 59, 815–829. doi: 10.1111/j.1467-8624.1988.tb03237.x

Coie, J. D., and Dodge, K. A. (1998). "Aggression and antisocial behavior," in *Handbook of Child Psychology*, eds W. Damon and N. Eisenberg (New York: Wiley), 779–862.

Coplan, R. J., and Arbeau, K. A. (2009). "Peer interactions and play in early childhood," in *Handbook of Peer Interactions, Relationships, and Groups*, eds W. M. Bukowski, K. H. Rubin, and B. Laursen (New York, NY: Guilford Publications). 143–161.

Corsaro, W. A. (2003). *We're Friends, Right?: Inside Kids' Culture*. Washington, DC: Joseph Henry Press.

Crick, N. R., Ostrov, J. M., Appleyard, K., Jansen, E. A., and Casas, J. F. (2004). "Relational aggression in early childhood: "You can't come to my birthday party unless."," in *Aggression, Antisocial Behavior, and Violence Among Girls: A Developmental Perspective*, eds M. Putallaz and K. Bierman (New York: Guilford Press), 71–89.

Crick, N. R., Ostrov, J. M., Burr, J. E., Cullerton-Sen, C., Jansen-Yeh, E., and Ralston, P. (2006). A longitudinal study of relational and physical aggression in preschool. *J. Appl. Dev. Psychol.* 27, 254–268. doi: 10.1016/j.appdev.2006.02.006

Division for Early Childhood, and National Association for the Education for Young Children (2009). *Early childhood inclusion: A joint position statement of the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC)*. Chapel Hill: Frank Porter Graham Child Development Institute, The University of North Carolina.

Dreeben, R., and Barr, R. (1988). The formation and instruction of ability groups. *Am. J. Educ.* 97, 34–64. doi: 10.1086/443912

Eisenberg, A. R., and Garvey, C. (1981). Children's use of verbal strategies in resolving conflicts. *Discourse Process.* 4, 149–170. doi: 10.1080/01638538109544512

Enders, C. K., Keller, B. T., and Levy, R. (2018). A fully conditional specification approach to multilevel imputation of categorical and continuous variables. *Psychol. Methods* 23:298. doi: 10.1037/met0000148

Eslea, M., and Mukhtar, K. (2000). Bullying and racism among Asian schoolchildren in Britain. *Educ. Res.* 42, 207–217. doi: 10.1080/001318800363845

Fang, Z. (1996). A review of research on teacher beliefs and practices. *Educ. Res.* 38, 47–65. doi: 10.1080/0013188960380104

Gamoran, A., and Berends, M. (1987). The effects of stratificationin secondary school: synthesis of survey and ethnographic research. *Rev. Educ. Res.* 57, 415–435. doi: 10.3102/00346543057004415

Gebbie, D. H., Ceglowski, D., Taylor, L. K., and Miels, J. (2012). The role of teacher efficacy in strengthening classroom support for preschool children with

disabilities who exhibit challenging behaviors. *Early Childhood Educ. J.* 40, 35–46. doi: 10.1007/s10643-011-0486-5

Gest, S. D. (2006). Teacher reports of children's friendships and social groups: agreement with peer reports and implications for studying peer similarity. *Soc. Dev.* 15, 248–259. doi: 10.1111/j.1467-9507.2006.00339.x

Gest, S. D., and Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *J. Appl. Dev. Psychol.* 32, 288–296. doi: 10.1016/j.appdev.2011.02.004

Godinet, M. T., Li, F., and Berg, T. (2014). Early childhood maltreatment and trajectories of behavioral problems: exploring gender and racial differences. *Child Abuse Neglect.* 38, 544–556. doi: 10.1016/j.chiabu.2013.07.018

Graham, J. (2012). *Missing Data: Analysis and Design*. New York, NY: Springer.

Graves, S. L. Jr., and Howes, C. (2011). Ethnic differences in social-emotional development in preschool: the impact of teacher child relationships and classroom quality. *Sch. Psychol. Q.* 26:202. doi: 10.1037/a0024117

Gremmen, M. C., Berg, Y. H. M., Van Den Steglich, C., Veenstra, R., and Kornelis, J. (2018). Journal of Applied Developmental Psychology The importance of near-seated peers for elementary students ' academic engagement and achievement. *J. Appl. Dev. Psychol.* 57, 42–52. doi: 10.1016/j.appdev.2018.04.004

Gremmen, M. C., van den Berg, Y. H., Segers, E., and Cillessen, A. H. (2016). Considerations for classroom seating arrangements and the role of teacher characteristics and beliefs. *Soc. Psychol. Educ.* 19, 749–774. doi: 10.1007/s11218-016-9353-y

Gutman, L. M., Sameroff, A. J., and Cole, R. (2003). Academic growth curve trajectories from 1st grade to 12th grade: effects of multiple social risk factors and preschool child factors. *Dev. Psychol.* 39, 777–790. doi: 10.1037/0012-1649.39.4.777

Hafen, C. A., Laursen, B., Burk, W. J., Kerr, M., and Stattin, H. (2011). Homophily in stable and unstable adolescent friendships: similarity breeds constancy. *Pers. Individ. Diff.* 51, 607–612. doi: 10.1016/j.paid.2011.05.027

Hallam, S., and Parsons, S. (2013). The incidence and make up of ability grouped sets in the UK primary school. *Res. Pap. Educ.* 28, 393–420. doi: 10.1080/02671522.2012.729079

Hallinan, M. T., and Sørensen, A. B. (1985). Ability grouping and student friendships. *Am. Educ. Res. J.* 22, 485–499. doi: 10.3102/00028312022004485

Hallinan, M. T., and Tuma, N. B. (1978). Classroom effects on change in children's friendships. *Sociol. Educ.* 51, 270–282. doi: 10.2307/2112365

Hamre, B. K., and Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. *Child Dev.* 72, 625–638. doi: 10.1111/1467-8624.00301

Hartup, W. W. (1992). "Friendships and their developmental significance," in *Childhood Social Development: Contemporary Perspectives*, ed. H. McGurk (Hillsdale, NJ: Erlbaum), 175–205.

Hay, D. F. (1984). "Social conflict in early childhood," in *Annals of Child Development*, Vol. 1, ed. G. Whitehurst (London: JAI), 1–44.

Hemmeter, M. L., Ostrosky, M., and Fox, L. (2006). Social and emotional foundations for early learning: a conceptual model for intervention. *Sch. Psychol. Rev.* 35, 583–601. doi: 10.1080/02796015.2006.12087963

Homan, G. C. (1974). *Social Beahvior: Its Elementary Forms*. New York: Harcourt Brace Jovanovich.

Hong, G., Corter, C., and Pelletier, J. (2012). Differential effects of literacy instruction time and homogeneous ability grouping in kindergarten classrooms: who will benefit? Who will suffer? *Educ. Eval. Policy Anal.* 34, 69–88. doi: 10.3102/0162373711424206

Howes, C. (1988). Same-and cross-sex friends: implications for interaction and social skills. *Early Childhood Res. Q.* 3, 21–37. doi: 10.1016/0885-2006(88)90027-0

Ireson, J., and Hallam, S. (2005). Pupils' liking for school: ability grouping, self-concept and perceptions of teaching. *Br. J. Educ. Psychol.* 75, 297–311. doi: 10.1348/000709904x24762

Ireson, J., and Hallam, S. (2009). Academic self-concepts in adolescence: relations with achievement and ability grouping in schools. *Learn. Instr.* 19, 201–213. doi: 10.1016/j.learninstruc.2008.04.001

Ireson, J., Hallam, S., and Plewis, I. (2001). Ability grouping in secondary schools: effects on pupils' self-concepts. *Br. J. Educ. Psychol.* 71, 315–326. doi: 10.1348/000709901158541

Jenkins, L. N., and Nickerson, A. B. (2019). Bystander intervention in bullying: role of social skills and gender. *J. Early Adolesc.* 39, 141–166. doi: 10.1177/0272431617735652

Juliano, M., Werner, R. S., and Cassidy, K. W. (2006). Early correlates of preschool aggressive behavior according to type of aggression and measurement. *J. Appl. Dev. Psychol.* 27, 395–410. doi: 10.1016/j.appdev.2006.06.008

Justice, L. M., Jiang, H., Purtell, K., Lin, T. J., and Logan, J. (2020). *Is Pre-Kindergarten Too Much Work and Not Enough Play?*. Availbale online at: https://crane.osu.edu/files/2020/06/2020_05-CSNAP-web.pdf (accessed July 20, 2020).

Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H. L., and Smith, D. S. (2019). Promoting social inclusion in educational settings: challenges and opportunities. *Educ. Psychol.* 54, 250–270. doi: 10.1080/00461520.2019.1655645

Kamper-DeMarco, K. E., and Ostrov, J. M. (2019). The influence of friendships on aggressive behavior in early childhood: examining the interdependence of aggression. *Child Psychiatry Hum. Dev.* 50, 520–531. doi: 10.1007/s10578-018-0857-x

Kulik, J. A., and Kulik, C.-L. C. (1992). Meta-analytic findings on grouping programs. *Gift. Child Q.* 36, 73–77. doi: 10.1177/001698629203600204

Kutnick, P., and Kington, A. (2005). Children's friendships and learning in school: cognitive enhancement through social interaction? *Br. J. Educ. Psychol.* 75, 521–538. doi: 10.1348/000709904x24591

Ladd, G. W. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classroom: predictors of children's early school adjustment? *Child Dev.* 61, 1081–1100. doi: 10.2307/1130877

Ladd, G. W., and Price, J. M. (1987). Predicting children's social and school adjustment following the transition from preschool to kindergarten. *Child Dev.* 58, 1168–1189. doi: 10.2307/1130613

Lin, T.-J., Justice, L. M., Paul, N., and Mashburn, A. J. (2016). Peer interaction in rural preschool classrooms: contributions of children's learning-related behaviors, language and literacy skills, and problem behaviors. *Early Childhood Res. Q.* 37, 106–117. doi: 10.1016/j.ecresq.2016.04.001

MacIntyre, H., and Ireson, J. (2002). Within-class ability grouping: placement of pupils in groups and self-concept. *Br. Educ. Res. J.* 28, 249–263. doi: 10.1080/01411920120122176

Malloy, H. L., and McMurray, P. (1996). Conflict strategies and resolutions: peer conflict in an integrated early childhood classroom. *Early Childhood Res. Q.* 11, 185–206. doi: 10.1016/s0885-2006(96)90005-8

Margetts, K. (2002). Transition to school—complexity and diversity. *Eur. Early Childhood Educ. Res. J.* 10, 103–114. doi: 10.1080/13502930285208981

Marks, R. (2014). Educational triage and ability-grouping in primary mathematics: a case-study of the impacts on low-attaining pupils. *Res. Math. Educ.* 16, 38–53. doi: 10.1080/14794802.2013.874095

Marsh, H. W. (1984). Self-concept, social comparison and ability grouping: a reply to Kulik and Kulik. *Am. Educ. Res. J.* 21, 799–806. doi: 10.3102/00028312021004799

Mashburn, A. J., Justice, L. M., Downer, J. T., and Pianta, R. C. (2009). Peer effects on children's language achievement during pre-kindergarten. *Child Dev.* 80, 686–702. doi: 10.1111/j.1467-8624.2009.01291.x

McKeown, S., Stringer, M., and Cairns, E. (2016). Classroom segregation: where do students sit and how is this related to group relations? *Br. Educ. Res. J.* 42, 40–55. doi: 10.1002/berj.3200

Meyer, L. E., and Ostrosky, M. M. (2018). Identifying classroom friendships: teachers' confidence and agreement with children. *Top. Early Childhood Special Educ.* 38, 94–104. doi: 10.1177/0271121418763543

Miller, A. L., Kiely Gouley, K., Seifer, R., Dickstein, S., and Shields, A. (2004). Emotions and behaviors in the head start classroom: associations among observed dysregulation, social competence, and preschool adjustment. *Early Educ. Dev.* 15, 147–166. doi: 10.1207/s15566935eed1502_2

Missett, T. C., Brunner, M. M., Callahan, C. M., Moon, T. R., and Azano, A. P. (2014). Exploring teacher beliefs and use of acceleration, ability grouping, and formative assessment. *J. Educ. Gift.* 37, 245–268. doi: 10.1177/0162353214541326

Muijs, D., and Reynolds, D. (2002). Teachers' beliefs and behaviors: what really matters? *J. Classroom Interact.* 37, 3–15.

Murphy, P. K., Greene, A., Firetto, C. M., Li, M., Lobczowski, N. G., Duke, R. F., et al. (2017). Exploring the influence of homogeneous versus heterogeneous

grouping on students' text-based discussions and comprehension. *Contemp. Educ. Psychol.* 51, 336–355. doi: 10.1016/j.cedpsych.2017.09.003

Nahal, S. P. (2010). Voices from the field: perspectives of first-year teachers on the disconnect between teacher preparation programs and the realities of the classroom. *Res. High. Educ. J.* 8, 1–19.

Newcomb, A. F., and Bagwell, C. L. (1995). Children's friendship relations: a meta-analytic review. *Psychol. Bull.* 117:306. doi: 10.1037/0033-2909.117.2.306

Nomi, T. (2009). The effects of within-class ability grouping on academic achievement in early elementary years. *J. Res. Educ. Effectiveness* 3, 56–92. doi: 10.1080/19345740903277601

Oakes, J. (1985). *Keeping Track: How Schools Structure Inequality*. New Haven, CT: Yale University Press.

Oberle, E., Schonert-Reichl, K. A., and Thomson, K. C. (2010). Understanding the link between social and emotional well-being and peer relations in early adolescence: gender-specific predictors of peer acceptance. *J. Youth Adolesc.* 39, 1330–1342. doi: 10.1007/s10964-009-9486-9

Odgers, C. L., Moffitt, T. E., Broadbent, J. M., Dickson, N., Hancox, R. J., Harrington, H., et al. (2008). Female and male antisocial trajectories: from childhood origins to adult outcomes. *Dev. Psychopathol.* 20, 673–716. doi: 10.1017/s0954579408000333

Odom, S. L., Zercher, C., Li, S., Marquart, J. M., Sandall, S., and Brown, W. H. (2006). Social acceptance and rejection of preschool children with disabilities: a mixed-method analysis. *J. Educ. Psychol.* 98:807. doi: 10.1037/0022-0663.98.4.807

Ojanen, T., Sijtsema, J. J., and Rambaran, A. J. (2013). Social goals and adolescent friendships: social selection, deselection, and influence. *J. Res. Adolesc.* 23, 550–562. doi: 10.1111/jora.12043

Ostrov, J. M., Woods, K. E., Jansen, E. A., Casas, J. F., and Crick, N. R. (2004). An observational study of delivered and received aggression, gender, and social-psychological adjustment in preschool:"This white crayon doesn't work…". *Early Childhood Res. Q.* 19, 355–371. doi: 10.1016/j.ecresq.2004.04.009

Parkhurst, J. T., and Asher, S. R. (1992). Peer rejection in middle school: subgroup differences in behavior, loneliness, and interpersonal concerns. *Dev. Psychol.* 28:231. doi: 10.1037/0012-1649.28.2.231

Patrick, S. K. (2020). Homogeneous grouping in early elementary reading instruction. *Element. Sch. J.* 120, 611–635. doi: 10.1086/708666

Pearl, R., Leung, M. C., Van Acker, R., Farmer, T. W., and Rodkin, P. C. (2007). Fourth-and fifth-grade teachers' awareness of their classrooms' social networks. *Element. Sch. J.* 108, 25–39. doi: 10.1086/522384

Peters, S. (2003). I Didn't expect that i would get tons of friends…more each day: children's experiences of friendship during the transition to school. *Early Years* 23, 45–53. doi: 10.1080/0957514032000045564

Pettigrew, T. F. (1998). Intergroup contact theory. *Annu. Rev. Psychol.* 49, 65–85.

Quinn, M., and Hennessy, E. (2010). Peer relationships across the preschool to school transition. *Early Educ. Dev.* 21, 825–842. doi: 10.1080/10409280903329013

Raver, C. C., and Knitzer, J. (2002). *Ready to Enter: What Research Tells Policymakers About Strategies to Promote Social and Emotional School Readiness Among Three- and Four-Year-Olds*. New York, NY: National Center for Children in Poverty.

Rende, R. D., and Killen, M. (1992). Social interactional antecedents of conflict in young children. *Early Childhood Res. Q.* 7, 551–563. doi: 10.1016/0885-2006(92)90086-e

Riley, T., and White, V. (2016). Developing a sense of belonging through engagement with like-minded peers: a matter of equity. *New Zealand J. Educ. Stud.* 51, 211–225. doi: 10.1007/s40841-016-0065-9

Rimm-Kaufman, S. E., Pianta, R. C., and Cox, M. J. (2000). Teachers' judgments of problems in the transition to kindergarten. *Early Childhood Res. Q.* 15, 147–166. doi: 10.1016/s0885-2006(00)00049-1

Robers, S., Zhang, J., and Truman, J. (2012). *Indicators of School Crime and Safety: 2011 (NCES 2012-002/NCJ 236021)*. Washington, DC: National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice.

Rose, A. J., and Asher, S. R. (2004). Children's strategies and goals in response to help-giving and help-seeking tasks within a friendship. *Child Dev.* 75, 749–763. doi: 10.1111/j.1467-8624.2004.00704.x

Rose, A. J., and Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: potential trade-offs for the emotional and behavioral development of girls and boys. Psychol. Bull. 132:98. doi: 10.1037/0033-2909.132.1.98

Rubin, K. H., Bukowski, W., and Parker, J. G. (2006). "Peers interactions, relationships, and interactions," in *Handbook of Child Psychology: Social, Emotional, and Personality Development*, 6th Edn, eds W. Damon, R. Lerner, and N. Eisenberg (New York, NY: Wiley), 571–645.

Rubin, K. H., and Cohen, J. S. (1986). The revised class play: correlates of peer assessed social behaviors in middle childhood. *Adv. Behav. Assess. Child. Fam.* 2, 176–206.

Ryan, A. M., Kuusinen, C. M., and Bedoya-Skoog, A. (2015). Managing peer relations: a dimension of teacher self-efficacy that varies between elementary and middle school teachers and is associated with observed classroom quality. *Contemp. Educ. Psychol.* 41, 147–156. doi: 10.1016/j.cedpsych.2015.01.002

Saft, E. W., and Pianta, R. C. (2001). Teachers' perceptions of their relationships with students: effects of child age, gender, and ethnicity of teachers and children. *Sch. Psychol. Q.* 16:125. doi: 10.1521/scpq.16.2.125.18698

Saleh, M., Lazonder, A. W., and de Jong, T. (2007). Structuring collaboration in mixed-ability groups to promote verbal interaction, learning, and motivation of average-ability students. *Contemp. Educ. Psychol.* 32, 314–331. doi: 10.1016/j.cedpsych.2006.05.001

Savanur, C. S., Altekar, C. R., and De, A. (2007). Lack of conformity between Indian classroom furniture and student dimensions: proposed future seat/table dimensions. *Ergonomics* 50, 1612–1625. doi: 10.1080/00140130701587350

Schafer, J. L., and Olsen, M. K. (1998). Multiple imputation for multivariate missing-data problems: a data analyst's perspective. *Multiv. Behav. Res.* 33, 545–571. doi: 10.1207/s15327906mbr3304_5

Schaffer, H. R. (1996). *Social Development*. Cambridge, MA: Blackwell.

Sebanc, A. M., Kearns, K. T., Hernandez, M. D., and Galvin, K. B. (2007). Predicting having a best friend in young children: individual characteristics and friendship features. *J. Genet. Psychol.* 168, 81–96. doi: 10.3200/gntp.168.1.81-96

Serbin, L. A., O'Leary, K. D., Kent, R. N., and Tonick, I. J. (1973). A comparison of teacher response to the preacademic and problem behavior of boys and girls. *Child Dev.* 44, 796–804. doi: 10.2307/1127726

Shin, H. (2017). Friendship dynamics of adolescent aggression, prosocial behavior, and social status: the moderating role of gender. *J. Youth Adolesc.* 46, 2305–2320. doi: 10.1007/s10964-017-0702-8

Singer, E., and Hännikäinen, M. (2002). The teacher's role in territorial conflicts of 2- to 3-year-old children. *J. Res. Childhood Educ.* 17, 5–18. doi: 10.1080/02568540209594994

Slavin, R. E. (1987). Ability grouping and student achievement in elementary schools: a best-evidence synthesis. *Rev. Educ. Res.* 57, 293–336. doi: 10.3102/00346543057003293

Sørensen, A. B., and Hallinan, M. T. (1986). Effects of ability grouping on growth in academic achievement. *Am. Educ. Res. J.* 23, 519–542. doi: 10.3102/00028312023004519

Spivak, A. L. (2016). Dynamics of young children's socially adaptive resolutions of peer conflict. *Soc. Dev.* 25, 212–231. doi: 10.1111/sode.12135

Steenbergen-hu, S., Makel, M. C., and Olszewski-kubilius, P. (2016). What one hundred years of research says about the effects of ability grouping and acceleration on k – 12 students' academic achievement?: findings of two second-order meta-analyses. *Rev. Educ. Res.* 86, 849–899. doi: 10.3102/0034654316675417

Suk Wai Wong, M., and Watkins, D. (2001). Self-esteem and ability grouping: a Hong Kong investigation of the big fish little pond effect. *Educ. Psychol.* 21, 79–87. doi: 10.1080/01443410123082

Swanson, H. L., O'Connor, J. E., and Cooney, J. B. (1990). An information processing analysis of expert and novice teachers' problem solving. *Am. Educ. Res. J.* 27, 533–556. doi: 10.3102/00028312027003533

Troop-Gordon, W., and Ladd, G. W. (2015). Teachers' victimization-related beliefs and strategies: associations with students' aggressive behavior and peer victimization. *J. Abnorm. Child Psychol.* 43, 45–60. doi: 10.1007/s10802-013-9840-y

Underwood, M. K. (2007). Introduction to the special issue: gender and children's friendships: do girls' and boys' friendships constitute different peer cultures, and what are the trade-offs for development? *Merrill Palmer Q.* 53, 319–324. doi: 10.1353/mpq.2007.0022

van den Berg, Y. H., and Cillessen, A. H. (2013). Computerized sociometric and peer assessment: an empirical and practical evaluation. *Int. J. Behav. Dev.* 37, 68–76. doi: 10.1177/0165025412463508

Van den Berg, Y. H., Segers, E., and Cillessen, A. H. (2012). Changing peer perceptions and victimization through classroom arrangements: a field experiment. *J. Abnorm. Child Psychol.* 40, 403–412. doi: 10.1007/s10802-011-9567-6

Van der Graaff, J., Branje, S., De Wied, M., Hawk, S., Van Lier, P., and Meeus, W. (2014). Perspective taking and empathic concern in adolescence: gender differences in developmental changes. *Dev. Psychol.* 50:881. doi: 10.1037/a0034325

Van Leeuwen, K., Meerschaert, T., Bosmans, G., De Medts, L., and Braet, C. (2006). The strengths and difficulties questionnaire in a community sample of young children in flanders. *Eur. J. Psychol. Assess.* 22, 189–197. doi: 10.1027/1015-5759.22.3.189

Vartuli, S. (1999). How early childhood teacher beliefs vary across grade level. *Early Childhood Res. Q.* 14, 489–514. doi: 10.1016/s0885-2006(99)00026-5

Watson, S. B. (2006). Novice science teachers: expectations and experiences. *J. Sci. Teach. Educ.* 17, 279–290. doi: 10.1007/s10972-006-9010-y

Webb, N. M. (1989). Peer interaction and learning in small groups. *Int. J. Educ. Res.* 13, 21–39. doi: 10.1016/0883-0355(89)90014-1

West, J., Denton, K., and Reaney, L. M. (2001). *The Kindergarten Year: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (Publication No. NCES2001-023)*. Washington, DC: Department of Education, National Center for Education Statistics.

Wilkinson, I. A. G., Soter, A. O., and Murphy, P. K. (2010). "Developing a model of quality talk about literacy text," in *Bringing Reading Research to Life*, eds M. G. McKeown and L. Kucan (New York: The Guilford Press), 142–169.

Wilkinson, L. C. (1989). Grouping children for learn- ing: implications for kindergarten education. *Rev. Res. Educ.* 15, 203–223. doi: 10.2307/1167364

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Psychology

ORIGINAL RESEARCH
published: 22 December 2020
doi: 10.3389/fpsyg.2020.586489

A Cooperative Learning Intervention to Promote Social Inclusion in Heterogeneous Classrooms

Nina Klang[1], Ingrid Olsson[1], Jenny Wilder[2], Gunilla Lindqvist[1], Niclas Fohlin[3] and Claes Nilholm[1]*

[1] Department of Education, Uppsala University, Uppsala, Sweden, [2] Department of Special Education, Faculty of Social Sciences, Stockholm University, Stockholm, Sweden, [3] Association of Cooperative Learning for Teachers, Stockholm, Sweden

Concerning challenges with the social inclusion of children with special educational needs (SEN), it is imperative to evaluate teacher interventions that promote social inclusion. This study aimed to investigate the effects of cooperative learning (CL) intervention on social inclusion. In addition, it was investigated to what degree CL implementation affected the outcomes. Fifty-six teachers of 958 fifth-grade children were randomly selected to intervention and control groups upon recruitment to the study. The intervention teachers received training and coaching in CL and implemented this approach three to four times a week for 15 weeks. The results showed a significant but small effect of CL on children's social acceptance, but no significant effect on children's friendships and perceptions of classroom relationships. The degree of CL implementation had effect on children's social acceptance, but the effect was not consistent across social acceptance measures as a friend or a groupmate. Thus, it can be concluded that CL, conducted with the length and intensity of this study, may not lead to substantial changes in the social inclusion of children with SEN. In future studies, more focus needs to be devoted to teacher implementation of the CL approach.

Keywords: inclusion, cooperative learning, teachers, children with special needs, intervention

OPEN ACCESS

Edited by:
Luciano Gasser,
University of Teacher Education Lucerne, Switzerland

Reviewed by:
Robyn M. Gillies,
The University of Queensland, Australia
Ariana Garrote,
University of Applied Sciences and Arts Northwestern Switzerland, Switzerland
Christoph Michael Müller,
Université de Fribourg, Switzerland

****Correspondence:***
Nina Klang
nina.klang@edu.uu.se

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Psychology

Received: *23 July 2020*
Accepted: *17 November 2020*
Published: *22 December 2020*

Citation:
Klang N, Olsson I, Wilder J, Lindqvist G, Fohlin N and Nilholm C (2020) A Cooperative Learning Intervention to Promote Social Inclusion in Heterogeneous Classrooms. Front. Psychol. 11:586489. doi: 10.3389/fpsyg.2020.586489

INTRODUCTION

While educational policies around the world have become more inclusive (Ramberg and Watkins, 2020), the social inclusion of children with special educational needs (SEN) still constitutes an area of concern. This concern has been expressed in a number of studies showing that children with SEN are less accepted by their peers and have fewer friends than their non-SEN peers (Pijl et al., 2010; Nepi et al., 2015; Schwab, 2015; Avramidis et al., 2018; Banks et al., 2018). Moreover, children with SEN have fewer interactions with classmates (Koster et al., 2010) and spend less time with peers during school breaks than their non-SEN peers (Schwab, 2015). They express lower self-concept and self-perception of social integration than their non-SEN peers (Pijl et al., 2010; Schwab, 2015). It is alarming that these patterns of exclusion seem to persist over time, as children's friendships tend to remain stable over time (Frederickson and Furnham, 2001; Frostad et al., 2011; Schwab, 2019). Thus, although children with SEN are educated alongside their peers, there seem to be few opportunities for social inclusion.

The explanations for the challenges of social inclusion may be related to individual and contextual factors. Based on an individual perspective, it is the lack of the necessary social

interaction skills that may be the reason for exclusion. For example, aggressive behavior and difficulties with social skills have been identified as predictors of peer rejection (Cillessen and Mayeux, 2004; de Boer et al., 2013; Schwab et al., 2015). Based on a contextual perspective, it is the factors in students' environments that may explain exclusion or inclusion. Such factors include peer attitudes (de Boer et al., 2013), classroom norms (Gasser et al., 2017, 2018), and lack of teacher support (Mikami et al., 2013). From this perspective, it is important to provide opportunities for meaningful peer contacts (Grütter et al., 2018; Pinto et al., 2019). Moreover, teachers may need to address peer attitudes and friendships by creating inclusive classroom norms, modeling positive peer relationships, and giving children positive feedback (Mikami et al., 2013; Huber et al., 2018). In light of the contextual perspective on inclusion, this study contributes to previous research by evaluating a cooperative learning (CL) intervention aiming to promote social inclusion in classrooms with SEN children.

Cooperative Learning Approach

In the CL approach, children work in small heterogeneous groups structured to enhance the learning of all group members (Slavin, 2014; Gillies, 2016). Several CL methods vary with regard to their theoretical underpinnings and specific elements, such as reward or task structures (for a review, see Slavin, 1996). An approach that has gained popularity in recent years is Learning Together (Johnson et al., 1993, 2009). This approach aims to promote group cohesion by structuring group work according to five principles based on social interdependence theory. The first principle, positive interdependence, ensures that all group members are aware that they are dependent on each other's efforts in completing a task–a single member of a group cannot achieve anything unless all its members do. The second principle, individual accountability, means that all the group members feel responsible for completing their share of the group work. Promotive interaction, the third principle, implies that children are given possibilities to interact to promote group work by giving each other help, support, and feedback. The fourth principle, social skills, entails explicitly teaching social skills and motivating children to use them in group work sessions. The final principle, group processing, involves reflecting on the group work to plan future group activities. The teacher's task in the CL approach is to structure classroom activities regarding the five principles of CL, introduce the activities, and monitor and intervene in the group work when needed (Johnson and Johnson, 2008; Gillies, 2016).

Reviews of the CL approach consistently show that it is a promising instructional method. CL approach has yielded higher results on children's achievement across a wide range of school subjects (Johnson and Johnson, 2002; Roseth et al., 2008; Kyndt et al., 2013). It has led to positive changes in children's perceptions of peer support, interpersonal attraction and liking, and children's prosocial behavior (Gillies and Ashman, 1997, 2000; Slavin and Cooper, 1999; Johnson and Johnson, 2002; Roseth et al., 2008). However, the CL approach for the social inclusion of children with SEN is less researched. In a recent review of the effects of CL on the social inclusion of children with SEN, Garrote et al. (2017) identified six studies that included both CL and group activities in general, such as peer tutoring or support groups. According to the authors, the number of methodologically sound studies is still too small to conclude the effectiveness of group activities in promoting the inclusion of children with SEN.

CL Approach and Social Inclusion of Children With SEN

The limited number of studies that have evaluated the effect of the CL approach on social inclusion of children with SEN show that this approach leads to increases in social acceptance and prosocial group behaviors (Putnam et al., 1996; Gillies and Ashman, 1997, 2000; Jacques et al., 1998; André et al., 2011; Capodieci et al., 2019). The interventions in these studies varied in length, from 12 h to 7 months, and in intensity, from 90 to 180 min per week. Thus, there is evidence for the benefits of the CL approach for children with SEN, even in short duration interventions. However, none of the studies evaluated children's perceptions of their classroom relationships due to instruction according to the CL approach. In this study, the effects of the CL approach are evaluated on peer acceptance, friendships, and children's own perceptions of their classroom relationships.

While there is evidence on the effect of the CL approach on inclusion, less is known of the conditions under which this approach has the intended effect. The social interdependence theory, a premise of the CL approach, posits that structuring tasks for positive interdependence among group members gives rise to psychological processes of caring for one's group members and readiness to invest energy into others than oneself (Johnson and Johnson, 2009). However, this assumption was challenged by Slavin (2014), who pointed out that it may be a necessary but not sufficient condition for cooperation. Slavin (2014) proposed that group members may need additional motivational incentives to cooperate effectively, and that change as a result of such an intervention may take time.

Research on social inclusion may also add important explanations to the complexity of the relationship between the CL approach and social inclusion. In children's decisions of whom to include, they appear to be balancing concerns of group functioning and moral issues of fairness and justice (Gasser et al., 2014). Peer group norms may influence these decisions. For example, under competitive classroom norms, group functioning concerns may weigh more, and peers may justify excluding a child with learning or behavior difficulties based on concerns of their group's functioning (Gasser et al., 2017). The question is whether these processes take place in studies of the CL approach in heterogeneous groups, in which differences in academic status among members have led to problems with the participation of low-performing children (Cohen, 1994; Mulryan, 1995). If so, teachers may need to pay specific attention to creating inclusive classroom norms when using the CL approach.

Specific arrangements to promote group cooperation have been described in the CL approach studies and social inclusion. Different parts of a task were assigned to individual group members, or complementary roles were introduced (Jacques et al., 1998; André et al., 2011). For example, in a study by

André et al. (2011) on CL's use in physical education, goal interdependence was ensured by aggregating team results by adding up each team member's score.

In addition to creating tasks conducive to cooperation, separate training in social and group work skills has proved to be important (Gillies and Ashman, 1997, 2000; Baines et al., 2015; Capodieci et al., 2019). In a series of studies, Gillies and Ashman (1997, 2000) had compared gains in children's cooperative behaviors in two groups–children who participated in group work and children who, before the group work, participated in two training sessions with a focus on group work skills. As a result, the children in cooperative groups with additional training in group work skills showed more cooperative behavior and were more responsive to children who needed help. However, these benefits were not evident for children with learning difficulties, who improved only in on-task behavior. To conclude, merely assigning students to groups may not lead to social inclusion. Instead, it requires effort from the teacher to promote social skills and positive interdependence among group members.

Implementing the CL Approach–Teachers' Role

Teachers may find it challenging to implement the CL approach in their everyday instruction. In a survey by Abrami et al. (2004), 61% of teachers reported that they used CL, but a closer look into the teacher-reported practices revealed a gap between the recommendations and the actual classroom practices. Only half of the teachers in the study reported structuring group activities with principles of CL in mind. In a study by Lopata et al. (2003), professional development in CL was only associated with an increase in practices to support individual accountability, but not positive interdependence. The authors pointed to a need for greater attention to the elements that promote cooperation, such as positive interdependence, promotive interaction, and group processing. Difficulties in teacher implementation of CL have been confirmed in recent studies. Gillies and Boyle (2010) found that, although teachers had positive experiences of CL, they also experienced difficulties in responding to children socializing and not working, in managing the time effectively, and setting aside time for preparation. Buchs et al. (2017) reported that teachers perceived implementing CL as difficult, especially with regard to assessing children's work and embedding CL within the curriculum. CL, as a practice, requires a profound change in teacher practices from teacher-led to child-centered pedagogy (Hennessey and Dionigi, 2013; Ghaith, 2018). Some researchers propose that to promote student cooperation, teachers need to cooperate with their colleagues, thus arguing for whole-school approaches in the implementation of CL (Sharan, 2010; Jolliffe, 2015).

The teacher's role in the CL approach is central but intricate. Training in CL renders changes in the teacher's role from modeling and providing direct instruction to one of monitoring and scaffolding group work (Blatchford et al., 2006; Gillies, 2016). It is generally acknowledged that less teacher involvement in group work is associated with greater autonomy (Lin et al., 2015). However, the teacher plays a profound role in framing the expectations of standard rules and norms in the classroom group work (Baker et al., 2017). These expectations may be communicated by asking and responding to questions or giving explanations (Webb et al., 2006). Furthermore, teacher guidance for group work may include prompting, modeling, and praising successful group processes (Lin et al., 2015). Thus, the teacher's role includes the *a priori* structuring of group work for cooperation; following up on the social rules for interaction, and intervening when groups encounter problems. Regarding the reported challenges in implementing the CL approach, the teachers' role in implementing the CL deserves careful attention in discerning the effects of this approach for the social inclusion of children with SEN.

The Present Study

Concerning the need to study interventions that may promote social inclusion for children with SEN (Garrote et al., 2017), this study aims to contribute to previous research by investigating the effect of CL on social inclusion in classrooms in which children with SEN are educated alongside with their peers. Following a view of social inclusion as a multidimensional construct (Koster et al., 2009), the study focuses on three aspects of inclusion, peer acceptance, friendships, and children's perceptions of classroom relationships. Also, concerning challenges in implementing the CL approach (Gillies and Boyle, 2010; Buchs et al., 2017), a special focus is devoted to the teacher implementation of the CL approach. The research questions are:

(a) What is the effect of CL approach and the effect of degree of CL implementation on children's perceptions of classroom relationships?
(b) What is the effect of CL approach and the effect of degree of CL implementation on children's social acceptance and friendships?

MATERIALS AND METHODS

A cluster-randomized experimental design was used to investigate the effects of CL on children's social inclusion. The study was conducted per the guidelines for good research practices stipulated in the European Code of Conduct for Research Integrity (All European Academies [ALLEA], 2017). Before starting the study, ethical approval (Dnr 2017/372) was obtained from the Swedish National Ethical Committee.

Participants

The study's participants were 56 teachers of 958 fifth graders, aged 11 (498 boys and 460 girls). After recruitment and the submittal of informed consent by the teachers, the children, and their parents, the teachers and their classes were randomly assigned to intervention and control groups. Furthermore, to ensure equal prerequisites in the intervention and control groups, before the randomization, the teachers were divided into three groups based on their reports of previous knowledge and experience of CL. These groups were: (a) having knowledge and experience of CL, (b) having some knowledge or experience of CL, and (c) having

no knowledge or experience of CL. The randomization was conducted within each group. Teachers working at the same school were randomized to the same group. As seen in **Table 1**, an approximately equal proportion of teachers in the intervention and control groups had knowledge and experience of CL.

Further, as seen in **Table 1**, the average class size was 27 children, and in 75% of classes, the proportion of children with SEN was 33–36%. In Sweden, the identification of special needs is not dependent on a medical diagnosis. Instead, it is up to the teachers and school welfare teams to determine which children are entitled to special support (Swedish National Educational Agency [SNAE], 2014). Children can receive two types of special support: extra adaptations and special support, documented in an individual educational plan (IEP). Thus, the proportion of children with SEN include those in need of extra adaptations and those who received support. Owing to regulations on the protection of individuals (SFS 2009:400, 2009), the information on children's need for special support or type of special needs on an individual or school level is not accessible to researchers. Therefore, a special letter of consent was sent to children's parents, asking them to approve teachers' providing the researchers with information on their child's need for special support. As the parents of only 12 students gave their approval for this, information on special support was retrieved through teacher reports on the class level.

Power analyses showed a need to recruit 51 classes and 1,020 children, based on an expected effect size of 0.30 and power of 80%, with an expected amount of 20 children per class and an intraclass correlation of 0.10. Therefore, 56 teachers, responsible for 1,169 fifth graders in 52 classes at 28 schools, were recruited. However, informed consent was obtained from the parents of only 958 children (463 in the intervention group and 495 in the control group). Furthermore, the attrition rate for pre- and post-measurement was 35% for perceptions of classroom relationships, so that 624 children were included in the analyses upon listwise deletion. For measures of peer acceptance and friendships, the attrition was 28%, resulting in analyses of data from 689 children. The reasons for attrition were teacher dropout from the study due to sick leave and personal circumstances (five teachers in the intervention group and two teachers in the control group). In addition, some teachers did not send the questionnaires to the researchers as intended, and some children were absent on the day of data collection.

In **Appendix Tables A1**, **A2**, the groups of children with missing values at pre- and post-measurement are compared with the children who participated in the study at both pre- and post-measurement. Comparisons between the groups were made using independent samples *T*-tests. Analyses revealed some degree of attrition bias. For children's perceptions of classroom relationships, the children with missing values at pre- or post-measurement rated academic and personal support from their classmates and cohesion in a class lower than did the children who participated in both pre- and post-measurement. Regarding social acceptance, children in the control group who dropped out of the study at post-measurement, received more most liked nominations than the children who did not drop out. For friendships, significant differences between the groups were found in the intervention group. Children with missing values at pre- and post-measurement had significantly fewer reciprocated nominations than the children in the study.

TABLE 1 | Background characteristics of classes and teachers in intervention and control groups.

	CL group	Control group
Number of teachers at recruitment	27	28
Number of children at recruitment	463	495
Teacher knowledge and experience of cooperative learning		
Knowledge and experience	9	6
Some knowledge	9	8
No previous knowledge	9	9
Mean number of students per class	27	27
Proportion of children with SEN per class		
Min	0.04	0.04
1st quartile	0.17	0.27
2nd quartile	0.27	0.33
3rd quartile	0.33	0.36
Max	0.60	0.58

Intervention

Teachers in the intervention group received 5 days of training in the CL approach, divided into three phases. In the first phase, a 2-day training focused on the five principles of the CL approach, the creation of heterogeneous groups, and group-building activities. The participating teachers created lesson plans for activities that embedded the five principles of CL. The first phase of training lasted for 7 weeks. This phase also included a classroom visit for each teacher, during which researchers observed one lesson and provided feedback. During the school visit, the data on the quality of implementation of CL were collected.

The second phase of the training focused on embedding the CL principles in mathematics and literacy curriculum activities during 2 days of training. The researchers elaborated scripts of activities in mathematical problem-solving and reading comprehension, incorporating the five principles of CL. The second phase lasted for 6 weeks and included a classroom visit and personal feedback to each teacher, which also served as a data collection point. The third phase encompassed 1 day of training, scheduled 2 weeks before the end of the study. The training was based on the classrooms' observations and focused on the CL approach's theoretical foundations and additional activities to promote student interaction in groups.

In all the phases, in accordance with previous research on the implementation of CL (Jolliffe, 2015), the teachers were invited to participate in the activities they were to conduct with their children. The teachers were supported with training materials describing the theory behind CL, and activities and strategies aligned with its five principles, positive interdependence, individual accountability, promotive interaction, teaching social skills, and group processing (Klang et al., 2018). Based on the Learning Together approach (Johnson et al., 1993, 2009), the training materials were developed in cooperation with four teachers and 90 children who were not participants in the study.

The five principles of cooperation were ensured in all the activities. To promote positive interdependence, the teachers devoted time to group-building activities. After the teachers formed the groups, the children created a name and logo for them. The teachers introduced each lesson with their group's common goal and emphasized group performance rather than individual performance. Tasks were structured to ensure that the children would be dependent on each other's information or knowledge. For individual accountability, the tasks were introduced by emphasizing that each group member is responsible for the group's work. At the end of each lesson, the children were asked to report on a task's results. They did this either individually or rotated between different groups where a group member reported the results of their group's work to the other groups. For promotive interaction, the teachers ensured that the children were seated near each other and shared the task's materials.

To promote social skills, the teachers introduced one or two social skills per lesson. The same social skill was focused on for 1 or 2 weeks. The social skill was visible on the whiteboard, and activities to practice it were conducted. The teachers encouraged the children to practice their social skills and praised them when they did. For group processing, the teachers allowed time to evaluate the groups' collaboration and decide on future strategies at the end of each lesson. The teachers worked on CL 3 to 4 days a week for 15 weeks. The groups were heterogeneous in terms of academic and social abilities, and the group composition alternated every 4 weeks.

Implementation of the CL Approach

Data on the fidelity of implementation included both adherence and dosage, in accordance with standards for evidence-based practices (Council for Exceptional Children, 2014). Data on implementation related to dosage was collected through teacher self-reports. Five times during the intervention period, the teachers were asked to provide information on the amount of time they devoted to CL over 2 weeks. Data on the quantity of implementation showed that in 21 of the 27 classes, the teachers reported having applied CL at least three to four times a week and in two classes in less than three to four lessons; no information was provided for the remaining four classes. Data on adherence were collected through observations using an observation protocol based on the principles of CL (Johnson et al., 2009). The observations revealed that most teachers implemented the CL intervention consistently through the intervention period, although the degree of implementation varied (see "Measures" section).

Control Condition

Teachers in the control condition were instructed to teach as usual. Due to a lack of time and resources, the observations in the control condition could not be conducted. To ensure that the teachers were interested in participating in the project, they received two lectures on mathematical problem-solving and reading comprehension despite being part of the control group. No cooperative activities were held.

Measures

According to a broad definition of social inclusion (Koster et al., 2009), data on children's social acceptance and friendships were collected through peer nominations. The children's perception of classroom relationships was measured using the Classroom Life Instrument (Johnson and Johnson, 1983). Data on teacher implementation of the CL approach were gathered through lesson observations during school visits.

Perceived Classroom Relationships

The Classroom Life Instrument (Johnson and Johnson, 1983) consists of 16 separate scales aiming to explore children's perceptions of classroom relationships. The instrument has shown acceptable reliability and validity (Johnson et al., 1983; Bertucci et al., 2016). Four scales from the instrument were used in this study. Two scales, Peer Personal Support (four items) and Peer Academic Support (five items), were used to measure children's perceptions of peer support. Two indicators of overall classroom climate, related to inclusion, were added: Class cohesion (five items) and Valuing heterogeneity (four items). A five-step Likert scale was used, ranging from 1 ("Completely false") to 5 ("Completely true"). The Student Academic Support scale includes four items focusing on children's perceptions of peer support and how much peers care about their classmates' learning, schoolwork, and school attendance. The Cronbach's alpha value for this scale was 0.748. The Student Personal Support scale includes five items encompassing children's perceptions of appreciation, friendship, and care from peers. The Cronbach's alpha value for this scale was 0.841. The Class Cohesion scale includes five items on whether all children in the class are friends and know each other well, and a reversed question on feelings of loneliness. The Cronbach's alpha value for this scale was 0.678. The Valuing Heterogeneity scale includes four questions on whether children appreciate learning from children who are different and if they perceive it as fun to work with and learn from them. The Cronbach's alpha value for this scale was 0.739. The items in the four scales were translated and back-translated by two researchers following guidelines for cultural translation and adaptation (Brislin, 1970). The scales were pilot-tested with four teachers and 90 children in fifth grade prior to their use in the study. The pilot study showed that all the items in the scales were easy for the children to understand and respond to.

Peer Acceptance and Friendships

Peer social acceptance was investigated through most liked peer nominations, and peer friendships were calculated through reciprocal nominations. Negative nominations were avoided due to ethical considerations as well as the teachers' and parents' concerns regarding the effect of negative nominations on the children's relationships (Child and Nind, 2013). Furthermore, the nominations were not limited to a certain number of children in a class, as unlimited nominations have higher ecological validity (Avramidis et al., 2017; Cillessen and Marks, 2017). Therefore, all children in a class could be selected, in accordance with the method used by Roistacher (1974). A matrix with two columns ("Who would you like to be friends with?" and

"Who would you like to work in a group with?") and rows representing the names of all the children in the class was used. The data for the students without parental consent were not included in the analyses. However, nominations from all submitted questionnaires in the classroom were included, when counting the nominations' proportion for the students with parental consent. Proportion scores, calculated by dividing the number of nominations by the number of nominators, were used in the analyses (Velásquez et al., 2013).

Degree of CL Implementation

During the first school visit, the main author and a research assistant conducted observations in 14 classes. Inter-rater reliability, counted by dividing the number of agreements by the total number of ratings, was 76%. The observation protocol included eight domains, including the introduction of knowledge and social goals, ensuring the five principles of cooperation, and seating arrangements (see **Table 2**). As seen in the table, the observations were rated using a three-step scale: 0 ("Not present"), 1 ("Minimal requirements for implementation fulfilled–partial implementation"), and 2 ("All the requirements for implementation are fulfilled–full implementation"). The definitions of the three steps are presented in **Table 2**.

A rating of 1 was assigned when the dimension was present at the beginning of the lesson, while a rating of 2 was assigned when the dimension was focused from beginning to the end of the lesson. For example, concerning the dimension of social skills, a rating of 1 was assigned to lessons in which the teacher introduced a social skill at the beginning of the lesson. A rating of 2 was assigned to lessons in which the teacher introduced the skills, explicitly accentuated the social skills during the lesson or provided praise for using them. As seen in the table, most of the teachers implemented six of the eight dimensions at least at a minimal level throughout the intervention period. It is also important to note that the lessons varied in the implementation of the dimensions, and there were no lessons in which all dimensions were not fully implemented.

As seen in **Table 2**, two dimensions–individual accountability and group processing–were not fully implemented by the teachers. For individual accountability, a higher number of teachers implemented this dimension during the second school visit. For group processing, the number of teachers who implemented this dimension was relatively low during the whole intervention period. In addition, as seen in the table, fewer teachers fully implemented all the dimensions, indicating that they introduced the dimensions but did not follow up and use them throughout the lesson. The data on implementation were aggregated to investigate the effect of the degree of teacher implementation of CL on children's outcomes. The classes in which the aggregated ratings for the eight dimensions were lower than 16 for two observations were assigned the category "partially implemented," while the classes in which the aggregated ratings exceeded 16 were assigned category "fully implemented." These categories were further used in quantitative analyses of the effect of CL on children's ratings of classroom relationships, social acceptance, and friendships.

Statistical Analyses

Multiple multilevel regression analyses with a two-level structure were conducted (Twisk, 2006). Multilevel regression analyses allowed to account for the nested structure of the data, in which students' responses were nested within their classrooms. The analyses were performed in R software, lme4 package, and children's classrooms were considered a level 2 variable. The assumptions of normality of residuals, controlled by visual inspection of quantile-quantile plots, were met for all the variables. The number of outliers, which had a studentized residual value greater than ± 3 varied from 0 to 15. In a case-by-case inspection, outliers with a value of Cook's distance larger than 1 were deleted. Regression analyses were run on data, including and excluding outliers. As the results of the analyses did not differ, the decision was made to keep the outliers. The assumption of multicollinearity was met as variance inflation factors (VIF) were not greater than 10. The missing data were handled by listwise deletion, in which all the cases with missing values at pre- or post-measurement were deleted prior to the analyses.

Two multilevel models were used in the analyses. In the first model, students' ratings of perceived classroom relationships as well as scores on social acceptance and friendships were studied as a function of time (pre- and post-measurement) and group belonging (intervention and control group), including an interaction between time and group. To account for variation in children's pre-test scores within classrooms and individuals, two random intercepts were included, varying by class and individuals' identification codes. When a random slope was added to the model, the random effects parameters could not be estimated, owing to a limited number of cases. Therefore, a decision was made to report the results of a model with two random intercepts, accounting for variation in students' pre-test scores across classrooms. The second model was similar to the first model, except that the group belonging variable had three levels (control, CL partially implemented, and CL fully implemented). This was done to investigate the effect of the degree of implementation on children's outcomes.

RESULTS

What Is the Effect of the CL Approach and the CL Degree of Implementation on Children's Perceptions of Classroom Relationships?

The results of multiple multilevel regression for children's ratings of perceived classroom relationships are presented in **Table 3**. As seen in **Table 3**, in the first regression model, including the CL group and control group, the regression analyses' results are not significant. Thus, it is not possible to conclude that being part of an intervention group using CL could be associated with higher ratings in children's classroom relationship perceptions. In addition, **Table 3** reports the results of the second regression model, including the control group and CL approach, partially and fully implemented. As seen in the table, the results are not

TABLE 2 | Data on implementation adherence.

	School visit 1 ($n = 21$)			School visit 2 ($n = 20$)		
	0	**1**	**2**	**0**	**1**	**2**
Knowledge goal 0 not present; 1 the goal is presented by the teacher and is visible on the whiteboard; 2 the knowledge goal is formulated as a common goal, e.g., "all group members should. . .," and is followed up.	0	8	13	2	9	9
Social goal 0 not present; 1 social goal is presented by the teacher and is visible on the whiteboard; 2 social goal is followed up during the lesson.	4	9	8	5	10	5
Social skills 0 not present; 1 social skills are presented by the teacher or are visible on the whiteboard; 2 social skills are given profound attention, and are modeled and reinforced during the lesson.	4	8	9	4	9	7
Promotive interaction 0 not present; 1 students are seated near each other and share materials; 2 students are seated near each other and the task requires cooperation.	3	9	9	1	8	11
Positive interdependence 0 not present; 1 group work is structured to strengthen cooperation, groups have identities, and group members have complementary roles; 2 the teacher follows up on the group's common goal and encourages cooperation during the lesson.	1	16	4	3	11	6
Individual accountability 0 not present; 1 teacher introduces the task by saying that individual students will be asked to report; 2 teacher both introduces and follows up on the task either by asking individual students or by asking students to present the results to other groups.	7	11	3	4	6	10
Group processing 0 not present; 1 time is given for a short evaluation of the group work, e.g., voting; 2 time is given for a longer evaluation and reflection on the group work.	9	12	0	10	8	2
Seating arrangements 0 not present; 1 students are seated for the task; 2 permanent seating arrangements in groups.	0	9	12	0	7	13

significant, which indicates that the degree of implementation did not affect children's perception of classroom relationships. Overall, the results show that the CL approach did not affect children's perceptions of classroom relationships, regardless of whether the CL approach was fully implemented.

What Is the Effect of CL Approach and CL Degree of Implementation on Children's Social Acceptance and Friendships?

The results of the two regression models for children's social acceptance, studied by most liked nominations of their classmates as friends or groupmates, and children's friendships, examined by reciprocated nominations, are presented in **Table 4**. As seen in the table, the CL approach had a significant effect on children's social acceptance. However, the magnitude of regression coefficients is small, indicating that being part of a CL group could only lead to a small increase in most liked nominations. Furthermore, the results are significant in the second model, differentiating full and partial implementation of the CL approach from the control group. For most liked nominations as a friend, the effect is significant for the partially implemented CL approach compared to the control group. For most liked nominations as a groupmate, the effect is significant for a fully implemented CL approach. Thus, the second model results indicate that the degree of implementation might be important, but the results are not consistent across the two variables. For children's friendships, measured through reciprocal nominations, there was no significant effect of the CL approach over the control group or significant effect of full or partial implementation of the CL approach compared with the control group.

DISCUSSION

Having friends and positive relationships with peers is an important part of children's school experiences, but research shows that it is not always the case for children with SEN (Pijl et al., 2010; Nepi et al., 2015; Schwab, 2015). Therefore, there is a need for research on interventions that promote social inclusion. This study, guided by research on the importance of contextual factors for inclusion (de Boer et al., 2013; Gasser et al., 2017), investigated the effects of the CL approach on social inclusion. While the CL approach is effective in whole-class approaches (Johnson and Johnson, 2002; Roseth et al., 2008), fewer studies have been conducted on its benefits for children with SEN (Garrote et al., 2017).

The study results showed that the CL approach had a small but significant effect on children's social acceptance, but not on children's friendships and perceptions of classroom relationships. Thus, the results corroborate previous findings on the effect of CL on social acceptance (Putnam et al., 1996; Jacques et al., 1998; André et al., 2011; Capodieci et al., 2019). Longitudinal studies reveal that patterns of friendships of children with SEN tend to remain stable over time (Frederickson and Furnham, 2001; Frostad et al., 2011; Schwab, 2019) and thus may be

TABLE 3 | Mean scores (standard deviation in parentheses), unstandardized multilevel regression estimates, and intraclass correlation coefficients for children's ratings of perceived classroom relationships.

	CL (259)		Control (365)		Multilevel regression estimates			ICC
	Pre	Post	Pre	Post	Model 1	Model 2		
					CL: control b (95% CI)	Partial CL: control b (95% CI)	Full CL: control b (95% CI)	
Peer Academic Support	3.45 (0.64)	3.57 (0.67)	3.58 (0.60)	3.67 (0.66)	−0.03 (−0.07 to 0.13)	0.01 (−0.12 to 0.15)	−0.04 (−0.08 to 0.16)	0.169
Peer Personal Support	3.80 (0.73)	3.88 (0.70)	3.93 (0.68)	3.97 (0.69)	−0.04 (−0.06 to 0.14)	−0.05 (−0.18 to 0.08)	0.12 (−0.01 to 0.24)	0.089
Class cohesion	3.85 (0.67)	3.89 (0.64)	3.99 (0.67)	3.99 (0.68)	0.05 (−0.05 to 0.14)	0.02 (−0.09 to 0.15)	−0.07 (−0.05 to 18)	0.158
Valuing heterogeneity	2.95 (0.73)	2.95 (0.73)	2.94 (0.71)	2.90 (0.74)	0.04 (−0.08 to 0.17)	0.14 (−0.03 to 0.31)	−0.03 (−0.18 to 0.12)	0.019

ICC, intraclass correlation coefficient; CL is used to denote cooperative learning intervention.

resistant to change. The CL intervention in this study lasted for 15 weeks. Hence, more time may be required to influence children's friendships. Future studies are needed to extend CL interventions over longer periods of time.

The study results indicate that the CL approach, implemented with the duration and intensity of this specific study, does not lead to social inclusion. In previous research, unequal participation patterns were observed in heterogeneous groups (Cohen, 1994; Mulryan, 1995). These patterns may be exposed during group formation when roles and norms are established in cooperative groups. Children with SEN may be particularly vulnerable in these situations. Children's inclusion decisions are complex, and they may be influenced by considerations of their group's functioning and norms (Gasser et al., 2014, 2017). Thus, teachers may need to consider the classroom norms when using the CL approach and accentuate inclusive classroom norms, valuing diversity and equal participation.

The CL approach assumes that children develop positive experiences of group work through a feeling of interdependence, created through the five principles of the approach, including positive interdependence, individual accountability, promotive interaction, explicit instruction in social skills, and group processing (Johnson and Johnson, 2009). Studies of CL, focusing on social inclusion of children with SEN, reported on the need for additional training in social skills (Gillies and Ashman, 1997, 2000; Baines et al., 2015; Capodieci et al., 2019). Moreover, specific procedures to ensure positive interdependence were used by aggregating team results on individual scores (André et al., 2011). In this study, the implementation of the five CL principles was assured through activities and materials. Based on the lack of a significant effect on social inclusion, future studies of the CL approach may be necessary to further accentuate training in social skills and to promote positive interdependence among group members.

As highlighted above, implementing a CL approach appears to be a formidable task for teachers. Therefore, it is important to explore how the CL approach can be incorporated into the teachers' everyday practices. In this study, the degree of CL implementation did not affect children's perceptions of their classroom relationships or friendships. It had, though, a significant effect on children's social acceptance as a groupmate. However, the observational data on implementation revealed that not all teachers fully implemented the CL approach in their classes. The dimensions of CL that were not sufficiently implemented were individual accountability and group processing. While individual accountability had been implemented by most teachers by the end of the intervention, not all the teachers in the intervention group devoted time to group processing. The groups need to evaluate their work and plan future actions to function well (Johnson et al., 1993, 2009). Given the importance of group processing, it is troubling that this element was not consistently used in the intervention. Teachers may struggle with the time needed to prepare lessons and fit the CL approach into the classroom curriculum (Gillies and Boyle, 2010; Buchs et al., 2017). Future studies should focus on how the CL approach can be fully implemented concerning teachers' everyday practices.

TABLE 4 | Mean scores (standard deviations in parentheses), unstandardized multilevel regression estimates and intraclass correlation coefficients for children's social acceptance and friendships.

	CL (307)		Control (382)		Multilevel regression estimates			ICC
	Pre	Post	Pre	Post	Model 1	Model 2		
					CL: control b (95% CI)	Partial CL: control b (95% CI)	Full CL: control b (95% CI)	
Social acceptance (most liked nominations)								
As a friend	0.40 (0.18)	0.47 (0.19)	0.50 (0.16)	0.53 (0.17)	0.04** (0.02 to 0.06)	0.05** (0.03 to 0.08)	0.02 (−0.01 to 0.05)	0.478
As a groupmate	0.32 (0.18)	0.38 (0.19)	0.40 (0.20)	43 (0.19)	0.03** (0.01 to 0.05)	0.02 (−0.01 to 0.04)	0.04** (0.01 to 0.06)	0.280
Friendships (reciprocated nominations)								
As a friend	0.27 (0.17)	0.31 (0.20)	0.34 (0.18)	0.38 (0.20)	0.01 (0.01 to 0.03)	0.01 (−0.03 to 0.03)	0.02 (−0.01 to 0.05)	0.209
As a groupmate	0.16 (0.12)	0.19 (0.16)	0.22 (0.17)	0.24 (0.17)	−0.01 (−0.03 to 0.02)	−0.01 (−0.03 to 0.03)	−0.01 (−0.01 to 0.02)	0.274

$^{**}p \leq 0.001$.
ICC, intraclass correlation coefficient; CL is used to denote cooperative learning intervention.

Another aspect of the implementation of CL concerns the teacher's role in CL. In this study, as seen from the observations of the teachers' practices, they successfully introduced the principles of CL at the beginning of the lesson, but these principles were seldom followed up throughout the lesson. Previous research has emphasized the importance of teacher framing expectations for social rules and norms in group work (Webb et al., 2006; Baker et al., 2017). As the teacher's role shifts from that of providing direct instruction to one of scaffolding group work, teacher guidance of group work through prompting, praising successful group processes, or modeling is essential (Blatchford et al., 2006; Lin et al., 2015). The identified challenges in CL implementation in this study suggest a need for further research on the teacher's role in CL, including video observations of teaching and interviews with both teachers and children.

Previous studies have emphasized CL's complexity, as it is not simply a technique but requires a shift from a teacher-led to a child-focused pedagogy (Hennessey and Dionigi, 2013; Ghaith, 2018). Thus, an intervention of 15 weeks may have been insufficient to give rise to these profound changes in teacher practices. Some researchers advocate whole-school approaches in the implementation of CL (Sharan, 2010; Jolliffe, 2015), arguing that to change the cooperation climate in the classroom, teachers need to change the way they cooperate with colleagues. In this study, individual teachers rather than schools were recruited for participation. Further studies on the implementation of CL may need to consider the importance of teacher teams in the implementation.

LIMITATIONS

The present study has several limitations. Firstly, due to regulations concerning the protection of individuals in Sweden (SFS 2009:400, 2009), the data on individual children's need for special support could not be disclosed without the children's legal guardians' permission. Upon the sending of an additional letter of consent, data on individual children's need for special support was retrieved for only 12 children, thus leaving no space for meaningful investigation of the benefits of CL for these children. However, based on the teachers' reports, 75% of the classes in the study had 33–36% children with SEN. So, although it is not possible to draw conclusions about the benefits of CL for individual children with SEN, the study contributes to research on the use of CL in classes with SEN children.

The second limitation concerns the teachers in the study. Upon recruitment, it was clear that the teachers were interested in using the CL approach for inclusion. Teachers in both the intervention and the control group had some knowledge and experience of CL. Although the teachers in the control group were not encouraged to use CL, their teaching may have contained elements of it. Due to a lack of time and resources, data on teaching in the control group were not collected, thus constituting a threat to the study's internal validity.

The third limitation concerns attrition bias in the study, which may also have influenced its internal validity. Analyses revealed significant differences between the groups of children with missing values and the groups of children who participated from the beginning to the end of the study: those who dropped out of the study rated their classroom relationships lower and had fewer friendships. Attrition bias may indicate that introducing CL in classes characterized by lower cohesion, less positively perceived classroom relationships, and fewer friendships at the start may be more difficult and lead to participant dropout.

Finally, the conclusions from the study may be limited due to the choice of outcome measures. In this study, only three of four dimensions of social inclusion (Koster et al., 2009) were investigated: peer social acceptance, friendships, and perceptions of children's classroom relationships. Data on peer interaction dimension were not collected. Observations of interactions among the children in the classrooms and during breaks might have rendered more accurate and ecologically valid measures.

IMPLICATIONS

Despite reforms to ensure access to mainstream schools for children with SEN, social inclusion remains a challenge. This study focused on CL as an intervention to improve social inclusion in classrooms with students with SEN. It was assumed

that this method could alternate the patterns of peer relationships in the classrooms by engaging children in heterogeneous groups in which the work was structured following the principles of productive collaboration. Although the study results showed small to non-significant effects of the CL approach on social inclusion, they may–with reservations regarding the study's limitations–offer important insight into when an intervention to support inclusion is not sufficient. The results indicate that, merely using CL approach may not lead to profound changes in social inclusion. In order for CL to be an effective practice, there is a need to look into teachers' everyday practices of CL in classrooms to understand how and why CL may promote social inclusion. In this regard, it is especially important to study how teachers can create optimal conditions for cooperation in heterogeneous groups.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors.

ETHICS STATEMENT

The project was approved by Uppsala Ethical Regional Committee, Dnr. 2017/372. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

NK and GL has participated in data collection, data analysis, and data interpretation. IO and JW has participated in data analysis and data interpretation. NF has participated in data collection, in the design of the intervention study, and in data interpretation. CN has participated in the design of the project and in data interpretation. All authors contributed to the article and approved the submitted version.

FUNDING

This work was supported by the Swedish Research Council under Grant 2016-04679.

ACKNOWLEDGMENTS

We would like to express our gratitude to Maj Stoddard, a teacher, who contributed to the project with her great knowledge and experience of CL approach.

REFERENCES

Abrami, P. C., Poulsen, C., and Chambers, B. (2004). Teacher motivation to implement an educational innovation: factors differentiating users and non-users of cooperative learning. *Educat. Psychol.* 24, 201–216. doi: 10.1080/0144341032000160146

All European Academies (ALLEA) (2017). *The European Code of Conduct for Research Integrity* (Revised Edition). Berlin: Brandenburg Academy of Sciences and Humanities.

André, A., Deneuve, P., and Louvet, B. (2011). Cooperative learning in physical education and acceptance of children with learning disabilities. *J. Appl. Sport Psychol.* 23, 474–485. doi: 10.1080/10413200.2011.580826

Avramidis, E., Avgeri, G., and Strogilos, V. (2018). Social participation and friendship quality of children with special educational needs in regular Greek primary schools. *Eur. J. Spec. Needs Educat.* 33, 221–234. doi: 10.1080/08856257.2018.1424779

Avramidis, E., Strogilos, V., Aroni, K., and Kantaraki, C. T. (2017). Using sociometric techniques to assess the social impacts of inclusion: some methodological considerations. *Educ. Res. Rev.* 20, 68–80. doi: 10.1016/j.edurev.2016.11.004

Baines, E., Blatchford, P., and Webster, R. (2015). The challenges of implementing group work in primary school classrooms and including pupils with special educational needs. *Education 3-13* 43, 15–29. doi: 10.1080/03004279.2015.961689

Baker, A. R., Lin, T., Chen, J., Paul, N., Anderson, R. C., and Nguyen-Jahiel, K. (2017). Effects of teacher framing on student engagement during collaborative reasoning discussions. *Contemp. Educ. Psychol.* 51, 253–266. doi: 10.1016/j.cedpsych.2017.08.007

Banks, J., McCoy, S., and Frawley, D. (2018). One of the gang? peer relations among children with special educational needs in Irish mainstream primary schools. *Eur. J. Spec. Needs Educ.* 33, 396–411. doi: 10.1080/08856257.2017.1327397

Bertucci, A., Johnson, D. W., Johnson, R. T., and Conte, S. (2016). Effect of task and goal interdependence on achievement, cooperation, and support among elementary school children. *Int. J. Educ. Res.* 79, 97–105. doi: 10.1016/j.ijer.2016.06.011

Blatchford, P., Baines, E., Rubie-Davies, C., Bassett, P., and Chowne, A. (2006). The effect of a new approach to group work on pupil-pupil and teacher-pupil interactions. *J. Educ. Psychol.* 98, 750–765. doi: 10.1037/0022-0663.98.4.750

Brislin, R. W. (1970). Back-translation for cross-cultural research. *J. Cross Cult. Psychol.* 1, 185–216. doi: 10.1177/135910457000100301

Buchs, C., Filippou, D., Pulfrey, C., and Volpé, Y. (2017). Challenges for cooperative learning implementation: reports from elementary school teachers. *J. Educ. Teach.* 43, 296–306. doi: 10.1080/02607476.2017.1321673

Capodieci, A., Rivetti, T., and Cornoldi, C. (2019). A cooperative learning classroom intervention for increasing peer's acceptance of children with ADHD. *J. Attent. Disord.* 23, 282–292. doi: 10.1177/1087054716666952

Child, S., and Nind, M. (2013). Sociometric methods and difference: a force for good – or yet more harm. *Disabil. Soc.* 28, 1012–1023. doi: 10.1080/09687599.2012.741517

Cillessen, A. H. N., and Marks, P. E. L. (2017). "Methodological choices in peer nomination research," in *New Directions in Peer Nomination Methodology*, Vol. 157, eds P. E. L. Marks and A. H. N. Cillessen (New York, NY: New Directions for Child and Adolescent Development), 21–44. doi: 10.1002/cad.20206

Cillessen, A. H. N., and Mayeux, L. (2004). "Sociometric status and peer group behavior: previous findings and current directions," in *Children's Peer Relations: From Development to Intervention*, eds J. B. Kupersmidt and K. A. Dodge (Washington, DC: American Psychological Association).

Cohen, E. G. (1994). Restructuring the classroom: conditions for productive small groups. *Rev. Educ. Res.* 64, 1–35. doi: 10.3102/00346543064001001

Council for Exceptional Children (2014). *Standards for Evidence-Based Practices in Special Education*. Available online at: https://www.cec.sped.org/~{}/media/Images/Standards/CEC%20EBP%20Standards%20cover/CECs%20Evidence%20Based%20Practice%20Standards.pdf on the 6th of July, 2020 (accessed July 6, 2020).

de Boer, A., Pijl, S. J., Post, W., and Minnaert, A. (2013). Peer acceptance and friendships of children with disabilities in general education: the role of child, peer, and classroom variables. *Soc. Dev.* 22, 831–844. doi: 10.1111/j.1467-9507.2012.00670.x

Frederickson, N. L., and Furnham, A. F. (2001). The long-term stability of sociometric status classification: a longitudinal study of included pupils who

have moderate learning difficulties and their mainstream peers. *J. Child Psychol. Psychiatry* 42, 581–592. doi: 10.1017/S0021963001007260

Frostad, P., Mjaavatn, P. E., and Pijl, S. J. (2011). The stability of social relations among adolescents with special educational needs (SEN) in regular schools in norway. *Lond. Rev. Educ.* 9, 83–94. doi: 10.1080/14748460.2011.550438

Garrote, A., Sermier Dessemontet, R., and Moser Opitz, E. (2017). Facilitating the social participation of pupils with special educational needs in mainstream schools: a review of school-based interventions. *Educ. Res. Rev.* 20, 12–23. doi: 10.1016/j.edurev.2016.11.00

Gasser, L., Grütter, J., and Torchetti, L. (2018). Inclusive classroom norms, children's sympathy, and intended inclusion toward children with hyperactive behavior. *J. Sch. Psychol.* 71, 72–84. doi: 10.1016/j.jsp.2018.10.005

Gasser, L., Grütter, J., Torchetti, L., and Buholzer, A. (2017). Competitive classroom norms and exclusion of children with academic and behavior difficulties. *J. Appl. Dev. Psychol.* 49, 1–11. doi: 10.1016/j.appdev.2016.12.002

Gasser, L., Malti, T., and Buholzer, A. (2014). Swiss children's moral and psychological judgments about inclusion and exclusion of children with disabilities. *Child Dev.* 85, 532–548. doi: 10.1111/cdev.12124

Ghaith, G. M. (2018). Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning. *Issues Educ. Res.* 28, 385–404.

Gillies, R. M. (2016). Cooperative learning: review of research and practice. *Austr. J. Teach. Educ.* 41, 39–54. doi: 10.14221/ajte.2016v41n3.3

Gillies, R. M., and Ashman, A. F. (1997). The effects of training in cooperative learning on differential student behavior and achievement. *J. Classroom Interact.* 32, 1–10.

Gillies, R. M., and Ashman, A. F. (2000). The effects of cooperative learning on children with learning difficulties in the lower elementary school. *J. Spec. Educat.* 34, 19–27. doi: 10.1177/002246690003400102

Gillies, R. M., and Boyle, M. (2010). Teachers' reflections on cooperative learning: issues of implementation. *Teach. Teacher Educ.* 26, 933–940. doi: 10.1016/j.tate.2009.10.034

Grütter, J., Gasser, L., Zuffianò, A., and Meyer, B. (2018). Promoting inclusion via Cross—Group friendship: the mediating role of change in trust and sympathy. *Child Dev.* 89, e414–e430. doi: 10.1111/cdev.12883

Hennessey, A., and Dionigi, R. A. (2013). Implementing cooperative learning in Australian primary schools: generalist teachers' perspectives. *Issues Educ. Res.* 23, 52–68.

Huber, C., Gerullis, A., Gebhardt, M., and Schwab, S. (2018). The impact of social referencing on social acceptance of children with disabilities and migrant background: an experimental study in primary school settings. *Eur. J. Spec. Needs Educat.* 33, 269–285. doi: 10.1080/08856257.2018.1424778

Jacques, N., Wilton, K., and Townsend, M. (1998). Cooperative learning and social acceptance of children with mild intellectual disability. *J. Intel. Disab. Res.* 42, 29–36. doi: 10.1046/j.1365-2788.1998.00098.x

Johnson, D. W., Johnson, R., and Anderson, D. (1983). Social interdependence and classroom climate. *J. Psychol.* 114, 135–142. doi: 10.1080/00223980.1983.9915406

Johnson, D. W., and Johnson, R. T. (1983). Social interdependence and perceived academic and personal support in the classroom. *J. Soc. Psychol.* 120, 77–82. doi: 10.1080/00224545.1983.9712012

Johnson, D. W., and Johnson, R. T. (2002). Learning together and alone: overview and meta-analysis. *Asia Pacific J. Educ.* 22, 95–105. doi: 10.1080/0218879020220110

Johnson, D. W., and Johnson, R. T. (2008). "Social interdependence theory and cooperative learning: the teacher's role," in *The Teacher's Role in Implementing Cooperative Learning in the Classroom*, eds R. M. Gillies, A. F. Ashman, and J. Terwel (Boston, MA: Springer).

Johnson, D. W., and Johnson, R. T. (2009). An educational psychology success story: social interdependence theory and cooperative learning. *Educ. Res.* 38, 365–379. doi: 10.3102/0013189x09339057

Johnson, D. W., Johnson, R. T., and Johnson, H. E. (1993). *Cooperation in the Classroom*. Edina, MN: Interaction Book Company.

Johnson, D. W., Johnson, R. T., and Johnson, H. E. (2009). *Circle of Learning: Cooperation in the Classroom*. Edina, MN: Interaction Book Company.

Jolliffe, W. (2015). Bridging the gap: teachers cooperating together to implement cooperative learning. *Education 3-13* 43, 70–82. doi: 10.1080/03004279.2015.961719

Klang, N., Fohlin, N., and Stoddard, M. (2018). *Inclusion Through Learning in Group: Cooperative Learning [Inkludering Genom Lärande i Grupp: Kooperativt Lärande]*. Uppsala: Uppsala University.

Koster, M., Nakken, H., Pijl, S. J., and van Houten, E. (2009). Being part of the peer group: a literature study focusing on the social dimension of inclusion in education. *Int. J. Inclus. Educ.* 13, 117–140. doi: 10.1080/13603110701284680

Koster, M., Pijl, S. J., Nakken, H., and Van Houten, E. (2010). Social participation of children with special needs in regular primary education in the Netherlands. *Int. J. Disab. Dev. Educ.* 57, 59–75. doi: 10.1080/10349120903537905

Kyndt, E., Raes, E., Lismont, B., Timmers, F., Cascallar, E., and Dochy, F. (2013). A meta-analysis of the effects of face-to-face cooperative learning. do recent studies falsify or verify earlier findings? *Educ. Res. Rev.* 10, 133–149. doi: 10.1016/j.edurev.2013.02.002

Lin, T., Jadallah, M., Anderson, R. C., Baker, A. R., Nguyen-Jahiel, K., Kim, I., et al. (2015). Less is more: teachers' influence during peer collaboration. *J. Educ. Psychol.* 107, 609–629. doi: 10.1037/a0037758

Lopata, C., Miller, K. A., and Miller, R. H. (2003). Survey of actual and preferred use of cooperative learning among exemplar teachers. *J. Educ. Res.* 96, 232–239. doi: 10.1080/00220670309598812

Mikami, A. Y., Griggs, M. S., Lerner, M. D., Emeh, C. C., Reuland, M. M., Jack, A., et al. (2013). A randomized trial of a classroom intervention to increase peers' social inclusion of children with attention-deficit/hyperactivity disorder. *J. Consult. Clin. Psychol.* 81, 100–112. doi: 10.1037/a0029654

Mulryan, C. M. (1995). Fifth and sixth graders' involvement and participation in cooperative small groups in mathematics. *Elemen. Sch. J.* 95, 297–310. doi: 10.1086/461804

Nepi, L. D., Fioravanti, J., Nannini, P., and Peru, A. (2015). Social acceptance and the choosing of favourite classmates: a comparison between children with special educational needs and typically developing children in a context of full inclusion: social acceptance. *Br. J. Spec. Educ.* 42, 319–337. doi: 10.1111/1467-8578.12096

Pijl, S. J., Skaalvik, E. M., and Skaalvik, S. (2010). Children with special needs and the composition of their peer group. *Irish Educ. Stud.* 29, 57–70. doi: 10.1080/03323310903522693

Pinto, C., Baines, E., and Bakopoulou, I. (2019). The peer relations of pupils with special educational needs in mainstream primary schools: the importance of meaningful contact and interaction with peers. *Br. J. Educ. Psychol.* 89, 818–837. doi: 10.1111/bjep.12262

Putnam, J., Markovchick, K., Johnson, D. W., and Johnson, R. T. (1996). Cooperative learning and peer acceptance of children with learning disabilities. *J. Soc. Psychol.* 136, 741–752. doi: 10.1080/00224545.1996.9712250

Ramberg, J., and Watkins, A. (2020). Exploring inclusive education across Europe: some insights from the European agency statistics on inclusive education. *FIRE* 6, 85–101.

Roistacher, R. C. (1974). A microeconomic model of sociometric choice. *Sociometry* 37, 219–238. doi: 10.2307/2786377

Roseth, C. J., Johnson, D. W., and Johnson, R. T. (2008). Promoting early adolescents' achievement and peer relationships: the effects of cooperative, competitive, and individualistic goal structures. *Psychol. Bull.* 134, 223–246. doi: 10.1037/0033-2909.134.2.223

Schwab, S. (2015). Social dimensions of inclusion in education of 4th and 7th grade pupils in inclusive and regular classes: outcomes from Austria. *Res. Dev. Disabil.* 4, 72–79. doi: 10.1016/j.ridd.2015.06.005

Schwab, S. (2019). Friendship stability among students with and without special educational needs. *Educ. Stud.* 45, 390–401. doi: 10.1080/03055698.2018.1509774

Schwab, S., Gebhardt, M., Krammer, M., and Gasteiger-Klicpera, B. (2015). Linking self-rated social inclusion to social behaviour. an empirical study of children with and without special education needs in secondary schools. *Eur. J. Spec. Needs Educ.* 30, 1–14. doi: 10.1080/08856257.2014.933550

SFS 2009:400 (2009). *Offentlighets- Och Sekretesslag. [Law on Publicity and Confidentiality]*. Available online at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/offentlighets--och-sekretesslag-2009400_sfs-2009-400 on the 14th of October (accessed October 14, 2009).

Sharan, Y. (2010). Cooperative learning for academic and social gains: valued pedagogy, problematic practice. *Eur. J. Educ.* 45, 300–313. doi: 10.1111/j.1465-3435.2010.01430.x

Slavin, R. E. (1996). Research on cooperative learning and achievement: what we know, what we need to know. *Contem. Educ. Psychol.* 21, 43–69. doi: 10.1006/ceps.1996.0004

Slavin, R. E. (2014). Cooperative learning and academic achievement: why does groupwork work? [Aprendizaje cooperativo y rendimiento académico: ??por qué funciona el trabajo en grupo?]. *Anal. Psicol.* 30, 785–791. doi: 10.6018/analesps.30.3.201201

Slavin, R. E., and Cooper, R. (1999). Improving intergroup relations: lessons learned from cooperative learning programs. *J. Soc. Issues* 55, 647–663. doi: 10.1111/0022-4537.00140

Swedish National Educational Agency [SNAE] (2014). *Support Measures in Education – On Leadership and Incentives, Extra Adaptations and Special Support [Stödinsatser i Utbildningen – Om Ledning och Stimulans, Extraanpassningar Och Särskilt Stöd]*. Stockholm: Swedish National Agency of Education.

Twisk, J. W. R. (2006). *Applied Multilevel Analysis: A Practical Guide*. Cambridge: Cambridge University Press.

Velásquez, A. M., Bukowski, W. M., and Saldarriaga, L. M. (2013). Adjusting for group size effects in peer nomination data: adjusting for group size effects. *Soc. Dev.* 22, 845–863. doi: 10.1111/sode.12029

Webb, N. M., Nemer, K. M., and Ing, M. (2006). Small-group reflections: parallels between teacher discourse and student behavior in peer-directed groups. *J. Learn. Sci.* 15, 63–119. doi: 10.1207/s15327809jls1501_8

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

APPENDIX

TABLE A1 | Students ratings of perceived classroom relationships in questionnaire Classroom Life Instrument, reported separately for those with missing values at pre-measurement, post-measurement and remaining participants.

	Missing at pre-measurement		Missing at post-measurement		Remaining participants	
	CL (*n* = 95)	**Control (*n* = 54)**	**CL (*n* = 109)**	**Control (*n* = 76)**	**CL (*n* = 259)**	**Control (*n* = 365)**
Academic support T1			3.29* (0.70)	3.54 (0.57)	3.45* (0.64)	3.58 (0.60)
Personal support T1			3.57* (0.86)	3.75 (0.75)	3.80* (0.73)	3.93 (0.68)
Class cohesion T1			3.63* (0.80)	3.82* (0.64)	3.85* (0.67)	3.99* (0.67)
Valuing heterogeneity T1			2.88 (0.77)	2.84 (0.68)	2.95 (0.73)	2.94 (0.74)
Academic support T2	3.60 (0.70)	3.40** (0.73)			3.57* (0.67)	3.67 (0.66)
Personal support T2	3.90 (0.79)	3.80 (0.85)			3.88 (0.70)	3.97 (0.69)
Class cohesion T2	3.85 (0.69)	3.91 (0.78)			3.89 (0.64)	3.99 (0.68)
Valuing heterogeneity T2	3.11 (0.73)	3.06 (0.79)			2.95 (0.73)	2.90 (0.74)

Values are mean values (standard deviations) unless stated otherwise.
*Significant differences between the remaining participants and the groups with missing values, as studied by Independent samples T-tests at significance levels *p = 0.05, **p = 0.01.*

TABLE A2 | Students' peer nominations, reported separately for those with missing values at pre-measurement, post-measurement, and remaining participants.

	Missing at pre-measurement		Missing at post-measurement		Remaining participants	
Peer nominations	**CL (*n* = 54)**	**Control (*n* = 29)**	**CL (*n* = 102)**	**Control (*n* = 84)**	**CL (*n* = 307)**	**Control (*n* = 382)**
Peer nominations as friend T1			0.42 (0.16)	0.53* (0.14)	0.40 (0.18)	0.50* (0.16)
Peer nominations as group-mate T1			0.31 (0.16)	0.35 (0.17)	0.32 (0.18)	0.40 (0.20)
Reciprocated peer nominations as a friend T1			0.27*** (0.16)	0.32 (0.23)	0.35*** (0.18)	0.25 (0.17)
Reciprocated peer nominations as a group-mate T1			0.16*** (0.13)	0.15 (0.12)	0.23*** (0.17)	0.14 (0.12)
Peer nominations as friend T2	0.44 (0.17)	0.52 (0.13)			0.47 (0.19)	0.53 (0.17)
Peer nominations as group-mate T2	0.33 (0.16)	0.44 (0.17)			0.38 (0.19)	43 (0.19)
Reciprocated peer nominations as a friend T2	0.26*** (0.17)	0.31 (0.22)			0.41*** (0.19)	0.30 (0.19)
Reciprocated peer nominations as a group-mate T2	0.10*** (0.08)	0.19 (0.22)			0.30*** (0.16)	0.18 (0.16)

Values are mean values (standard deviations) unless stated otherwise.
*Significant differences between the remaining participants and the groups with missing values, as studied by independent samples T-tests at significance levels *p ≤ 0.05, ***p ≤ 0.001.*

frontiers in Psychology

ORIGINAL RESEARCH
published: 11 January 2021
doi: 10.3389/fpsyg.2020.581089

School and Teacher Factors That Promote Adolescents' Bystander Responses to Social Exclusion

Kelly Lynn Mulvey[1], Seçil Gönültaş[1], Greysi Irdam[2], Ryan G. Carlson[2], Christine DiStefano[2] and Matthew J. Irvin[2]*

[1] Department of Psychology, North Carolina State University, Raleigh, NC, United States, [2] Department of Educational Studies, University of South Carolina, Columbia, SC, United States

Schools may be one important context where adolescents learn and shape the behaviors necessary for promoting global inclusivity in adulthood. Given the importance of bystanders in halting bullying and peer aggression, the focus of this study is on both moral judgments regarding one type of bullying, social exclusion, and factors that are associated with bystander intervention. The study includes 896 adolescents, who were 6th (N = 450, M_{age} = 11.73), and 9th (N = 446, M_{age} = 14.82) graders, approximately evenly divided by gender. Participants were primarily European–American (63.3%). Results revealed that girls and participants who perceived better relationships between students and teachers were more likely to judge exclusion to be wrong. Further, ethnic minority participants, those who were more anxious about being rejected by their teachers and reported more teacher discrimination were less likely to judge exclusion as wrong. Participants who reported more positive student–teacher relationships, perceptions of a more positive school social environment and more prior experiences of teacher discrimination were more likely to report that they would seek help for the victim. On the other hand, participants who reported being more angry about teacher rejection, experiencing either peer or teacher discrimination, and perceiving they are excluded from opportunities at school were less likely to intervene to come to the aid of a peer who is being excluded. The results document the complex interplay of school and teacher factors in shaping adolescents' bystander responses to social exclusion. Our findings suggest that positive school climate can promote intentions to intervene. However, findings indicate that adolescents who are marginalized in their school environments, and who report experiences of rejection, exclusion or discrimination are not willing or likely to intervene to prevent others from experiencing exclusion.

Keywords: bystander intervention, peers, discrimination, teachers, school climate, inclusion

OPEN ACCESS

Edited by:
Luciano Gasser,
University of Teacher Education Lucerne, Switzerland

Reviewed by:
Sebastian Dys,
University of Toronto Mississauga, Canada
Jeanine Grütter,
University of Zurich, Switzerland

****Correspondence:***
Kelly Lynn Mulvey
klmulvey1@ncsu.edu

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Psychology

Received: *07 July 2020*
Accepted: *07 December 2020*
Published: *11 January 2021*

Citation:
Mulvey KL, Gönültaş S, Irdam G, Carlson RG, DiStefano C and Irvin MJ (2021) School and Teacher Factors That Promote Adolescents' Bystander Responses to Social Exclusion. Front. Psychol. 11:581089. doi: 10.3389/fpsyg.2020.581089

INTRODUCTION

Adolescents experience social exclusion and observe others who are excluded (Abrams et al., 2005; Killen and Rutland, 2011). While researchers have often examined social exclusion with the aim of understanding youth experiences of exclusion and exploring their evaluations of and reasoning about exclusion (Rutland and Killen, 2015; Mulvey, 2016), it is imperative to also understand what factors predict inclusive behavior. This is especially important given the negative impacts of

exclusion on short- and long-term well-being, academic success and mental health (Buhs et al., 2006). Furthermore, the United Nations, which has placed a strong focus on ensuring global inclusive societies, articulates that social exclusion can manifest in many ways, including rejection from group activities, denial of educational and occupational opportunities, restricted access to social support, and systematic inequality (United Nations., 2016). Finally, the Organization for Economic Co-operation and Development noted that over the past decade, schools have struggled to make progress in both academic and social inclusion (OECD, 2015). Although, as noted above, exclusion can occur in community settings as well (for instance, in informal peer interactions), schools may be one important context where adolescents learn and shape the inclusive behaviors necessary for promoting global inclusivity in adulthood. Thus, we examine adolescents' bystander behaviors, with attention to school and teacher factors that promote adolescents' defending behaviors when they observe social exclusion, a type of bullying. In particular, we examine school climate, as key research has documented that school climate can shape feelings of inclusion and belonging (Cemalcilar, 2010), teacher rejection sensitivity as rejection sensitivity is linked to negative social experiences in schools (Zimmer-Gembeck et al., 2013), and experiences of discrimination as perceived discrimination has been associated with less willingness to intervene on behalf of one's peers who are victimized (Mulvey et al., 2019).

Bystander Intervention

Bullying can be defined as aggressive behavior which is repeated over time and which involves a power imbalance between the aggressor and the victim (Espelage and Colbert, 2016). Bullying can take many forms, including physical aggression, verbal aggression, cyberbullying, and social exclusion (Wang et al., 2010). The current study focuses on social exclusion, one type of bullying. Research indicates the powerful roles that bystanders can play in halting bullying (Mulvey et al., 2013), with results indicating that bullying tends to stop very quickly if a bystander intervenes (Hawkins et al., 2001). Bystanders have a number of different options when they observe someone else being bullied—they could defend the victim, reinforce the bully (by laughing or watching), assist the bully (participate in excluding) or distance themselves as an outsider (walk away) (Salmivalli et al., 2011). Individuals may make different decisions about how to respond depending on the type of bullying and how the bullying is occurring. Moreover, findings on bystander responses to social exclusion, one type of bullying, indicate that when bystanders observe exclusion but do not intervene, observers judge exclusion as more acceptable, suggesting the important distal impacts of bystanders (Malti et al., 2015). Given the importance of bystanders in helping to stop bullying, the focus of this study is on both moral judgments regarding one type of bullying, namely social exclusion, and factors that are associated with bystander intervention to stop social exclusion. Moral judgments are important to also consider, in addition to bystander behavior. This is because for youth to be motivated to intervene on behalf of one who is excluded, youth first need to recognize that the exclusion which is occurring is wrong. However, research suggests that adolescents often prioritize group membership (maintaining group identity) over moral principles in making decisions about if social exclusion is okay or not okay (Hitti et al., 2016).

What Fosters an Inclusive Environment?

Our research on fostering inclusive spaces draws on the social reasoning development perspective (Rutland et al., 2010; Rutland and Killen, 2015). This perspective stems from two robust research traditions, social domain theory (Turiel, 1983) and social identity theory (Tajfel and Turner, 1976), in arguing that individuals weigh both their moral principles and sense of loyalty and identification with their groups when making social decisions. When considering inclusion and exclusion evaluations, research drawing on this perspective finds that youth consistently balance the pull of both of these concerns (Mulvey, 2016). Further, research demonstrates that youth are especially attuned to the importance of inclusion in school contexts: they judge exclusion at school (e.g., at a school dance or lunch at school) to be less acceptable than exclusion from out of school events (e.g., birthday sleepovers; Killen et al., 2010). Thus, school may be one particular context where inclusive attitudes can be fostered as there may be school norms, policies or practices that foster inclusion in schools (Nipedal et al., 2010). Moreover, with age, adolescents may place greater priority on group-based concerns than on moral principles (Killen et al., 2017). As an example, findings suggest that older adolescents are less likely to intervene when they hear peers use race-based humor at school, in part because of concerns regarding the consequences they may face for challenging their peer group (Mulvey et al., 2016).

Factors within the school environment may be centrally important for fostering inclusive tendencies. Prior research has documented the role of school norms in fostering inclusion, with findings suggesting that if children are told that their school has a norm supporting inclusion of others, they will be more likely to reject exclusion of peers, although individual group norms can also influence judgments (Nesdale, 2011; McGuire et al., 2015), but less work has examined other factors in the school environment that may shape inclusive tendencies. Further, research demonstrates that adolescents are able to articulate harm associated with exclusion experienced at school, while also recognizing the importance of maintaining group boundaries (Thorkildsen et al., 2002). This suggests that adolescents understand the complexity of exclusion. The aim of the current study is to examine specific school and teacher-related factors that may shape adolescents' intentions to intervene to discourage social exclusion.

School Climate

Research also demonstrates that school climate as a multidimensional construct (perceptions of dimensions of the school environment such as student–teacher relationships, social environment, differential treatment of some students, and connection to one's school) is important for shaping moral judgments and responses to bullying, including exclusion, in school contexts (Mulvey et al., 2019). For example, beyond school norms, the school social environment more generally may

be important for fostering inclusive tendencies. Students who feel happy with their peers and the overall climate for students at their school may be more likely to welcome others and be inclusive. Further, adolescents who perceived higher support from their teachers were more likely to report that they would challenge the bully and comfort the victims by being inclusive for them (Evans and Smokowski, 2015).

Research shows that students who are satisfied at school (happy and content with their school) are more likely to report that they experience positive relationships (Whitley et al., 2012). In addition to the social environment, school connectedness or school belonging is a central dimension of school climate that may shape students' inclusive tendencies. Prior research documents positive outcomes (for instance, greater school enjoyment) for youth who feel that they are more connected to their schools or have higher school belonging ratings (Cemalcilar, 2010; Gillen-O'Neel and Fuligni, 2013). Further, research documents that belonging matters for how students think about if they might intervene if someone is being excluded: students who recognize the importance of belonging are more likely to demonstrate inclusive tendencies (Feigenberg et al., 2008).

However, there is still much that is unknown with regards to the way that students' own feelings about their connectedness to their school or how much they belong shape their desire to include others and prevent exclusion.

Additional school climate factors such as student-teacher relationships are centrally important for shaping student attitudes and responses (Mulvey et al., 2019). Further, while we often think of student–teacher relationships as important for shaping resilience in victimized youth (Konishi and Hymel, 2009; Wang et al., 2015), recent research indicates that positive relationships with teachers are not protective for youth who experience high rates of bias-based victimization such as teasing and exclusion (Price et al., 2019). Additionally, research demonstrates that youth who report more positive student-teacher relationships are more likely to defend victims of bullying (Jungert et al., 2016). Less is known, however, about whether student-teacher relationships can foster inclusive tendencies in youth, perhaps preventing victimization from occurring.

Teacher Rejection Sensitivity

While positive student-teacher relationships may be important, not all students have positive student–teacher relationships (McGrath and Van Bergen, 2015). In fact, some students fear rejection from their teachers (London et al., 2007) or experience exclusion and discrimination from their teachers (Benner and Graham, 2013; Respress et al., 2013; Mulvey et al., 2020). Rejection sensitivity refers to a tendency that some children hold to react defensively (either with anxiety or anger) to the potential for rejection from others in ambiguous situations (Downey et al., 1998; London et al., 2007). Findings document that youth who score higher on rejection sensitivity experience more difficulty with relationships and engage in more aggressive behavior (Downey et al., 1998; Bondü and Krahé, 2015; Zimmer-Gembeck et al., 2016; Gao et al., 2019). Further, prior work has documented that youth who feel rejected by their teachers have increasingly difficult relationships with their peers over time (Mercer and DeRosier, 2008). What has not yet been explored, however, is how teacher rejection sensitivity relates to student inclusive tendencies. It may be that adolescents who are more worried about being rejected by their teachers will be motivated to protect others from being excluded. Prior research demonstrates the importance of examining both anxious and angry subtypes of rejection sensitivity, as these subtypes are differentially related to child outcomes (Downey et al., 1998; London et al., 2007; Zimmer-Gembeck and Nesdale, 2013). Specifically, London et al. (2007) found that anxious rejection sensitivity was associated with social anxiety and withdrawal, while angry rejection sensitivity was associated with aggression. On the other hand, fears of rejection from teachers may result in adolescents' not wanting to intervene to promote inclusion as participants may fear that actively advocating for inclusion may place them at greater risk for additional rejection from their teachers. Additionally, those who perceive that they are rejected by their teachers may not be motivated to foster others' inclusion or may not feel that they have the capabilities to support others' inclusion (London et al., 2007). Prior research has not previously assessed whether anxious and angry teacher rejection sensitivity are associated with expected responses to observing others' exclusion, but we hypothesized that anxious rejection sensitivity might be more likely to be associated with responses that could promote exclusion, given its links to social anxiety and withdrawal (London et al., 2007; Zimmer-Gembeck and Nesdale, 2013) than would angry rejection sensitivity. While measures of rejection sensitivity include subscales for peer and teacher rejection sensitivity, for the current analysis we focused on teacher rejection sensitivity in order to closely examine the impact of perceptions of relationships with teachers.

Perceptions of Discrimination

Related to rejection sensitivity, some youth may perceive that they are targeted by their teachers for discrimination or that they are excluded from opportunities provided by teachers or that others are given differential treatment (Griffin et al., 2020). Findings suggest that such perceptions of discrimination can impact one's self-esteem (Verkuyten, 1998) and that experiences of bias and discrimination in schools are related to factors such as teacher responsiveness and multicultural education (Verkuyten and Thijs, 2002). Further, prior research has shown that perceptions of discrimination can, at times, motivate youth and emerging adults, especially those from ethnic minority backgrounds, to engage in activism to promote social change (Hope et al., 2019). Research also documents that there are different profiles of students who report high perceptions of peer and teacher discrimination with some adolescents disengaging if they experience discrimination and not expressing intentions to intervene to help others, while others increase their involvement in the bullying ecology broadly, expressing intentions to both challenge unfair treatment of others as well as to potentially participate in others' victimization (Mulvey et al., 2020). Thus, more research is needed that examines the role of perceptions of discrimination and perceived exclusion/differential treatment in shaping youth inclusive tendencies.

Current Study

Our focus on schools and teachers centered on factors that would encourage bystanders to defend victims of social exclusion, such as school climate (Zullig et al., 2015), as well as factors that might inhibit inclusion, such as sensitivity to being rejected by teachers (Zimmer-Gembeck et al., 2013) or perceptions of teacher or peer discrimination (Adam et al., 2015; Gutman et al., 2017). Further, in the current study, we examined 6th and 9th graders, as these grades are transition years in schools the United States (movement from elementary school to middle school and from middle school to high school) wherein peer relationships undergo significant reorganization (Farmer et al., 2013).

Our research questions were:

(1) How do student, peer and teacher factors explain adolescents' moral judgments of exclusion?
(2) How do student and teacher factors explain adolescents' intentions to intervene to prevent exclusion?

Our hypotheses were:

(1) Adolescents who perceive their school climate to be more positive generally (positive student–teacher relationships, greater school connectedness, lower perceived exclusion/differential treatment, and higher school social environment) would indicate more intentions to intervene to defend the victim and be less likely to respond in ways that may support the social exclusion.
(2) Adolescents who are more sensitive to rejection from their teachers, especially those who are anxious about rejection sensitivity, would be less likely to actively intervene to defend the victim and more likely to respond in ways that may promote exclusion.
(3) Adolescents who report experiencing more peer or teacher discrimination would be less likely to actively intervene to defend victims of exclusion and more likely to respond in ways that support the excluder.
(4) Consistent with prior research that documents that younger adolescents are more likely to recognize the harmful nature of exclusion (Hitti et al., 2016) and to intend to intervene to support victims (Mulvey et al., 2016), we expected that 6th graders might judge exclusion as more wrong and be more likely to expect to intervene to defend the victim than would 9th graders.
(5) Consistent with prior research documenting that girls are more likely to recognize the harmful nature of exclusion than are boys (Killen et al., 2002), we expected that girls would judge exclusion to be more wrong than would boys.

MATERIALS AND METHODS

Participants

Our study included 896 adolescents who were 6th (N = 450, M_{age} = 11.73, SD = 0.84), and 9th (N = 446, M_{age} = 14.82, SD = 0.90) graders ranging between 10 and 18 years of age. Participants were approximately evenly divided by gender (49.6% of the 6th graders were female and 50.4% of the 9th graders were female) and were from five middle- to low-income public schools in the Southeastern United States. Participants were reflective of the school communities, representing primarily European-Americans (63.3%), with 22.9% African-American, 3.9% Latino, 7% Multiracial, and 2.9% other ethnic groups represented as well. The study was approved by the Institutional Review Board at the University of South Carolina. All students in the 6th and 9th grades at participating schools were invited to participate and informed opt-out consent letters were sent home to families 1 week before data was collected. Only students with parental consent who also assented to completing the study were allowed to participate (participation rate was 78%).

Measures

Social Exclusion

All participants evaluated a gender-matched hypothetical bullying scenario focused on social exclusion ("Let's say that X is ignored and left out all the time by some of X's classmates. No one talks to X and they act like X doesn't even exist. X does not know what to do about.") They first completed a *moral judgment* assessment (acceptability of exclusion: How okay or not okay is it that his (her) classmates act this way? 1 = Really Not Okay to 6 = Really Okay). Then, they completed a measure of their *intervention tendencies* as a bystander: "Let's say you thought what his classmates were doing was not okay. Pick a response for each question showing how likely or not likely you would do the following: say something to them; get help from a teacher, family member or other adults; get help from a friend; talk to the victim about it later; not get involved and stay there; or walk away" (1 = Really Not Likely to 6 = Really Likely). A factor analysis using principal components analysis was conducted on bystander responses, which indicated two factors with eigenvalues about 1. The first factor (eigenvalue = 2.72, 45.4% of variance), defending behaviors, included the responses saying something to them to get help from a teacher, family member, or other adults, get help from a friend and talk to the victim about it later (factor loadings between 0.71 and 0.83). The second factor (eigenvalue = 1.74, 23.7% of variance), non-defending behaviors, included the responses saying the individual would not get involved and stay there (0.78) and would walk away (0.72). Thus, these assessed both tendencies that would help defend the victim against exclusion (say something to them, get help from a teacher, family member or other adult; get help from a friend; and talk to the victim about it later) as well as non-defender tendencies that might further perpetuate exclusion (not get involved and stay there, and walk away).

Rejection Sensitivity

The Childhood Rejection Sensitivity Questionnaire (Downey et al., 1998; Zimmer-Gembeck et al., 2013) was used to measure adolescents' rejection sensitivity. This measure included written scenarios involving peers and teachers; however, for this analysis only the teacher rejection sensitivity items were used. An example scenario was, "Now imagine that you're back in class. Your teacher asks for a volunteer to help plan a party for your class. Lots of kids raise their hands so you wonder if the teacher will choose YOU." Following each vignette, participants responded

to three questions. The first two questions assessed anxious and angry responses by asking how nervous (e.g., "How nervous would you feel, right then, about whether or not the teacher will choose you?"; three items; $\alpha = 0.73$) and how mad (e.g., "How mad would you feel, right then, about whether or not the teacher will choose you?"; three items; $\alpha = 0.76$) participants would feel in the situation. Responses to these items ranged from 1 (Not Mad/nervous at all) to 6 (Very, very mad/nervous). The third question asked about the expectation of acceptance (e.g., "Do you think the teacher will choose you?"; three items; $\alpha = 0.71$), with responses from 1 (YES!!) to 6 (NO!!). A separate score was created for each situation by multiplying the score for the expected likelihood of rejection by the degree of anger or anxiety over the possibility of its occurrence (expectancy of rejection X anger and expectancy of rejection X anxious) and then dividing their sum by the total number of situations (Downey et al., 1998).

School Climate

Participants completed the School Climate Measure (Zullig et al., 2015) which assessed perceptions of school climate on a number of dimensions using a Likert-type scale (1 = Strongly disagree to 5 = Strongly agree). The subscales of interest were: positive student-teacher relationships (eight items; example item "Students get along well with teachers"; $\alpha = 0.92$), school connectedness (four items; example item "This school can make students enthusiastic about learning"; $\alpha = 0.86$), perceived exclusion/differential treatment (three items; example item "At my school, the same students get chosen every time to take part in after-school or special activities; $\alpha = 0.87$), and school social environment (two items; example item "I am happy with the kinds of students who go to my school"; $\alpha = 0.87$).

Perceptions of Racial Discrimination

Self-report measures of perceptions of teacher and peer racial discrimination were used (see Wong et al., 2003; Eccles et al., 2006). The measure included two subscales, a peer/social discrimination subscale, and a teacher/classroom discrimination subscale. The peer discrimination subscale had three items that assessed perceptions of negative peer treatment due to race (e.g., getting into fights, being picked on, not being picked for teams or activities) (Likert-type: 1 = Never to 5 = Every day; $\alpha = 0.87$). The teacher/classroom discrimination scale comprised five items evaluating students' experiences of race-based discrimination in class settings by teachers in the past year (e.g., being disciplined more harshly, graded harder because of the race) (Likert-type: 1 = Never to 5 = Every day; $\alpha = 0.90$).

Data Analytic Plan

Preliminary analyses determined that a very small amount of variance in our dependent variables was accounted for by the nesting of students within schools (intraclass correlations were 0.01–0.02). Hierarchical linear regression was used to examine predictors of participants' moral judgments of social exclusion and their expected intervention behaviors if they observed social exclusion (see **Table 1** for correlations between variables, means, and standard deviations). First, participants' age group (dichotomous: 6th grade = 0, 9th grade = 1), ethnicity [dichotomous: ethnic majority (European-American participants) = 0, ethnic minority (non-European-American participants) = 1], and gender (male = 0, female = 1) were entered into the first step. For all intervention analyses (but not moral judgments), a dichotomous variable for participants' moral judgment [0 = not okay (responses of 1 – 3); and 1 = okay (responses of 4 – 6) was computed and entered as the second step]. Next, teacher rejection sensitivity (angry and anxious) variables were entered into the model. In the next step, school climate (positive student–teacher relationships, school connectedness, perceived exclusion/differential treatment, school social environment) were entered and in the final step school discrimination (peer discrimination, and teacher discrimination) variables were added next. Additional regression analyses were conducted by adding interaction terms last. However, the inclusion of the interaction terms did not significantly account for the variance of outcome interest in the overall model, thus interaction terms were dropped from the final models. In order to correct for multiple comparisons, $p < 0.005$ was considered significant.

RESULTS

Moral Judgments

For moral judgments, the final model with all variables included accounted for a significant amount of variance (15%), see **Table 2**. There were three significant predictors of moral judgment of social exclusion: gender ($B = -0.26$, $\beta = -0.12$, $p = 0.001$), ethnicity ($B = -0.30$, $\beta = -0.13$, $p < 0.001$), and teacher discrimination ($B = 0.31$, $\beta = 0.22$, $p < 0.001$). Further, positive student-teacher relationships approached significance ($B = -0.12$, $\beta = -0.10$, $p = 0.04$). Female and ethnic majority participants were more likely to judge the social exclusion as wrong than were male and ethnic minority participants. Further, the more teacher discrimination participants reported, the more acceptable they judged the social exclusion to be. Finally, participants with more positive student–teacher relationships were generally more likely to judge exclusion as wrong.

Defender Behaviors

For bystander intervention expectations that would defend the victim of exclusion (such as confronting the excluder or talking to an adult), the final model accounted for a significant amount of variance (26%), see **Table 3**. There were six significant predictors of expectations to engage in behaviors that would promote inclusion if the participant observes exclusion: gender ($B = 0.51$, $\beta = 0.20$, $p < 0.001$), moral judgment ($B = -0.88$, $\beta = -0.19$, $p < 0.001$), anxious teacher rejection sensitivity($B = 0.04$, $\beta = 0.17$, $p < 0.001$), angry teacher rejection sensitivity ($B = -0.04$, $\beta = -0.15$, $p < 0.001$), positive student–teacher relationships ($B = 0.43$, $\beta = 0.32$, $p < 0.001$), and teacher discrimination ($B = 0.20$, $\beta = 0.13$, $p = 0.0014$). School social environment ($B = 0.12$, $\beta = 0.10$, $p = 0.012$) approached significance. This revealed that female participants, those who were more anxious about being rejected by their teachers, those with more positive student-teacher relationships and those who report

TABLE 1 | Means, standard deviations, and correlations between variables.

Variables	*M* (*SD*)	1	2	3	4	5	6	7	8	9	10
(1) Moral Judgment of Exclusion	1.77 (1.13)	–									
(2) Non-Defending Behaviors	2.51 (1.51)	0.26[b]	–								
(3) Defending Behaviors	4.53 (1.25)	– 0.35[b]	– 0.24[b]	–							
(4) Rejection Sensitivity - Anxious	10.54 (5.50)	– 0.05	0.01	– 0.10[b]	–						
(5) Rejection Sensitivity- Angry	7.99 (4.82)	0.10[b]	0.15[b]	– 0.09[b]	0.64[b]	–					
(6) Positive Student-Teacher Relationships	3.59 (0.93)	– 0.19[c]	– 0.06	0.39[b]	– 0.05	– 0.18[b]	–				
(7) School Connectedness	3.32 (1.03)	– 0.13[c]	0.24	0.29[b]	0.03	– 0.07	0.70[b]	–			
(8) School Social Environment	3.62 (1.08)	– 0.18[c]	– 0.02	0.30[b]	– 0.0	– 0.12[b]	0.59[b]	0.63[b]	–		
(9) Perceived Exclusion/Differential Treatment	2.83 (1.07)	0.05	– 0.08[a]	0.03	0.11[b]	0.13[b]	– 0.01	0.08[a]	0.05	–	
(10) Teacher Discrimination	1.41 (0.81)	0.32[c]	0.26[b]	– 0.08[a]	0.16[b]	0.33[b]	– 0.16[b]	– 0.03	– 0.14[b]	0.22[b]	–
(11) Peer Discrimination	1.44 (0.85)	0.25[c]	0.23[b]	– 0.09[a]	0.10[b]	0.25[b]	– 0.09[a]	– 0.01	– 0.12[b]	0.19[b]	0.70[b]

[a]$p < 0.05$;
[b]$p < 0.01$;
[c]$p < 0.001$.

TABLE 2 | Moral judgment of social exclusion.

	Moral Judgment		
Variable	***B***	***SE B***	β
Age	0.10	0.08	0.05
Ethnicity (Majority = 1, Minority = 0)	– 0.30	0.08	– 0.13***
Gender (Male = 1, Female = 0)	– 0.26	0.08	– 0.12***
Teacher Rejection Sensitivity-Anxious	– 0.03	0.01	– 0.13**
Teacher Rejection Sensitivity-Angry	0.01	0.01	0.06
Positive Student-Teacher Relationships	– 0.12	0.06	– 0.10*
School Connectedness	0.00	0.05	0.00
School Social Environment	– 0.07	0.05	– 0.06
Perceived Exclusion/Differential Treatment	– 0.02	0.04	– 0.02
Peer Discrimination	0.04	0.06	0.03
Teacher Discrimination	0.31	0.07	0.22
R^2	0.15		
F Change	21.80***		

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 3 | Bystander intervention in response to social exclusion: defending behaviors.

	Defending Behaviors		
Variable	***B***	***SE B***	β
Age	0.04	0.08	0.02
Ethnicity (Majority = 0, Minority = 1)	0.07	0.08	0.03
Gender (Male = 1, Female = 0)	0.51	0.08	0.20***
Moral Judgment (0 = not okay; 1 = okay)	– 0.88	0.15	– 0.19***
Teacher Rejection Sensitivity-Anxious	0.04	0.01	0.17***
Teacher Rejection Sensitivity-Angry	– 0.04	0.01	– 0.15***
Positive Student-Teacher Relationships	0.43	0.06	0.32***
School Connectedness	– 0.02	0.06	– 0.02
School Social Environment	0.12	0.05	0.10*
Perceived Exclusion/Differential Treatment	0.04	0.04	0.03
Peer Discrimination	– 0.07	0.06	– 0.04
Teacher Discrimination	0.20	0.07	0.13**
R^2	0.26		
F Change	4.42**		

*$p < 0.05$; **$p < 0.01$; *** $p < 0.001$.

more teacher discrimination were more likely to expect that they would intervene to defend the victim. Additionally, those who experience more positive school social environments were generally more likely to expect that they would intervene. However, participants who judged the exclusion to be acceptable and those who were more angry about teacher rejection were less likely to expect that they would intervene to defend the victim.

Non-defender Behaviors

For bystander intervention expectations of engaging in behaviors that would not defend the victim and might promote exclusion, such as walking away or not taking any action, the last model with all variables included, accounted for a significant amount of variance (11%), see **Table 4**. There were five predictors of expectations of promoting exclusion that were significant or that approached significance: moral judgment (B = 0.40, β = 0.07, p = 0.04), anxious teacher rejection sensitivity (B = −0.03, β = −0.10, p = 0.01), angry teacher rejection sensitivity (B = 0.05, β = 0.14, $p < 0.001$), perceived exclusion/differential treatment (B = 0.13, β = 0.1, p = 0.007) and teacher discrimination (B = 0.20, β = 0.11, p = 0.034). This revealed that those who were more anxious about being rejected by their teachers were less likely to engage in non-defender behaviors. However, participants who judged the exclusion to be acceptable, those who reported that they were more angry about teacher rejection, those who perceived more differential treatment at school and those who report experiencing more teacher discrimination were more likely to report that they would engage in non-defender behaviors.

DISCUSSION

Our novel results revealed the importance of school climate, teacher rejection sensitivity and perceptions of discrimination for promoting inclusive tendencies. We also documented intriguing

TABLE 4 | Responses to social exclusion: non-defending behaviors.

	Non-defending Behaviors		
Variable	***B***	***SE B***	β
Age	0.14	0.11	0.05
Ethnicity (Majority = 0, Minority = 1)	− 0.16	0.11	− 0.05
Gender (Male = 1, Female = 0)	− 0.19	0.10	− 0.06
Moral Judgment (0 = not okay; 1 = okay)	0.40	0.19	0.07*
Teacher Rejection Sensitivity-Anxious	− 0.03	0.01	− 0.10**
Teacher Rejection Sensitivity-Angry	0.05	0.01	0.14***
Positive Student-Teacher Relationships	0.05	0.08	0.03
School Connectedness	0.07	0.07	− 0.05
School Social Environment	− 0.07	0.06	− 0.05
Perceived Exclusion/Differential Treatment	− 0.13	0.05	0.10**
Peer Discrimination	0.15	0.08	0.08
Teacher Discrimination	0.20	0.09	0.11*
R^2	0.11		
F Change	9.95***		

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

differences based on participant demographics, including gender and ethnicity. Results indicated that girls and participants who perceived better relationships between students and teachers were more likely to judge exclusion to be wrong. Further, ethnic minority participants, those who were more anxious about being rejected by their teachers and those who reported more teacher discrimination were less likely to judge the exclusion as wrong. In general, participants who recognized the harmful nature of exclusion, and those who reported more positive student-teacher relationships, and who perceived a more positive school social environment were more likely to expect that they would defend victims against exclusion. On the other hand, participants who reported being more angry about teacher rejection, who believed that some students received differential treatment at school, and those who saw the exclusion are more okay were more likely to expect they would respond in ways that would not defend victims of exclusion such as saying nothing.

School Climate

Our results documented the complex interplay of school and teacher factors in shaping adolescents' inclusive tendencies. In terms of school climate, we find that positive student–teacher relationships are of central importance in defending behaviors: the more positive adolescents' report their relationships with their teachers to be, the more wrong they recognize exclusion to be. Further, recognizing exclusion as wrong is a critical foundation for intervention: youth who report that exclusion is wrong and those who report more positive student–teacher relationships are more likely to engage in behaviors that will encourage inclusion such as to speak up, to get help from peers and adults, and to talk to the victim when someone is excluded. Interestingly, school connectedness was not a key factor in accounting for inclusive behavior. This may be because the particular school connectedness items used in this measure capture teachers creating positive learning environments (exciting coursework, enthusiasm around learning, feeling as though teachers take student feedback on possible courses) (Zullig et al., 2015). In line with this, school social environment, which captures more completely belonging with peers, is positively related to behaviors that will encourage inclusion. Finally, perceived exclusion/differential treatment, which captures feeling as though some students are denied opportunities that others are afforded at school ("the same person always gets to help the teacher"), positively predicts behaviors that might promote exclusion, such as not getting involved. This suggests that adolescents who perceive that their school fosters differential treatment of some students may disengage and not seek out opportunities to help others who they observe being excluded. These findings highlight the nuanced way in which different elements of the school climate shape adolescents' inclusive orientation. Teacher factors, perceptions of the environment at school, and peer factors can all play a role in how adolescents think about and respond to the exclusion of others.

Teacher Rejection Sensitivity

Interestingly, the findings also suggest that youth who are sensitive to being rejected by their teachers also respond differently to exclusion. Contrary to our hypotheses, when adolescents are more anxious about being rejected by their teachers, they judge exclusion unacceptable, and seek to defend victims of exclusion. This suggests that anxious rejection sensitive youth are attuned to the harmful nature of, and are willing to help prevent, exclusion. We expected that anxious rejection sensitive youth might disengage and not want to help others because they may be anxious about further rejection. However, we find that they are actually engaged in defending behaviors. Thus, these students may be attending more to preventing rejection of others as opposed to concerned with experiencing additional rejection themselves. Future research might further explore this with qualitative interviews with students who are rejection sensitive to more completely understand their decision-making when they observe others' exclusion. Importantly, though, participants who were angry about possible rejection from their teachers look quite different: angry youth were less likely to defend the victim. Prior research demonstrates that rejection sensitive youth may engage in higher rates of aggression (Webb, 2008; Bondü and Krahé, 2015), and that rejection sensitive youth are more likely to not intervene if they observe aggression (Gönültaş et al., 2019). These findings extend this prior work (London et al., 2007; Zimmer-Gembeck and Nesdale, 2013) by demonstrating differential patterns for youth who are anxious and angry about possible teacher rejection.

Perceptions of Discrimination

Our findings suggest that a positive school climate can promote intentions to intervene. Surprisingly, our results also demonstrate that participants who perceive that their teachers discriminate against them were more likely to indicate that they would both promote and discourage inclusion. It may be that these youth do not want to be present when others are excluded, and thus seek opportunities to avoid the situation or to seek out help away from the instance of exclusion. It could be that they want to disengage from the immediate instance of exclusion because they fear being falsely accused of being involved, given that they

report prior experiences of teacher discrimination. Perhaps they are concerned that their attempts to intervene directly would be misinterpreted and that they would be seen as culpable. Given this pattern of teacher discrimination being associated with both wanting to promote and challenge exclusion, future research may need to explore more carefully specific intervention behaviors to uncover if these findings are being driven by particular behaviors. Finally, although there were no differences in how ethnic minority and ethnic majority participants expected they would respond if they observed social exclusion occurring, ethnic minority adolescents judged the act of social exclusion as less acceptable than did ethnic majority youth. This is important as prior research indicates that ethnic minority youth who experienced discrimination can be motivated to engage in civic activism (Hope et al., 2019). Our findings suggest that ethnic minority peers may be especially attuned to how harmful exclusion can be. Interestingly, although they are more likely to recognize that exclusion is harmful, this does not translate into increased intentions to defend those who are excluded. Future research should aim to identify additional factors that may promote intentions to intervene.

The set of findings suggest the importance of examining predictors of upstander behavior for ethnic minority youth and those who perceive that they are the victims of discrimination. Prior research documents that there is heterogeneity in responses to peer aggression in youth who perceive that they are the victims of discrimination, with some youth motivated to challenge other aggressors, while others even become involved in bullying others (Mulvey et al., 2020). Thus, more work is needed to understand how to shift cognitive patterns and empower youth who experience discrimination or are marginalized to harness their experiences to help others by fostering inclusion. Further, additional research should explore whether having peers who share your experiences (for instance, ethnic identity) or having a stronger sense of ethnic identity (Mathews et al., 2019) may propel youth toward fostering inclusion for others.

Gender and Age Differences

Further, we document age and gender findings. Interestingly, while much prior research has documented that younger adolescents are more likely to engage in bystander intervention (Mulvey et al., 2016, 2019), in this study, 6th and 9th-grade adolescents did not differ in their judgments or expected responses. This is important as it suggests that older adolescents, may, at times, be just as likely as younger adolescents to recognize how harmful exclusion is, even though prior research finds that adolescents are often more accepting of exclusion with age (Hitti et al., 2016). In terms of gender, we find that girls are more likely to judge the exclusion wrong, and to expect that they will respond in ways that defend the victim. These findings are consistent with prior research that documents that girls are often acutely attuned to the harmful nature of exclusion (Killen et al., 2002). The findings also suggest the importance of encouraging inclusive behavior not only among girls, but also among boys. Stereotypes often suggest that girls are more likely to engage in relational aggression, such as exclusion (Crick and Grotpeter, 1995), even though recent findings suggest that relational aggression is equally common among boys and girls (Lansford et al., 2012). These stereotypes, however, may lead to boys and girls being socialized differently around issues of social exclusion, with girls more likely to be encouraged to stop exclusion and engage in inclusive practices as a result of misperceptions about girls having a higher likelihood of excluding others. Thus, future research might involve qualitative interviews with boys and girls about how the messages they hear about exclusion can be used to identify if boys and girls are encouraged to be inclusive in similar ways.

Limitations and Future Directions

While this work provides important insight into how schools can foster inclusive tendencies, it does have some limitations. First, the focus of this research was on adolescents, yet children report experiencing exclusion well before adolescence (Elenbaas and Killen, 2016), which suggests that it may be important to identify factors that foster inclusion in children as well to have a more comprehensive developmental story. Further, this research was cross-sectional, which is helpful in identifying critical factors that may be important targets for intervention. However, it will be important for future research to examine longitudinal and bi-directional relationships between school and teacher factors, as well as one's own experiences of exclusion and youth attitudes toward exclusion. Longitudinal research will be able to also identify possible causal factors, which the current study cannot. Finally, the current study includes assessment of hypothetical scenarios. While expected behaviors reported in response to hypothetical scenarios align well with reports of actual behavior (Turiel, 2008), it will still be important for future research to gather data using multiple sources of information such as teacher reports of inclusive behavior or peer nominations of which students do intervene to stop exclusion. It may also be helpful to examine family relationship quality and other environmental contexts such as neighborhood safety that may contribute to perceptions and inclusive tendencies.

CONCLUSION AND IMPLICATIONS

The novel findings in our study document that school climate can shape adolescents' attitudes toward inclusion. Further, findings highlight places for intervention. Youth who are sensitive to possible rejection from their teachers and who perceive that they have been discriminated against by peers or teachers are less likely to defend victims of exclusion. Thus, school programming to foster inclusion should work to ensure that students feel welcomed and included and seek to root out instances of discrimination or differential treatment in order to foster inclusion. Additionally, interventions might aim to target youth cognition to increase bystanders' motivation to intervene in situations involving social exclusion—helping to instruct how to accurately interpret social cues from both peers and teachers (Arsenio and Lemerise, 2004) — to create environments conducive to inclusive behavior. The implications of this work suggest the importance of school-wide approaches to creating inclusive climates with attention

to climate, peer relationships, student–teacher relationships, and student experiences. Additionally, the findings suggest the importance of recognizing the harmful nature of exclusion. Parents, and teachers can work to foster discussions with students about the importance of inclusion. In sum, our results suggest that generally youth recognize the harmful nature of exclusion and are willing to intervene if they observe others being excluded.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the University of South Carolina IRB with inter-institutional agreement by the North Carolina State University IRB. Written informed consent for participation was not provided by the participants' legal guardians/next of kin because: we used written informed consent, using a passive or opt-out consent form (parents responded if they did not want their child to participate). This was the informed consent procedure approved by our IRB and the school district.

AUTHOR CONTRIBUTIONS

KM, MI, CD, and RC designed the study. KM, SG, and GI collected the data for the study. KM and SG conducted the analyses. KM drafted the manuscript. SG, GI, RC, CD, and MI edited and reviewed the manuscript. All the authors contributed to the article and approved the submitted version.

FUNDING

This project was supported by Award No. 2016-R2-CX-0056, awarded by the National Institute of Justice, Office of Justice Programs, United States Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect those of the Department of Justice.

ACKNOWLEDGMENTS

We thank the students who participated, the research assistants who aided in data collection, and the parents, teachers, and schools with whom we worked as part of this study.

REFERENCES

Abrams, D., Hogg, M., and Marques, J. (2005). *The social psychology of inclusion and exclusion*. New York, NY: Psychology Press.

Adam, E. K., Heissel, J. A., Zeiders, K. H., Richeson, J. A., Ross, E. C., Ehrlich, K. B., et al. (2015). Developmental histories of perceived racial discrimination and diurnal cortisol profiles in adulthood: A 20-year prospective study. *Psychoneuroendocrinology* 62, 279–291. doi: 10.1016/j.psyneuen.2015.08.018

Arsenio, W. F., and Lemerise, E. A. (2004). Aggression and moral development: Integrating social information processing and moral domain models. *Child Dev.* 75, 987–1002. doi: 10.1111/j.1467-8624.2004.00720.x

Benner, A. D., and Graham, S. (2013). The antecedents and consequences of racial/ethnic discrimination during adolescence: Does the source of discrimination matter? *Dev. Psychol.* 49, 1602–1613. doi: 10.1037/a0030557

Bondü, R., and Krahé, B. (2015). Links of justice and rejection sensitivity with aggression in childhood and adolescence. *Aggress. Behav.* 41, 353–368. doi: 10.1002/ab.21556

Buhs, E. S., Ladd, G. W., and Herald, S. L. (2006). Peer exclusion and victimization: Processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? *J. Educ. Psychol.* 98, 1–13. doi: 10.1037/0022-0663.98.1.1

Cemalcilar, Z. (2010). Schools as socialisation contexts: Understanding the impact of school climate factors on students sense of school belonging. *Appl. Psychol. Int. Rev.* 59, 243–272. doi: 10.1111/j.1464-0597.2009.00389.x

Crick, N. R., and Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Dev.* 66, 710–722. doi: 10.2307/1131945

Downey, G., Lebolt, A., Rincón, C., and Freitas, A. L. (1998). Rejection sensitivity and children's interpersonal difficulties. *Child Dev.* 69, 1074–1091. doi: 10.2307/1132363

Eccles, J. S., Wong, C. A., and Peck, S. C. (2006). Ethnicity as a social context for the development of african-american adolescents. *J. School Psychol.* 44, 407–426. doi: 10.1016/j.jsp.2006.04.001

Elenbaas, L., and Killen, M. (2016). "Research in developmental psychology: Social exclusion among children and adolescents," in *Social exclusion: Psychological approaches to understanding and reducing its impact*, eds P. Riva and J. Eck (New York,: Springer Publishing Company), 89–108. doi: 10.1007/978-3-319-33033-4_5

Espelage, D. L., and Colbert, C. L. (2016). "School-based bullying: Definition, prevalence, etiology, outcomes, and preventive strategies," in *Critical issues in school-based mental health: Evidence-based research, practice, and interventions*, eds M. K. Holt, A. E. Grills, M. K. Holt, and A. E. Grills (New York, NY: Routledge), 132–144.

Evans, C. B. R., and Smokowski, P. R. (2015). Prosocial bystander behavior in bullying dynamics: Assessing the impact of social capital. *J. Youth Adolesc.* 44, 2289–2307. doi: 10.1007/s10964-015-0338-5

Farmer, T. W., Irvin, M. J., Motoca, L. M., Leung, M.-C., Hutchins, B. C., Brooks, D. S., et al. (2013). Externalizing and internalizing behavior problems, peer affiliations, and bullying involvement across the transition to middle school. *J. Emot. Behav. Dis.* 23, 3–16. doi: 10.1177/1063426613491286

Feigenberg, L. F., King, M. S., Barr, D. J., and Selman, R. L. (2008). Belonging to and exclusion from the peer group in schools: Influences on adolescents moral choices. *J. Moral Educ.* 37, 165–184. doi: 10.1080/03057240802009306

Gao, S., Assink, M., Liu, T., Chan, K. L., and Ip, P. (2019). Associations between rejection sensitivity, aggression, and victimization: A meta-analytic review. *Trauma Violence Abuse* 22, 125–135. doi: 10.1177/1524838019833005

Gillen-O'Neel, C., and Fuligni, A. (2013). A longitudinal study of school belonging and academic motivation across high school. *Child Dev.* 84, 678–692. doi: 10.1111/j.1467-8624.2012.01862.x

Gönültaş, S., Mulvey, K. L., Irdam, G., Goff, E., Irvin, M. J., Carlson, R., et al. (2019). The role of social-emotional factors in bystanders' judgments and responses to peer aggression and following retaliation in adolescence. *J. Emot. Behav. Dis.* 28:1063426619870492. doi: 10.1177/1063426619870492

Griffin, C. B., Stitt, R. L., and Henderson, D. X. (2020). Investigating School Racial Climate and Private Racial Regard as Risk and Protector Factors for Black High School Students' School Engagement. *J. Black Psychol.* 46:0095798420946895.

Gutman, L. M., Peck, S. C., Malanchuk, O., Sameroff, A. J., and Eccles, J. S. (2017). Moving through adolescence: Developmental trajectories of african american and european american youth: V r/e identity and discrimination. *Monogr. Soc. Res. Child Dev.* 82, 83–94. doi: 10.1111/mono.12331

Hawkins, D. L., Pepler, D. J., and Craig, W. M. (2001). Naturalistic observations of peer interventions in bullying. *Soc. Dev.* 10, 512–527. doi: 10.1111/1467-9507.00178

Hitti, A., Mulvey, K. L., and Killen, M. (2016). "Social exclusion in adolescence," in *Encyclopedia of adolescence*, ed. R. J. Levesque (Cham: Springer International Publishing), 1–14. doi: 10.1007/978-3-319-32132-5_50-2

Hope, E. C., Gugwor, R., Riddick, K. N., and Pender, K. N. (2019). Engaged against the machine: Institutional and cultural racial discrimination and racial identity as predictors of activism orientation among black youth. *Am. J. Commun. Psychol.* 63, 61–72. doi: 10.1002/ajcp.12303

Jungert, T., Piroddi, B., and Thornberg, R. (2016). Early adolescents' motivations to defend victims in school bullying and their perceptions of student–teacher relationships: A self-determination theory approach. *J. Adolesc.* 53, 75–90. doi: 10.1016/j.adolescence.2016.09.001

Killen, M., and Rutland, A. (2011). *Children and social exclusion: Morality, prejudice, and group identity*. New York, NY: Wiley.

Killen, M., Elenbaas, L., Rizzo, M. T., and Rutland, A. (2017). "The role of group processes in social exclusion and resource allocation decisions," in *The wiley handbook of group processes in children and adolescents*, eds A. Rutland, D. Nesdale, and C. S. Brown (New York, NY: Wiley Blackwell), 124–143.

Killen, M., Kelly, M. C., Richardson, C., Crystal, D., and Ruck, M. (2010). European american children's and adolescents' evaluations of interracial exclusion. *Group Processes Intergr. Relat.* 13, 283–300. doi: 10.1177/1368430209346700

Killen, M., Lee-Kim, J., McGlothlin, H., and Stangor, C. (2002). How children and adolescents evaluate gender and racial exclusion. *Monogr. Soc. Res. Child Dev.* 67:218. doi: 10.1111/1540-5834.00218

Konishi, C., and Hymel, S. (2009). Bullying and stress in early adolescence: The role of coping and social support. *J. Early Adolesc.* 29, 333–356. doi: 10.1177/0272431608320126

Lansford, J. E., Skinner, A. T., Sorbring, E., Giunta, L. D., Deater-Deckard, K., Dodge, K. A., et al. (2012). Boys' and girls' relational and physical aggression in nine countries. *Aggress. Behav.* 38, 298–308. doi: 10.1002/ab.21433

London, B., Downey, G., Bonica, C., and Paltin, I. (2007). Social causes and consequences of rejection sensitivity. *J. Res. Adolesc.* 17, 481–506. doi: 10.1111/j.1532-7795.2007.00531.x

Malti, T., Strohmeier, D., and Killen, M. (2015). The impact of onlooking and including bystander behaviour on judgments and emotions regarding peer exclusion. *Br. J. Dev. Psychol.* 33, 295–311. doi: 10.1111/bjdp.12090

Mathews, C., Medina, M., Bañales, J., Pinetta, B., Marchand, A., Agi, A., et al. (2019). Mapping the intersections of adolescents' ethnic-racial identity and critical consciousness. *Adolesc. Res. Rev.* 5, 363–379. doi: 10.1007/s40894-019-00122-0

McGrath, K. F., and Van Bergen, P. (2015). Who, when, why and to what end? Students at risk of negative student–teacher relationships and their outcomes. *Educ. Res. Rev.* 14, 1–17. doi: 10.1016/j.edurev.2014.12.001

McGuire, L., Rutland, A., and Nesdale, D. (2015). Peer group norms and accountability moderate the effect of school norms on children's intergroup attitudes. *Child Dev.* 86, 1290–1297. doi: 10.1111/cdev.12388

Mercer, S. H., and DeRosier, M. E. (2008). Teacher preference, peer rejection, and student aggression: A prospective study of transactional influence and independent contributions to emotional adjustment and grades. *J. School Psychol.* 46, 661–685. doi: 10.1016/j.jsp.2008.06.006

Mulvey, K. L. (2016). Children's reasoning about social exclusion: Balancing many factors. *Child Dev. Perspect.* 10, 22–27. doi: 10.1111/cdep.12157

Mulvey, K. L., Gönültaş, S., Goff, E., Irdam, G., Carlson, R., DiStefano, C., et al. (2019). School and family factors predicting adolescent cognition regarding bystander intervention in response to bullying and victim retaliation. *J. Youth Adolesc.* 48, 581–596. doi: 10.1007/s10964-018-0941-3

Mulvey, K. L., Gönültaş, S., Hope, E. C., Hoffman, A. J., DiStefano, C., Irvin, M. J., et al. (2020). The complex nature of youth aggression: Relations between cognition, discrimination, and peer perceptions of bullying involvement. *Youth Soc.* 2020:0044118X20920085. doi: 10.1177/0044118X20920085

Mulvey, K. L., Hitti, A., and Killen, M. (2013). "Intentionality, morality, and exclusion: How children navigate the social world," in *Navigating the social world: What infants, children and other species can teach us*, eds M. Banaji and S. Gelman (Oxford: Oxford University Press), 377–384. doi: 10.1093/acprof:oso/9780199890712.003.0070

Mulvey, K. L., Palmer, S. B., and Abrams, D. (2016). Race-based humor and peer group dynamics in adolescence: Bystander intervention and social exclusion. *Child Dev.* 87, 1379–1391. doi: 10.1111/cdev.12600

Nesdale, D. (2011). Social groups and children's intergroup prejudice: Just how influential are social group norms? *Anales de Psicol.* 27, 600–610.

Nipedal, C., Nesdale, D., and Killen, M. (2010). Social group norms, school norms, and children's aggressive intentions. *Aggress. Behav.* 36, 195–204.

OECD (2015). *Pisa in focus: How have schools changed over the past decade?*. Paris: OECD Publishing.

Price, M., Hill, N. E., Liang, B., and Perella, J. (2019). Teacher relationships and adolescents experiencing identity-based victimization: What matters for whom among stigmatized adolescents. *School Mental Health* 11, 790–806. doi: 10.1007/s12310-019-09327-z

Respress, B. N., Small, E., Francis, S. A., and Cordova, D. (2013). The role of perceived peer prejudice and teacher discrimination on adolescent substance use: A social determinants approach. *J. Ethnicity Subst. Abuse* 12, 279–299. doi: 10.1080/15332640.2013.836728

Rutland, A., and Killen, M. (2015). A developmental science approach to reducing prejudice and social exclusion: Intergroup processes, social−cognitive development, and moral reasoning. *Soc. Iss. Policy Rev.* 9, 121–154. doi: 10.1111/sipr.12012

Rutland, A., Killen, M., and Abrams, D. (2010). A new social-cognitive developmental perspective on prejudice: The interplay between morality and group identity. *Perspect. Psychol. Sci.* 5, 279–291. doi: 10.1177/1745691610369468

Salmivalli, C., Voeten, M., and Poskiparta, E. (2011). Bystanders matter: Associations between reinforcing, defending, and the frequency of bullying behavior in classrooms. *J. Clin. Child Adolesc. Psychol.* 40, 668–676. doi: 10.1080/15374416.2011.597090

Tajfel, H., and Turner, J. C. (1976). "The social identity theory of intergroup behaviour," in *The social psychology of intergroup relations*, eds W. G. Austin and S. Worchel (Monterey CA: Brooks-Cole), 33–47.

Thorkildsen, T. A., Reese, D., and Corsino, A. (2002). School ecologies and attitudes about exclusionary behavior among adolescents and young adults. *Merrill Palmer Quart. J. Dev. Psychol.* 48, 25–51. doi: 10.1353/mpq.2002.0004

Turiel, E. (1983). *The development of social knowledge: Morality and convention*. Cambridge: Cambridge University Press.

Turiel, E. (2008). Thought about actions in social domains: Morality, social conventions, and social interactions. *Cognit. Dev.* 23, 136–154. doi: 10.1016/j.cogdev.2007.04.001

United Nations. (2016). *Leaving no one behind: The imperative of inclusive development. Report on the world social situation 2016*. New York, NY: United Nations.

Verkuyten, M. (1998). Perceived discrimination and self-esteem among ethnic minority adolescents. *J. Soc. Psychol.* 138, 479–493. doi: 10.1080/00224549809600402

Verkuyten, M., and Thijs, J. (2002). Racist victimization among children in the Netherlands: The effect of ethnic group and school. *Ethnic Racial Stud.* 25, 310–331. doi: 10.1080/01419870120109502

Wang, C., Swearer, S. M., Lembeck, P., Collins, A., and Berry, B. (2015). Teachers matter: An examination of student-teacher relationships, attitudes toward bullying, and bullying behavior. *J. Appl. School Psychol.* 31, 219–238. doi: 10.1080/15377903.2015.1056923

Wang, J., Iannotti, R. J., Luk, J. W., and Nansel, T. R. (2010). Co-occurrence of victimization from five subtypes of bullying: Physical, verbal, social exclusion, spreading rumors, and cyber. *J. Pediatr. Psychol.* 35, 1103–1112. doi: 10.1093/jpepsy/jsq048

Webb, L. R. (2008). Toward a biobehavioral analysis of rejection sensitivity in adolescence. *J. Behav. Anal. Offender Victim Treat. Preven.* 1, 202–208. doi: 10.1037/h0100444

Whitley, A. M., Huebner, E. S., Hills, K. J., and Valois, R. F. (2012). Can students be too happy in school? The optimal level of school satisfaction. *Appl. Res. Qual. Life* 7, 337–350. doi: 10.1007/s11482-012-9167-9

Wong, C. A., Eccles, J. S., and Sameroff, A. (2003). The influence of ethnic discrimination and ethnic identification on african american adolescents' school and socioemotional adjustment. *J. Personal.* 71, 1197–1232. doi: 10.1111/1467-6494.7106012

Zimmer−Gembeck, M. J., and Nesdale, D. (2013). Anxious and angry rejection sensitivity, social withdrawal, and retribution in high and low ambiguous situations. *J. Personal.* 81, 29–38. doi: 10.1111/j.1467-6494.2012.00792.x

Zimmer-Gembeck, M. J., Nesdale, D., McGregor, L., Mastro, S., Goodwin, B., and Downey, G. (2013). Comparing reports of peer rejection: Associations with rejection sensitivity, victimization, aggression, and friendship. *J. Adolesc.* 36, 1237–1246. doi: 10.1016/j.adolescence.2013.10.002

Zimmer-Gembeck, M. J., Nesdale, D., Webb, H. J., Khatibi, M., and Downey, G. (2016). A longitudinal rejection sensitivity model of depression and aggression: Unique roles of anxiety, anger, blame, withdrawal and retribution. *J. Abnor. Child Psychol.* 44, 1291–1307. doi: 10.1007/s10802-016-0127-y

Zullig, K. J., Collins, R., Ghani, N., Hunter, A. A., Patton, J. M., Huebner, E. S., et al. (2015). Preliminary development of a revised version of the school climate measure. *Psychol. Assess.* 27, 1072–1081. doi: 10.1037/pas0000070

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

ORIGINAL RESEARCH
published: 13 January 2021
doi: 10.3389/feduc.2020.609451

Teacher Practices, Peer Dynamics, and Academic Enablers: A Pilot Study Exploring Direct and Indirect Effects Among Children at Risk for ADHD and Their Classmates

Julie Sarno Owens[1], Hongyuan Qi[2], Lina K. Himawan[1], Mary Lee[1] and Amori Yee Mikami[2]*

[1] Department of Psychology, Ohio University, Athens, OH, United States, [2] Department of Psychology, University of British Columbia, Vancouver, BC, Canada

OPEN ACCESS

Edited by:
Luciano Gasser,
University of Teacher Education Lucerne, Switzerland

Reviewed by:
Julia McQuade,
Amherst College, United States
Jeremy R. Sullivan,
University of Texas at San Antonio, United States

****Correspondence:***
Julie Sarno Owens
owensj@ohio.edu

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *23 September 2020*
Accepted: *10 December 2020*
Published: *13 January 2021*

Citation:
Owens JS, Qi H, Himawan LK, Lee M and Mikami AY (2021) Teacher Practices, Peer Dynamics, and Academic Enablers: A Pilot Study Exploring Direct and Indirect Effects Among Children at Risk for ADHD and Their Classmates. Front. Educ. 5:609451. doi: 10.3389/feduc.2020.609451

Establishing a positive peer climate in elementary school classrooms is an important goal for educators because peer dynamics are thought to affect academic learning. Thus, it is important to (a) understand the relationship between children's peer dynamics and academic functioning, and (b) identify teacher practices that influence both peer processes and academic outcomes. In this pilot study, we explored whether specific teacher strategies that promote positive behaviors in children and positive peer dynamics influence children's better academic enablers, as well as whether they do so indirectly via improving peer sociometric ratings. Such teacher strategies may be particularly relevant for supporting children who demonstrate impairment in both social and academic domains, such as children at risk for attention-deficit/hyperactivity disorder (ADHD). Thus, we also examined whether these relationships differ for children with elevated ADHD symptoms and peer problems (i.e., target students), relative to classmates (i.e., non-target students). Participants were 194 children in the classrooms of 12 teachers (grades K-4) who participated in an open-trial pilot study of the school-based version of the Making Socially Accepting Inclusive Classrooms (MOSAIC) program. In the fall and spring of a school year, we assessed children's sociometric ratings received from peers, and academic enabler skills as rated by teachers. Throughout one academic year, we obtained assessments of teachers' use of MOSAIC strategies (observed and self-reported). Results showed that, after accounting for fall academic enablers, the teacher strategy of CARE time (involving one-on-one interaction with the student to build the teacher-student relationship) was positively associated with spring academic enablers. However, findings did not support the hypothesized indirect effect of peer sociometric ratings on the relationship between teacher strategy use and academic enablers, or the moderated indirect effect by target student status. Implications for future research and classroom interventions are discussed.

Keywords: teacher practices, academic enablers, MOSAIC program, peer dynamics, sociometric ratings, ADHD

INTRODUCTION

Establishing a positive peer climate in elementary school classrooms is an important goal for educators, as peer dynamics are theorized to relate to academic performance (Wentzel, 2017; Sette et al., 2020). Specifically, positive peer dynamics create a social context in the classroom that may foster the growth of academic enablers, which are cognitions, attitudes, and behaviors that facilitate and predict student academic achievement on grades and test scores, educational attainment, and future employment (e.g., DiPerna et al., 2002; Borghans et al., 2008; Farrington et al., 2012). Key academic enablers for elementary school students are motivation (e.g., academic interest and persistence), engagement (e.g., attention and participation), and effective communication in an academic context (working effectively in groups, listening to others; DiPerna and Elliott, 2002).

Being poorly regarded by classroom peers, as evidenced by sociometric measures, may interfere with children's development of academic enablers (Buhs and Ladd, 2001), as is evident among students at risk for attention-deficit/hyperactivity disorder (ADHD). This population of students has problems in both academic and social functioning, and furthermore, there is evidence that peer problems create risk for their subsequent academic failure beyond that conferred by initial academic impairment (Mikami and Hinshaw, 2006; Gardner and Gerdes, 2015). Given the dynamic relationships between ADHD behaviors, peer sociometrics, and academic enablers within the ecology of the classroom, it is important to identify teacher practices that can influence student behavior and peer dynamics as a way to facilitate the development of academic enablers and ultimately, academic success. In the current open trial pilot study, we examine the extent to which teacher practices in the **M**aking **S**ocially **A**ccepting **I**nclusive **C**lassrooms (MOSAIC) program directly influence children's academic enablers, and whether they do so indirectly via peer sociometric ratings. Because teacher practices may have unique influences on children with ADHD and social problems (Mikami et al., 2013a), we also examine whether these relationships differ for target students selected for elevated ADHD symptoms and peer problems vs. their classmates. A primary goal of the current pilot study was to identify specific teacher practices that have the most promise for future study.

The Making Socially Accepting Inclusive Classrooms (MOSAIC) Program

Although evidence-based classroom interventions for elementary school children with ADHD improve parent and teacher ratings of children's social and academic competencies (Pfiffner et al., 2016), there are no interventions that successfully improve peers' sociometric judgments of these children (Hoza et al., 2005). We argue that this is because such interventions focus solely on behavior management and the deficient skills of the target student and fail to account for critical peer influences (Mikami et al., 2010). The MOSAIC program was designed to address the limitations of existing attempts to alter peers' sociometric judgments of students with or at risk for ADHD. Namely, the program includes behavior management strategies to promote positive behavior among students with ADHD, as well as strategies to dismantle negative peer dynamics (e.g., reputational biases, exclusionary behavior, devaluation of students who behave differently from others). Teachers in MOSAIC are trained to incorporate the strategies into their day-to-day activities to encourage students' positive social behaviors, increase positive peer dynamics, and foster positive teacher-student relationships. Key MOSAIC strategies include: reviewing and reinforcing expectations for positive classroom behavior; reviewing and reinforcing expectations for inclusiveness among peers; brief one-on-one quality time between the teacher and student (referred to as CARE time; see Method); discreet corrections for inappropriate behavior, and teacher statements that specifically highlight personal strengths of individual students (see Mikami et al., 2020 for details).

The efficacy of the MOSAIC program was initially examined in a 2-week summer day camp with 24 children with ADHD (i.e., the target group) and 113 typically developing children in Grade 1 through Grade 3 (Mikami et al., 2013a,b). Findings showed that, relative to children receiving behavioral management only, children in the MOSAIC group received more favorable peer sociometric nominations and liking ratings, and received more positive messages written by peers in memory books. Although positive effects of MOSAIC were observed in typically developing children, the effects were stronger for target students, indicating the presence of moderation. Given the proof of concept demonstrated by the summer program finding, we collaboratively developed (with teachers) the school-based version of MOSAIC (Mikami et al., 2020). In our initial open trial pilot study (without a control group), we assessed the associations between specific MOSAIC strategies and peer sociometric ratings in spring of the school year, after statistical control of sociometric ratings in fall of the school year (Mikami et al., 2020). Our findings suggest that specific teacher practices (i.e., reviewing expectations for appropriate behavior, reinforcing expectations for inclusiveness, highlight personal strengths, and use of CARE time) in the MOSAIC program may influence better peer sociometrics, and that the effect of some of these practices may be moderated by target student status (see Moderating Role of ADHD Status section below). To date, however, direct effects of these same teacher practices on academic enablers have not been tested. Nor has the potential for indirect effects through the influence of these same teacher practices on peer sociometric ratings been studied. In the current pilot study, we explore these possibilities with the aim of identifying teacher practices that may relate to the complex interplay between student peer dynamics and academic enablers.

MOSAIC Practices and Peer Sociometrics

The practices included in the MOSAIC program are designed to shift peers' sociometric judgments by both increasing deficient skills of children who are poorly regarded by peers, and by altering peer group process. Behavioral theory and

evidence-based classroom management strategies (Epstein et al., 2008; Simonsen et al., 2008) suggest that teachers can improve children's off-putting behavior by creating, reviewing, and reinforcing expectations for appropriate behavior. However, given that improving disruptive behavior may be insufficient for shifting peers' sociometric judgments (Mikami and Normand, 2015), teachers can potentially also use effective classroom management strategies to affect peer dynamics. For example, teachers can create, review, and reinforce expectations for peer respect and inclusiveness. One study found that by declaring "you can't say you can't play" as a classroom rule, or including language in a classroom charter about respectful treatment of others, teachers were able to shape more favorable class-wide peer sociometric ratings (Harrist and Bradley, 2003; Bacete et al., 2019).

Teachers may also influence peer dynamics via indirect methods, wherein teachers act as an "invisible hand" and guide peers to have more positive sociometric judgments of a classmate without explicitly instructing them to this end (Farmer et al., 2011). These indirect methods are thought to influence peer sociometrics via modeling. Specifically, in early elementary grades children make sociometrics judgments about their peers which are partly influenced by perceptions of how their teacher evaluates those same peers (Chang et al., 2007; Brey and Shutts, 2018). For example, when teachers give personalized, positive attention to a student, or highlight a positive attribute about a student, it may implicitly communicate to others that the student has desirable characteristics and is likable. Similarly, positive teacher-student interactions may offer a model for how students should treat one-another and send cues to peers that a given student has value. Support for these indirect influences comes from studies showing that a more positive teacher-student relationship predicts peers having better sociometric judgments of that student (Hughes et al., 2001; Hughes and Kwok, 2006). Additional support for these indirect influences comes from longitudinal investigations that show that teachers' personal liking of certain students predicts increases in favorable peer sociometric judgments of those students over time, with subsequent benefits for the recipients' academic functioning (Hughes and Chen, 2011; Sette et al., 2020). These ideas are also supported by our recent study showing associations between specific MOSAIC strategies and better peer sociometric ratings in spring of the school year, after statistical control of sociometric ratings in fall of the school year (Mikami et al., 2020).

In summary, there is emerging evidence that teacher practices can influence classroom peer dynamics. With this pilot study, we aim to advance the literature by examining the extent to which MOSAIC strategies predict children's better academic enablers at the end of the year, and whether they do so indirectly via improvements in peer sociometric ratings.

MOSAIC Practices and Academic Enablers

Direct Effects

Academic enablers are malleable and influenced by multiple factors within the dynamic classroom ecology, including teacher practices (Greenwood et al., 2002; Lekwa et al., 2019). Some of these teacher practices (effective classroom management and strategies to build student-teache relationships) are included in the MOSAIC program. For example, teachers may facilitate academic enabler skills through the use of effective classroom management practices. In the MOSAIC program, teachers are encouraged to establish and reinforce student behaviors that align with classroom expectations, and consistently use mild, discreet consequences for behaviors that violate classroom expectations, as the use of these strategies is associated with greater student academic task engagement and fewer disruptive behaviors (see Simonsen et al., 2008 for review). These links may exist, in part, because when teachers review expectations before an activity, it reminds students *how* to participate and communicate successfully. Similarly, when teachers reinforce those expectations during activities, it facilitates student on-task behavior and persistence (Jenkins et al., 2015).

In addition, teachers' use of strategies that promote their interpersonal closeness with and support of students may help reduce student disruptive behavior and increase academic engagement (Simonsen et al., 2008). This is consistent with empirical evidence finding that positive teacher-student relationships were associated with children's academic success concurrently and prospectively (Hamre and Pianta, 2001; Roorda et al., 2017). In the MOSAIC program, teachers are encouraged to call positive attention to students' strengths, or take a personal interest in students through spending one-on-one quality time with them. These strategies likely help students feel more welcome in the teacher's classroom and more motivated and supported to approach challenging tasks. In other words, supportive teacher behaviors may create a safe environment for children to take the intellectual risks needed for academic learning to occur (Roorda et al., 2011). Given this body of literature, we hypothesized that MOSAIC practices may have a direct effect on improvement in students' academic enablers.

Indirect Effects via Peer Dynamics

Peer dynamics may also have a significant influence on academic enablers (Buhs and Ladd, 2001; Ladd and Burgess, 2001). One commonly used metric of peer dynamics is the sociometric judgments that children receive from their classroom peers, indicating the extent to which a child is positively vs. negatively regarded by the peer group (e.g., liked or disliked; Coie et al., 1982). Positive sociometric judgments not only afford children supportive interpersonal interactions that are conducive for social and academic growth, but also may lead children to feel a sense of safety and belonging, thereby reinforcing their academic engagement and aspirations (Robinson and Mueller, 2014; Wentzel, 2017). In contrast, negative sociometric judgments are associated with children's lower participation in classroom activities and higher rates of off-task disruptive behaviors, both of which negatively impact academic achievement for the affected student and the classroom as a whole (Robinson and Mueller, 2014; Wentzel, 2017). Moreover, such children may develop low self-esteem and low expectations for social success (Sandstrom et al., 2017), which may diminish motivation to initiate social interactions and to pursue their academic goals (Boivin and Hymel, 1997; Wentzel, 2017). Indeed, it is well-established that

negative sociometric judgments, especially when they occur year after year, undermine children's motivation to spend time on academic tasks (e.g., due to fear of being mocked and marginalized), and subsequently result in children's withdrawal from classroom participation (Buhs et al., 2006; Ladd et al., 2008; Iyer et al., 2010). Further, recent evidence suggests that classroom interventions focused on relationship building are capable of changing peer networks, as well as students' subsequent academic performance (DeLay et al., 2016), perhaps via the indirect effects of peer dynamics. Collectively, these findings highlight the relevance of peer dynamics for students' academic enabler skills, and coupled with the previously described direct effects of MOSAIC practices on sociometric ratings, provide the rationale for our examination of the relationship between MOSAIC practices and academic enablers via peer sociometrics.

The Moderating Role of ADHD Status

In our first evaluation of the school-based version of MOSAIC, we explored whether the associations between MOSAIC teacher practices and sociometric ratings differed among target students (students selected for being at risk for ADHD and peer problems) relative to non-target students (Mikami et al., 2020). Although we found evidence for the moderating effects of target student status for the outcome of sociometric ratings, the pattern was inconsistent across teacher practices (Mikami et al., 2020). Namely, we found that teacher use of reinforcing expectations for behavior and discreet corrections were associated with improved sociometric ratings for target children but not non-target students (Mikami et al., 2020). In contrast, teacher use of highlighting positive attributes and spending one-on-one quality time (CARE time) were useful for all children, and had accentuated benefits for non-target students (Mikami et al., 2020). In the current study, we also explore whether target students might differentially benefit from teacher practices to enhance academic enablers, directly and through the indirect effects of improved sociometric ratings. However, there is potential for these associations to be either stronger or weaker for target relative to non-target students.

On one hand, given that children at risk for ADHD show pronounced deficits in academic enablers and sociometrics (Hoza et al., 2005; Loe and Feldman, 2007), there may be more room for them to benefit from teacher practices that address these outcomes. Indeed, classroom behavioral management strategies represent an evidence-based intervention for this population (Epstein et al., 2008; Owens et al., 2020b). Thus, these strategies may act as a buffer between child deficits and classroom outcomes. In addition, children with ADHD often have strained relationships with their teachers (Greene et al., 2002). Therefore, teacher practices, such as promoting classroom inclusiveness, highlighting students' strengths, and spending one-on-one positive time talking with the student may help target students feel a sense of belonging in the classroom. Such feelings may increase target children's motivation to engage in classroom activities and to persist in difficult tasks. Thus, target students may show accentuated effects from these teacher practices relative to non-target students. In fact, in the summer program pilot, positive effects of MOSAIC were observed in typically developing children; however, the effects were stronger for target students, indicating the presence of moderation.

On the other hand, the substantial deficits in academic enablers and sociometrics shown by children at risk for ADHD may lead this group to not experience as much benefit from these teacher practices as do typical children. That is, children at risk for ADHD may have more entrenched negative reputations among peers and teachers for having poor behaviors and academic skills. Subtle teacher practices may be insufficient to change these negative peer sociometric judgments, or deficient academic enablers, in target children compared to in non-target children. This may be why, to date, evidence-based treatments for ADHD have had limited impact on changing peer sociometrics (Evans et al., 2018).

The Current Study

Using the dataset from the open trial pilot study of the school-based version of MOSAIC program (Mikami et al., 2020), the current analyses examine: whether teachers' use of MOSAIC strategies have direct effects on students' academic enablers (Aim 1), the extent to which any relationships between MOSAIC strategies and academic enablers might operate via the indirect effect of sociometric ratings (Aim 2), and whether the above direct and indirect effects are moderated by target student status (i.e., among students at risk for ADHD, relative to their classmates; Aim 3). See **Figure 1** for a conceptual model of these relationships. We hypothesized that teachers' use of MOSAIC strategies would predict improvements in children's academic enablers at the end of the school year, while controlling for academic enablers in the fall, at the whole class level (Hypothesis 1). We expected to find indirect effects of peer sociometric ratings (Hypothesis 2) on this relationship. That is, we hypothesized that the use of MOSAIC strategies would predict children receiving more positive sociometric ratings, which in turn would lead to higher scores in teachers' ratings of their academic enablers. Lastly, in all of the above relationships, we explored the potential moderating role of target student status. Given that moderation by target student status was found for some but not all teacher strategies in our previous studies (Mikami et al., 2013a,b, 2020), and that the direction of the moderation was inconsistent, we did not make directional hypotheses.

MATERIALS AND METHODS

Participants

Participants were 12 elementary school teachers (K-4) and 194 students in their classrooms in Southern British Columbia, Canada (6 classrooms) and Central and Southeast Ohio, United States (6 classrooms), in the 2017–2018 school year. Of all students in the 12 classrooms, 82% of their parents provided consent at the Canada site and 70% at the United States site (range: 56–95% across the 12 classrooms). See **Table 1** for teacher and student demographic information.

Procedure

All procedures were approved at both sites by the associated university research ethics boards and school district

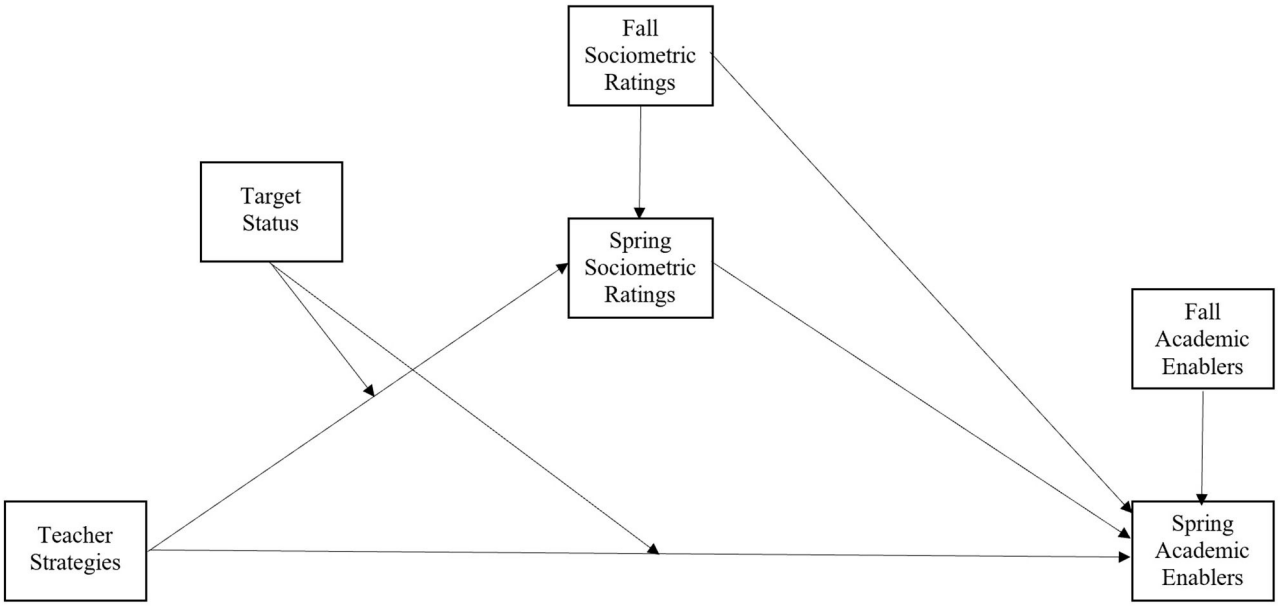

FIGURE 1 | Diagram for the conceptual model. Aim 1: Examines the direct effects of teacher strategies on academic enablers. Aim 2: Examines the indirect effects of spring sociometric ratings on the relationship between teacher strategies and academic enablers. Aim 3: Examines whether the above direct and indirect effects are moderated by target student status.

administrators. School districts at each site were chosen based on interest from districts, variability in student demographic characteristics, and proximity to the university site. Teachers were recruited at staff meetings and by principals sharing project information with staff. Consenting teachers then shared project information with parents of all students in their classrooms (consent forms were translated into additional languages based on school request). Children whose parents provided consent and who provided assent participated in the study. All participating teachers received intensive coaching during the 2017–2018 school year in the use of the MOSAIC program.

Target Student Selection

At the beginning of the school year, teachers selected between three to five of the consented students in their classroom to serve as target students for the MOSAIC intervention (i.e., to receive a higher dose of the intervention). Target students were chosen based on having elevated ADHD symptoms and peer problems. Specifically, teachers completed a measure of children's ADHD symptoms (ADHD Rating Scale−5; DuPaul et al., 2016) and of children's peer problems (Dishion Social Acceptance Scale; Dishion and Kavanagh, 2003) for all consented students in the classroom. Additionally, their parents completed a brief measure of hyperactivity/inattention and of peer problems (Hyperactivity/Inattention subscale and Peer Problems subscale of the Strengths and Difficulties Questionnaire; Goodman, 1997). In each classroom, children were rank-ordered by teacher-rated ADHD symptoms, then teacher-rated peer problems. Based on this ranking, teachers selected the top three to five children who had both high ADHD symptoms and peer problems. If there was a tie for the top children, parent ratings were examined. This process resulted in the selection of 51 target students across the 12 classrooms. See **Table 1** for target and non-target student demographic information, and **Table 2** for their group differences in ADHD symptoms, academic enablers, and peer problems.

Coaching Teacher Use of MOSAIC

In the spring before the 2017–2018 school year, recruited teachers attended a 2-h borientation on study procedures and MOSAIC strategies. At this orientation, teachers were given a manual describing the intervention and were encouraged to review it over the summer. During the 2017–2018 school year, teachers were asked to deliver all MOSAIC strategies to the whole class (Tier 1) with an emphasis on using the strategies more frequently with target students (Tier 2). Teachers received coaching on MOSAIC strategies from a consultant, who was a research team member. One of the goals of the pilot study was to reduce the number of strategies, thus, teachers were encouraged to use and provide feedback on several MOSAIC strategies. The current study focuses on seven strategies as they have the strongest psychometric properties and they are consistent with the strategies examined in Mikami et al. (2020). See Mikami et al. (2020) for a more detailed discussion on selection of these strategies.

Throughout the school year, teachers were observed by their consultants or by other research team members twice per month for approximately 40 min each time. After each observation, consultants emailed feedback to teachers on their use of MOSAIC strategies. Teachers met with a consultant twice per month (about 45 min each meeting) to discuss the teachers' the observation data

TABLE 1 | Demographic information for teachers and students.

	Teachers (n = 12)	
Age (M, SD)	42.1 (7.5)	
Years of teaching experience (M, SD)	11.2 (8.9)	
Gender (*N*, %)		
Female	12 (100)	
Race (*N*, %)		
White/Caucasian	10 (83.3)	
Asian/Asian American/Asian Canadian	1 (8.3)	
Multiracial	1 (8.3)	
Ethnicity (*N*, %)		
Non-hispanic	12 (100)	
Degree (*N*, %)		
Bachelor's	2 (16.7)	
Master's	10 (83.3)	
	Students: Full sample (n = 194) ***N* (%)**	**Students: Target sample (n = 51)** ***N* (%)**
Age (M, SD)	6.6 (1.4)	6.5 (1.4)
Gender		
Female	90 (46.4)	13 (25.5)
Male	103 (53.1)	38 (74.5)
Transgender	1 (0.5)	0 (0.0)
Grade		
Kindergarten	21 (10.8)	6 (11.8)
1st	102 (52.6)	27 (53.0)
2nd	25 (12.9)	9 (17.6)
3rd	23 (11.9)	4 (7.8)
4th	23 (11.9)	5 (9.8)
Race		
White/Caucasian	122 (62.9)	30 (58.8)
Asian/Asian American/Asian Canadian	26 (13.4)	4 (7.8)
Black/African American/Afro Canadian/Black Canadian	3 (1.5)	1 (2.0)
American Indian/Alaska Native	1 (0.5)	0 (0.0)
Multiracial	36 (18.6)	14 (27.5)
Missing/Did not report	6 (3.1)	2 (3.9)
Ethnicity		
Hispanic	5 (2.6)	2 (3.9)
Non-hispanic	162 (83.5)	46 (90.2)
Missing/Did not report	27 (13.9)	3 (5.9)

Values for continuous variables represent means with standard deviations in parentheses. Values for categorical variables represent n with percentages in parentheses.

to encourage the teacher's use of strategies with the whole class, and in a higher dose with target students.

The MOSAIC consultants were a postdoctoral fellow and two graduate students in clinical or school psychology, and two research associates (at the BA level) with experience working in schools. Consultants received a full-day training and weekly supervision. The team of study staff who served as observers consisted of the consultants, other graduate students and research associates (who were not consultants assigned to the teacher), and undergraduate research assistants. The study staff who interviewed children were research associates and undergraduate research assistants.

Measures

Throughout the school year, teachers' use of the specific MOSAIC practices was assessed through observations approximately twice per month, and through self-report surveys once per month where teachers reported the extent to which they used each MOSAIC strategy on the day prior to receiving the survey. Approximately one month after the start of school (to allow teachers and students time to know one another; fall assessment), and one month before the end of school (spring assessment), students participated in a peer sociometric interview and teachers completed a questionnaire measure of students' academic enablers. See **Table 2** for the descriptive statistics of our measures.

Observed Teacher Practices

Across the school year, teachers were observed an average of 29.3 times (SD = 6.9, range = 19–37) for 40 min each time (broken down into five, 8 min blocks). On average, 39.8% of observations were completed by the consultant while the rest were completed by other research team members. As there were no significant differences in rates of MOSAIC practices observed by consultants vs. other research team members, observations from both types of raters were used in this study. Additionally, two coders together completed 30.2% of observations and these observations were used to calculate inter-rater reliability using inter-class correlation coefficients (below 0.40 = poor, 0.40–0.59 = fair, 0.60–0.74 = good, 0.75 and above = excellent; Cicchetti, 1994) for continuous variables. The seven strategies described below were considered the key strategies of MOSAIC.

Reviewing Expectations for Behavior

This strategy involved a teacher reminding students of what behaviors are expected before the activity occurs (e.g., before transitioning to independent work the teacher reminds students to use voice level 0). The purpose of this strategy was to encourage children to display appropriate behavior. Any time a teacher reviewed expectations for general behavior that was not inclusiveness (inclusiveness was tallied differently, see below), it was counted in this category (ICC = 0.99, excellent).

Reinforcing Expectations for Behavior

This strategy involved a teacher reinforcing appropriate behavior by calling attention to the behavior using specific praise or a reward (e.g., the teacher tells a student "Great job waiting your turn to speak!"). The purpose of this strategy was also to encourage appropriate behavior. Any instance of a teacher reinforcing positive behavior was counted in this category, unless specific to inclusiveness (ICC = 0.99, excellent).

Reviewing Expectations for Inclusiveness

Similar to reviewing expectations for behavior, this strategy involved a teacher reminding students of expected behaviors

TABLE 2 | Descriptive statistics on study measures for target and non-target students.

	Fall				Spring			
	All Students (M, SD)	**Target (M, SD)**	**Non-target (M, SD)**	***t*[a]**	**All students (M, SD)**	**Target (M, SD)**	**Non–target (M, SD)**	***t*[a]**
Teacher ratings								
ADHD–IV Inattention[b]	8.01 (7.07)	16.25 (6.00)	5.04 (4.67)	−12.10**	7.09 (7.36)	15.13 (6.28)	4.46 (5.58)	−10.91**
ADHD–IV Hyper/Impul[b]	4.85 (6.27)	11.10 (7.38)	2.61 (3.88)	−7.84**	4.40 (6.05)	9.41 (6.98)	2.76 (4.70)	−6.04**
% of class who like student[c]	75.17 (22.26)	60.98 (24.27)	80.26 (19.16)	5.13**	81.64 (18.35)	73.50 (22.70)	84.30 (15.90)	3.00*
% of class who dislike student[c]	6.61 (11.68)	16.57 (16.48)	3.03 (6.38)	−5.72**	5.25 (9.10)	10.17 (12.71)	3.65 (6.89)	−3.33*
ASF composite[d]	3.61 (0.75)	2.90 (0.57)	3.87 (0.64)	9.50**	3.90 (0.79)	3.20 (0.72)	4.12 (0.67)	7.90**
Parent ratings								
SDQ hyperactivity[e]	3.89 (2.46)	5.65 (2.34)	3.25 (2.19)	−6.57**	—	—	—	—
SDQ peer problems[e]	1.53 (1.60)	2.08 (1.60)	1.34 (1.57)	−2.88*	—	—	—	—
Peer sociometric ratings[f]	4.01(0.53)	3.59 (0.58)	4.16 (0.42)	6.20**	3.87 (0.54)	3.99 (0.47)	3.53 (0.57)	5.57**

[a] *Independent samples t-tests were conducted to examine differences between target and non-target students.*
[b] *Total scores of teacher-reported inattention and hyperactivity/impulsivity symptoms with items rated on a 0–3 scale, where 0 = never, 3 = very often.*
[c] *Teachers estimated the percentage of classmates that "like and accept" and "dislike and reject" the child on the Dishion Social Acceptance Sale (DSAS; Dishion and Kavanagh, 2003).*
[d] *ASF composite was calculated by averaging the three ASF scales; each ASF scale averages score with items rated on a 1–5 scale, where 1 = never and 5 = almost always.*
[e] *Total scores of parent-reported hyperactivity symptoms and peer problems with items rated on a 0-2 scale, where 0 = not true, 2 = certainly true. Parent ratings were only obtained in fall.*
[f] *Average sociometric rating received from classmates on a 1–5 scale, where 1= dislike a lot and 5 = like a lot.*
*$p < 0.01$, **$p < 0.001$.

related to inclusiveness, before the activity begins (e.g., a teacher reminds the class before small group work that all members should be allowed to contribute). The purpose of this strategy was to encourage students to exhibit behavior that creates positive peer dynamics in the classroom environment. Any instance of the teacher reviewing expectations for inclusive behavior before an activity was counted here (ICC = 0.96, excellent).

Reinforcing Expectations for Inclusiveness

This strategy involved the teacher calling attention to a student exhibiting inclusive and prosocial behavior (e.g., a teacher tells a student "Thank you for helping your classmate clean up that mess!"). The purpose of this strategy was also to encourage student behavior that creates positive peer dynamics. Any instance of the teacher reinforcing inclusive or prosocial behavior was counted here (ICC = 0.97, excellent).

Highlighting Positive Attributes

This strategy involved a teacher calling peers' attention to persistent, positive qualities of a child that were related to the child's talent or character, and not to behavioral compliance (e.g., a teacher points out that a child is great at solving puzzles or telling jokes). The purpose of this strategy was to promote the idea that every child in the classroom is valued by the teacher, therefore creating more positive peer dynamics. Any instance of the teacher calling attention to a positive steadfast quality of a child in the presence of other children was counted here (ICC = 0.86, excellent).

CARE Time

This strategy involved the teacher providing a short amount of one-on-one quality time (3–5 min) to a student, where the teacher takes a positive interest in the student and what the student likes to do. Teachers were encouraged to provide time that was Child-centered, *A*ffirms the child, during which the teacher *R*eflects the child's feelings and behavior, and the teacher *E*njoys the child (i.e., CARE time). This technique was adapted to be used with elementary school students from one typically used with preschoolers (e.g., Banking Time; Driscoll and Pianta, 2010). The purpose of this strategy was to increase the teachers' personal liking of the student as well as to show that each child is valued, therefore increasing positive peer dynamics. The number of minutes that teachers conducted CARE time during the observation was counted (ICC = 0.99, excellent).

Discreet Corrections

This strategy involved the teacher providing corrective feedback on child misbehavior in a discreet manner when possible (e.g., a teacher calls a child aside and uses a low voice to inform the child to raise a hand to speak instead of blurting out). The purpose of discreet corrections is not to hide the corrections from peers (as they likely are aware of the teacher's intentions) but rather, to convey that the child should not be shamed for the behavior and that the teacher still respects and cares for the child. Each instance of the teacher correcting a child's behavior discreetly was counted here (ICC = 0.99, excellent).

Self-Reported Teacher Practices

In addition to observation of the above described MOSAIC strategies, teachers also completed nine surveys over the course of the academic year about their use of these same strategies. Teachers reported whether they used or did not use the strategies on the last full school day. To decrease teacher burden, only half of the seven strategies were assessed for each survey (i.e., each strategy was rated between four and five times across the nine total surveys sent out). Of the 12 teachers in the study,

seven completed all of the surveys and five completed all but one of the surveys. We calculated a proportion score reflecting the number of surveys in which the teacher reported using that strategy divided by the number of surveys in which the teacher was asked about that strategy.

Peer Sociometric Ratings

In the fall and spring, a sociometric procedure (Coie et al., 1982) was conducted with consented children. Research team members interviewed each consented child individually, in private, and provided a visual of the names and pictures of all consented children in the classroom to aid in recall. Children were asked to rate how much they liked each classmate on a scale from 1 to 5 (1 = *dislike a lot,* 5 = *like a lot*), while the research assistant checked for children's comprehension and recorded children's answers. Children were also provided a visual of a face that ranged from frowning to smiling to correspond with the ratings. This procedure has strong test-retest reliability over a 6-month period (Wasik, 1987). The average sociometric rating received from peers was computed for each child.

Academic Enablers

In the fall and spring, teachers rated children's academic enablers using three subscales (Motivation, Engagement, and Interpersonal Skills) of the Academic Competence Evaluation Scales–Short Form (ASF; Anthony and DiPerna, 2018). The ASF has strong psychometric properties including high internal consistency, and convergent and discriminant validity (Anthony and DiPerna, 2018; Owens et al., 2020a). Engagement (3 items) captures active class participation, Motivation (5 items) measures persistence on challenging academic tasks, and Interpersonal Skills (5 items) reflects appropriate communication skills in an academic context. For each item, teachers rated the frequency the child exhibits the academic enabler behavior on a scale from 1 to 5 (1 = *never*, 5 = *almost always*). The mean of all items was calculated for each child to produce a total academic enablers score. Internal consistency of the 13 items was excellent in both fall ($\alpha = 0.94$) and spring ($\alpha = 0.95$).

Data Reduction

Reports of MOSAIC strategy use from observations and teacher self-report were moderately positively correlated (range of 0.31–0.63). To reduce the number of analyses, a composite of observations and teacher self-report was created for each strategy. First, the strategy was converted to a z-score. Second, for each strategy, an average of the z-scores of the observations and teacher self-report was calculated. For the strategy of reinforcing expectations for behavior, teachers reported that they used this strategy 100% of the time so the observation z-score was used for this strategy.

Data Analytic Strategy

Of the 194 students, all had complete data on the MOSAIC strategies their teacher used, and their target status. However, one child was missing fall scores on academic enablers, seven were missing spring scores on academic enablers, 10 were missing sociometric ratings in the fall, and nine were missing sociometric ratings in the spring, leaving 178 children with complete data across all variables. Missing data were mostly due to a child joining the class after the fall measures were completed or leaving before the spring measures were completed. There were no significant differences between the children with vs. without complete data on target status, gender, race (dichotomized as White vs. non-White), or academic enablers at fall or spring. However, children with complete data received higher sociometric ratings in fall, $t_{(182)} = 2.45$, $p = 0.015$, and in spring, $t_{(183)} = 2.79$, $p = 0.006$, and were younger in age, $t_{(189)} = 2.34$, $p = 0.017$, compared to those with missing data. Missing data were handled using Full Information Maximum Likelihood (FIML) in all models.

The diagram of the model fitted for Aims 1, 2, and 3 is presented in **Figure 1**. We created seven models, one for each teacher MOSAIC strategy (reviewing expectations for behavior, reinforcing expectations for behavior, reviewing expectations for inclusiveness, reinforcing expectations for inclusiveness, highlighting positive attributes, CARE time, and discreet corrections). To test Aim 1, we examined the direct effect of the MOSAIC strategy on children's spring academic enablers, after statistical control of fall academic enablers and target student status (dummy coded as 0 = *non-target*, 1 = *target*). To test Aim 2, we examined the indirect effect of the MOSAIC strategy on spring academic enablers via spring sociometric ratings, after statistical control of fall academic enablers, fall sociometric ratings, and target student status. Finally, to test Aim 3 we added interaction effects to explore whether the direct effect of the MOSAIC strategy on academic enablers differed as a function of children's target vs. non-target status, and whether the indirect effect of the MOSAIC strategy on academic enablers via sociometric ratings differed as a function of children's target vs. non-target status (i.e., moderated mediation).

There is a nested structure within the data, where students (Level 1) are nested within classrooms (Level 2). We first tested Aim 1 using Multilevel Model (MLM) model in SAS for Windows Version 9.4, where we accounted for this nested structure. Then, to test Aims 2 and 3 we attempted to fit a Multilevel Structural Equation Model (MSEM) to the data using Mplus Version 8.4. However, MSEMs are difficult to fit and our models ran into a non-identification problem because we had more parameters to be estimated than the number of clusters. Therefore, Aims 2 and 3 were analyzed with Structural Equation Model (SEM) with Mplus Version 8.4 which does not account for the nested structure. The indirect effect in the mediation (Aim 2) and moderated mediation (Aim 3) analyses were produced using bootstrapping with 10000 subsamples drawn. All variables were grand-mean centered, in line with recommendations from Enders and Tofighi (2007) for analyses testing the main effects of a Level 2 predictor on a Level 1 outcome (Aim 1), and because the tests of Aims 2 and 3 did not incorporate nesting.

RESULTS

Descriptive Statistics

On average, students received high sociometric ratings (M = 4.01 in fall, 3.87 in spring; possible range of scores = 1–5) and high ratings of academic enablers (M = 3.61 in fall, 3.90

TABLE 3 | Summary of analyses for Aims 1 and 2.

	Reviewing expectations for behavior	Reinforcing expectations for behavior	Reviewing expectations for inclusiveness	Reinforcing expectations for inclusiveness	Highlighting positive attributes	CARE time	Discreet corrections
AIM 1: DIRECT EFFECTS OF TEACHER STRATEGIES ON ACADEMIC ENABLERS							
DV: Spring academic enablers							
Fall academic enablers	**0.84 (0.05)*** **	**0.85 (0.05)*** **	**0.85 (0.05)*** **	**0.84 (0.05)*** **	**0.85 (0.05)*** **	**0.84 (0.05)*** **	**0.85 (0.05)*** **
Student target status	−0.05 (0.09)	−0.04 (0.09)	−0.04 (0.09)	−0.05 (0.09)	−0.05 (0.09)	−0.05 (0.09)	−0.04 (0.09)
Teacher practice	0.15 (0.09)	−0.07 (0.08)	−0.01 (0.09)	0.03 (0.09)	0.12 (0.10)	**0.19 (0.09)***	−0.11 (0.10)
AIM 2: INDIRECT EFFECTS OF SOCIOMETRIC RATINGS ON ASSOCIATIONS IN AIM 1							
DV: Spring sociometric ratings							
Fall sociometric ratings	**0.70 (0.06)*** **	**0.72 (0.06)*** **	**0.72 (0.06)*** **	**0.71 (0.06)*** **	**0.69 (0.06)*** **	**0.69 (0.07)*** **	**0.73 (0.06)*** **
Student target status	−0.08 (0.07)	−0.07 (0.07)	−0.07 (0.07)	−0.07 (0.07)	−0.09 (0.08)	−0.09 (0.08)	−0.06 (0.08)
Teacher practice	0.06 (0.03)$^{+}$	−0.01 (0.03)	−0.01 (0.03)	0.04 (0.03)	**0.10 (0.04)** **	**0.08 (0.04)***	−0.04 (0.04)
DV: Spring academic enablers							
Fall academic enablers	**0.68 (0.07)*** **	**0.69 (0.07)*** **	**0.68 (0.07)*** **	**0.68 (0.07)*** **	**0.70 (0.07)*** **	**0.73 (0.07)*** **	**0.70 (0.08)*** **
Fall sociometric ratings	−0.02 (0.11)	0.02 (0.11)	<0.01 (0.11)	−<0.01 (0.11)	−0.01 (0.11)	−0.04 (0.10)	0.03 (0.11)
Student target status	−0.16 (0.11)	−0.12 (0.11)	−0.13 (0.11)	−0.14 (0.11)	−0.14 (0.11)	−0.14 (0.10)	−0.11 (0.11)
Spring sociometric ratings	0.22 (0.12)$^{+}$	**0.24 (0.11)***	**0.25 (0.12)***	**0.25 (0.12)***	0.21 (0.12)$^{+}$	0.18 (0.11)	0.22 (0.12)$^{+}$
Teacher practice	**0.14 (0.05)** **	−0.06 (0.03)$^{+}$	−<0.01 (0.04)	0.02 (0.04)	**0.09 (0.04)***	**0.19 (0.05)*** **	**−0.10 (0.04)***
Indirect effect of teacher strategies on spring academic enablers	0.013 (−0.003, 0.040)	−0.002 (−0.021, 0.014)	−0.002 (−0.019, 0.016)	0.009 (−0.006, 0.030)	0.022 (−0.002, 0.060)	0.014 (−0.002, 0.052)	−0.009 (−0.035, 0.009)

DV, dependent variable.

All significant effects are bolded. Indirect effects were obtained from bootstrapping; therefore, the significance was inferred from the confidence interval.

$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

in spring; possible range of scores = 1–5). Sociometric ratings in the fall and spring were negatively skewed (skewness = −0.81 in fall, −0.68 in spring). All variables were examined for outliers using absolute deviation around the median technique (Leys et al., 2013). The variables of fall and spring sociometric ratings, and spring academic enablers, had outliers at the lower end as determined by this method (seven for fall sociometric ratings, nine for spring sociometric ratings, and one for spring academic enablers). However, the outlier cases were examined and they did not appear to result from a data entry or calculation error. Additionally, the majority of the outliers were target student cases. Considering that classrooms have a wide range of students and target students (selected for elevated ADHD symptoms and peer problems) are likely to fall on the lower end of the class distribution in social and academic functioning, these cases were included. The teacher variables representing teachers' use of CARE time, highlighting positive attributes, and reinforcing expectations for behavior were positively skewed, whereas discreet corrections was negatively skewed. As there were only 12 teachers, these teacher variables were not assessed for the presence of outliers.

All student variables were significantly and positively correlated at the bivariate level ($p < 0.01$; $r = 0.52$–0.78). The following MOSAIC strategies were significantly and positively correlated ($p < 0.05$): CARE time with highlighting positive attributes ($r = 0.75$), reinforcing expectations for behavior with discreet corrections ($r = 0.67$), and reinforcing expectations for inclusiveness with reviewing expectations for behavior ($r = 0.71$). However, as there were only 12 teachers in this sample, a lack of significant correlation between other MOSAIC strategies should be interpreted cautiously.

Direct Effects of MOSAIC Strategies on Academic Enablers

For Aim 1, results showed that teachers' use of CARE time ($\beta = 0.19$, $p = 0.029$) was positively associated with spring academic enablers, after controlling for fall academic enablers and target student status (see **Table 3**). The MOSAIC strategies were z-scored, and the outcome of academic enablers reflected the average (from 1 to 5) of the ratings of each academic enabler item. Therefore, the beta weights indicate that a 1 *SD* increase in teachers' use of CARE time was associated with increases of 0.19 in spring academic enabler mean scores. The other teacher practices were not significantly associated with spring academic enablers (all *p*s > 0.10), after accounting for fall academic enablers.

Indirect Effects of MOSAIC Strategies on Academic Enablers via Sociometric Ratings

As seen in **Table 3**, there were no significant indirect effects between teacher strategy use and spring academic enablers, as mediated by spring sociometric ratings (Aim 2). In these mediational models, the direct effects of reviewing expectations for behavior ($\beta = 0.14$, $p = 0.007$), highlighting positive attributes ($\beta = 0.09$, $p = 0.046$), CARE time ($\beta = 0.19$, $p < 0.001$), and discreet corrections ($\beta = -0.10$, $p = 0.015$) to spring academic enablers were significant. Because the analyses of direct

TABLE 4 | Summary of analyses for Aim 3.

	Reviewing expectations for behavior	Reinforcing expectations for behavior	Reviewing expectations for inclusiveness	Reinforcing expectations for inclusiveness	Highlighting positive attributes	CARE time	Discreet corrections
AIM 3: MODERATION OF THE PATHWAYS IN AIMS 1 AND 2 BY TARGET STUDENT STATUS							
DV: Spring sociometric ratings							
Fall sociometric ratings	**0.70 (0.06)*** **	**0.72 (0.06)*** **	**0.72 (0.06)*** **	**0.71 (0.06)*** **	**0.71 (0.06)*** **	**0.70 (0.07)*** **	**0.74 (0.06)*** **
Teacher practice	0.05 (0.04)	−0.04 (0.03)	<0.01 (0.04)	0.04 (0.04)	**0.17 (0.04)*** **	**0.13 (0.04)** **	**−0.11 (0.04)** **
Target status	−0.08 (0.08)	−0.06 (0.07)	−0.06 (0.07)	−0.07 (0.07)	−0.08 (0.07)	−0.08 (0.08)	−0.06 (0.07)
Teacher practice X target status	0.06 (0.07)	**0.12 (0.06)***	−0.04 (0.07)	−<0.01 (0.07)	**−0.23 (0.08)** **	**−0.21 (0.09)***	**0.21 (0.08)***
DV: Spring academic enablers							
Fall academic enablers	**0.68 (0.07)*** **	**0.69 (0.07)*** **	**0.68 (0.07)*** **			**0.74 (0.07)*** **	**0.70 (0.08)*** **
Fall sociometric ratings	−0.02 (0.11)	0.02 (0.11)	(0.11)	**0.67 (0.07)*** **	**0.70 (0.07)*** **	−0.05 (0.11)	0.05 (0.11)
Spring sociometric ratings	0.22 (0.12)$^{+}$	**0.24 (0.11)***	**0.24 (0.12)***	<0.01 (0.11)	−0.01 (0.11)	0.19 (0.11)$^{+}$	0.21 (0.12)$^{+}$
Teacher practice	**0.16 (0.06)** **	−0.06 (0.04)$^{+}$	(0.04)	**0.25 (0.12)***	0.21 (0.13)$^{+}$	**0.17 (0.06)** **	**−0.12 (0.05)***
Target status	−0.16 (0.11)	−0.12 (0.11)	−0.13 (0.11)	(0.05)	0.09 (0.05)	−0.14 (0.10)	−0.10 (0.11)
Teacher practice X target status	−0.07 (0.12)	0.02 (0.06)	−0.05 (0.10)	−0.14 (0.11)	−0.14 (0.11)	0.05 (0.11)	0.06 (0.09)
				−0.05 (0.10)	<0.01 (0.09)		
Indirect Effect of Teacher Strategies on Spring Academic Enablers							
For target status = 0	0.010 (−0.009, 0.036)	−0.009 (−0.033, 0.006)	(−0.018, 0.021) −0.009	0.009 (−0.010, 0.033)	0.036 (−0.005, 0.089)	0.024 (−0.003, 0.071)	−0.022 (−0.060, 0.003)
For target status = 1	0.022 (−0.005, 0.076)	0.020 (−0.013, 0.059)	(−0.052, 0.027)	0.008 (−0.023, 0.049)	−0.014 (−0.063, 0.020)	−0.014 (−0.061, 0.021)	0.020 (−0.010, 0.074)

DV, dependent variable.

All significant effects are bolded. Indirect effects were obtained from bootstrapping; therefore, the significance was inferred from the confidence interval.

$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

effects in Aim 1 account for nesting, we base our interpretation of direct effects of teacher practices on academic enablers on the results from Aim 1 rather than Aim 2.

Moderation by Target Status

Table 4 contains the results testing Aim 3. In the full model (see **Figure 1**), target student status was not found to moderate the direct effects of MOSAIC strategies on spring academic enablers, nor the indirect effect of MOSAIC strategies on spring academic enablers, via spring sociometric ratings. As a replication of our previous findings, target status moderated the direct effects of some strategies on sociometric ratings (see Mikami et al., 2020 for discussion of those results). Similar to as in Aim 2, the direct effects of reviewing expectations for behavior ($\beta = 0.16$, $p = 0.004$), CARE time ($\beta = 0.17$, $p = 0.002$), and discreet corrections ($\beta = -0.12$, $p = 0.018$) to spring academic enablers were significant.

DISCUSSION

The current pilot study explored specific teacher practices that may be associated with improvement in children's academic enablers, whether any such associations operate via the indirect effect of better sociometric ratings, and the extent to which the findings may be similar for children at risk for ADHD relative to their classmates. These teacher practices were suggested in previous work (Mikami et al., 2020) to be associated with children receiving better sociometric ratings from their classroom peers. With the current analyses we attempted to determine whether the suggested benefits of any of these teacher practices might also extend to academic outcomes. Our goal was to better understand the complex associations between teacher practices, classroom peer dynamics, and student academic functioning, and also to identify potentially unique or previously undiscovered teacher practices that have the promise of shaping both peer dynamics and academic enablers. In partial support of our hypotheses, teacher use of the MOSAIC strategy of CARE time was positively associated with children having better academic enablers in spring, after accounting for fall levels of academic enablers. However, we did not find support for the hypothesized indirect effects of sociometric ratings on academic enablers, or for moderation by target student status on any of the above relationships. Below we interpret our pattern of findings and discuss the implications of the lack of significant findings for future research.

Teacher Practices and Academic Enablers

Greater teacher use of CARE time was associated with children having better academic enablers in spring after adjusting for fall enablers. The positive association for CARE time is consistent with the Banking Time intervention literature (Driscoll and Pianta, 2010) that shows that teacher use of this strategy is associated with teacher-reported improvements in student task persistence, engagement, and participation. In our previous analyses (Mikami et al., 2020), we found that greater use of CARE time was also significantly associated with students receiving higher peer sociometric ratings. Collectively, these findings, coupled with the literature, suggest that spending one-on-one time where the teacher shows interest in students may have positive impacts on student academic, behavioral, and social

functioning. Given its impact on multiple domains of student functioning, teacher use of this practice could be considered high priority in pre-service and in-service professional development training and consultation, and research on potential mechanisms of action should continue.

Interestingly, the other teacher strategies (i.e., highlighting positive attributes, reviewing and reinforcing expectations for behavior, reviewing and reinforcing expectations for inclusiveness, and discreet corrections) were not significantly associated with improvement in academic enablers. In our previous analysis of these data (Mikami et al., 2020), we found the greater teacher use of highlighting positive attributes, reviewing expectations for behavior, and reinforcing expectations for inclusiveness, were significantly associated with students receiving higher peer sociometric ratings. These strategies are also thought to enhance student motivation, participation, and engagement through fostering positive teacher-student relationships and encouraging adaptive classroom behaviors. For example, reviewing expectations for behavior is an evidence-based classroom management strategy (Simonsen et al., 2008), and is particularly useful for students at risk for ADHD (Epstein et al., 2008). Moreover, highlighting students' strengths could make students feel more welcome in the teacher's classroom and more motivated and supported to persist in challenging tasks. However, in the current study, the use of these strategies was not positively associated with spring academic enablers as expected. We have considered multiple explanations for this null finding. First, other practices, such as teacher instructional strategies (e.g., critical thinking and problem-solving tasks, variety in academic work) have a powerful impact on academic enablers (Greenwood et al., 2002; Lekwa et al., 2019). It is possible that MOSAIC teachers were also using instructional strategies (that we did not measure) that directly targeted academic enablers, and these strategies exerted a stronger influence than did the MOSAIC strategies. In this context, the unique impact of MOSAIC strategies may not be detectable. Second, academic enablers skills were fairly high in the fall, leaving little room for improvement.

Another possibility is that our measurement approach may have limited our ability to detect the intended effects. Namely, we isolated strategies at the micro-level to enhance our ability to reliably measure each teacher strategy; however, these micro-level strategies may be necessary but insufficient to alter, or to predict change in, academic enablers[1]. For example, recent studies have found that (a) teachers' appropriate response to student rule violations (e.g., verbal or non-verbal behaviors accompanied by appropriate tone, affect, intensity, and pitch) was more predictive of rates of student disruptive behavior than was the use of effective instructions or reinforcing expectations (Owens et al., 2018), and (b) that the relationship between use of appropriate response to rule violations and lower disruptive behavior became stronger over time for both target students and other students (Owens et al., 2020b). Thus, although reinforcing rules, which is a MOSAIC strategy, is a critical component of classroom management, this practice may only be sufficient in addressing student behavior and enablers when coupled with appropriate responses to rule violation. In the MOSAIC trial, we did not measure appropriate responses to rule violations as described above; if we had, perhaps we would have found a greater association between teacher practices and academic enablers.

Lastly, it is possible that we did not have the sample size to detect the impact of these strategies on academic enablers. Namely, even among the effects that were significant, the magnitude of these effects is rather modest. Thus, in a dynamic classroom context where multiple factors and their interactions are predicting student outcomes (Kyriakides et al., 2013; Steinbrenner and Watson, 2015), and because we statistically controlled for fall academic enabler skills in data analyses, MOSAIC strategies may only account for a small proportion of variance in spring academic enablers.

Indirect Effects of Peer Dynamics

We did not find support for the hypothesized indirect effects of sociometric ratings on the relationship between teacher strategies and academic enablers. In the context of the lack of findings, it is prudent to consider limitations in research design and measurement, as well as possible modification to the theory of change. With regard to design and measurement, there are many lessons learned from this pilot project that can inform future research. First, we are assessing multiple complex constructs within a dynamic ecological system. Thus, in order to detect the effects of interest, future researchers may need a significantly larger sample of teachers and more distinct and more frequent measurement periods (e.g., enablers measured in the fall and spring, sociometric ratings assessed in the winter, and rates of teacher strategy use prior to each of these time periods). We had a sample of 12 teachers which may have prevented the MSEMs from converging. A larger sample of teachers and a more distinct temporal sequence of the predictor, mediator, and outcome variables would likely allow for model converge and tests of mediation effects. Similarly, although there is evidence that peer dynamics can affect academic achievement within one school year (e.g., DeLay et al., 2016; Mikami et al., 2017), it may take longer than a year to detect the indirect effects of peer dynamics on a pathway between teacher practices to academic enablers.

Second, as described above, future researchers should consider the level of measurement of teacher practices. It is possible that capturing both a "global" indicator of effective teaching, in addition to micro-level indicators of strategy use, would allow for greater detection of effects of teacher behavior on student outcomes. For example, a highly effective teacher may use both specific MOSAIC strategies and other general strategies (e.g., an overall sensitive approach to understanding and incorporating students' unique emotional and learning needs into instructional practice; an organized classroom that runs like a well-oiled and productive machine) that together, contribute to students' social and academic functioning. Yet the measurement approach used in this study could not capture this global effectiveness factor. In future studies, researchers should consider assessing both micro-skills and more comprehensive indicators of classroom success,

[1]We note that we also explored a composite variable representing each teacher's use of all MOSAIC strategies. However, none of the results changed when using this variable.

such as those assessed by the Classroom Assessment Scoring System (CLASS; Pianta et al., 2008).

Third, it is important to consider the overlap that may exist among the constructs assessed in this study. For example, one of the key academic enablers is interpersonal skills, which is the ability to communicate effectively and cooperate with peers on academic tasks. There is likely shared variance between this academic enabler and sociometric ratings. This shared variance might have contributed to the challenges we experienced when fitting the MSEM models. Thus, in future studies, researchers may need to consider examining indicators of academic performance that have less conceptual overlap with the variables assessing peer dynamics. Lastly, it is possible that the hypothesized pathways in this study are best detected early in the student's educational career (e.g., Kindergarten) before social reputations become intractable.

As we are learning more about the outcomes of the program (Mikami et al. under review), it may be fruitful to consider prioritizing fewer strategies (e.g., CARE time) and increase the use of strategies designed to shift peer sociometric judgments directly rather than indirectly via teacher modeling. Strategies that directly impact peer relationships include strategic seating, peer tutoring, cooperative learning tasks, use of direct peer compliments, and peer problem-solving skills (e.g., Van den Berg and Stoltz, 2018). Although some of these are included in the MOSAIC program (e.g., cooperative learning tasks, peer compliments), they are introduced to teachers later in the year (i.e., in the third of three phases, so as not to overwhelm teachers with multiple strategies and to account for the developmental progression of teacher and peer relationships over the course of the year) and were not prioritized with teachers in the current study. Future iterations of the MOSAIC program could examine the utility of applying these strategies earlier in the year to enhance their dose and potency.

Moderation by Target Status

The associations between teacher strategies and academic enablers were not moderated by target student status. This was the case for both the direct effects of teacher practices on academic enablers, and the indirect effects of sociometric ratings on the relationship between teacher strategies and academic enablers. These findings suggest that CARE time may be effective for all students' academic enablers as a direct effect, possibly rendering them valuable strategies that teachers can apply universally to all students in the classroom. On the other hand, the indirect effects of sociometric ratings on improvements in academic enablers did not seem to appear, regardless of students' target or non-target status. Future research with larger and more homogeneous samples (e.g., students who meet diagnostic criteria for ADHD and who have significant deficits in academic functioning) may be warranted to detect if there are differential benefits for subgroups of students in the classroom.

Strengths and Limitations

Study strengths include (a) use of a short-term longitudinal design across one school year, (b) a multi-informant, multi-method approach to measurement of both teacher practices and student outcomes to obtain good separation of method variance, (c) the controlling of fall academic enabler scores when predicting spring academic enabler scores, and (d) a two-site study that enhanced diversity of the sample and generalizability of our findings.

However, there are several limitations that are consistent with the pilot nature of the current study, including a small sample of teachers and the assessment of a limited number of teacher practices. The lack of assessment of the amount of teacher strategies specifically directed toward target vs. non-target students is another limitation. Had we found a moderating effect, we could not be certain if the effects were a function of target student status (i.e., ADHD symptoms and peer problems), or occurred because these students received higher doses of the MOSAIC practices. This limitation is being addressed in our current randomized clinical trial of the MOSAIC program.

In addition, our testing of Aims 2 and 3 did not account for the nested structure of students in classrooms. We understand that not accounting for nesting may provide biased estimates of standard errors, because it is ignoring interdependence among participants within a cluster. Of concern, it is more likely that the standard errors will be underestimated; that is, one may find a significant result without nesting that would be non-significant once nesting occurred (Osborne, 2000). In the current study, we find it notable that the hypotheses for Aims 2 and 3 were not supported in the non-nested data analyses. Therefore, we suspect that they would also not be supported if we had tested them using a nested structure.

Other limitations are that the target students were at risk for ADHD but we do not know if results can be extrapolated to children with confirmed ADHD diagnoses in the general education classroom. Lastly, we only measured three academic enablers (i.e., we did not include a measure of the academic enabler of study skills); different patterns may be detected with other academic enablers.

CONCLUSIONS AND IMPLICATIONS

Our results suggest that specific teacher strategies designed to influence relationships (i.e., CARE time) hold some promise for improving student academic enablers from fall to spring. Although the magnitude of this effect may be small, this strategy should be considered a priority in both research and practice arenas, as this study and others collectively suggest the utility of this strategy on children's social, behavioral, and academic outcomes (Driscoll and Pianta, 2010; Mikami et al., 2020). Our findings also highlight the challenges of documenting the impact of teacher practices on social and academic outcomes, as well as the mechanisms through which these practices are operating to produce changes. It is recommended that researchers examine these relationships by recruiting a larger sample of teachers; comprehensively assessing teacher use of strategies (at micro- and macro-levels) and their use directed toward target vs. non-target students; and including multiple measurement periods (perhaps over multi-year periods) to establish the temporal sequence

for mediation analyses. Given that multiple strategies may be required to develop a comprehensive approach that improves children's classroom functioning, it is recommended that teachers work collaboratively with behavioral consultants or school psychologists to determine the best combination for each classroom based on student needs and characteristics.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Institutional Review Board, Ohio University, Institutional Review Board, University of British Columbia, and reviews boards in all participating school districts. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

ML contributed to the conceptualization of the paper. HQ contributed to writing the Introduction and Discussion sections and was responsible for the references section. LH conducted all statistical analyses, prepared all tables and figures, and contributed to the writing of the results section. All authors contributed to the article and approved the submitted version.

FUNDING

The research was supported by the Institute of Education Sciences, U.S. Department of Education (R324A160053). The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

REFERENCES

Anthony, C. J., and DiPerna, J. C. (2018). Piloting a short form of the academic competence evaluation scales. *School Mental Health* 10, 314–321. doi: 10.1007/s12310-018-9254-7

Bacete, F. J. G., Marande, G., and Mikami, A. Y. (2019). Evaluation of a multi-component and multi-agent intervention to improve classroom social relationships among early elementary school-age children. *J. School Psychol.* 77, 124–138. doi: 10.1016/j.jsp.2019.09.001

Boivin, M., and Hymel, S. (1997). Peer experiences and social self-perceptions: a sequential model. *Dev. Psychol.* 33, 135–145. doi: 10.1037/0012-1649.33.1.135

Borghans, L., Duckworth, A. L., Heckman, J. J., and ter Weel, B. (2008). The economics and psychology of personality traits. *J. Human Resources* 43, 972–1059. doi: 10.3386/w13810

Brey, E., and Shutts, K. (2018). Children use nonverbal cues from an adult to evaluate peers. *J. Cogn. Dev.* 19, 121–136. doi: 10.1080/15248372.2018.1449749

Buhs, E. S., and Ladd, G. W. (2001). Peer rejection as antecedent of young children's school adjustment: an examination of mediating processes. *Dev. Psychol.* 37, 550–560. doi: 10.1037/0012-1649.37.4.550

Buhs, E. S., Ladd, G. W., and Herald, S. L. (2006). Peer exclusion and victimization: processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? *J. Educat. Psychol.* 98, 1–13. doi: 10.1037/0022-0663.98.1.1

Chang, L., Liu, H., Fung, K. Y., Wang, Y., Wen, Z., Li, H., et al. (2007). The mediating and moderating effects of teacher preference on the relations between students' social behaviors and peer acceptance. *Merrill-Palmer Quarterly* 53, 603–630. doi: 10.1353/mpq.2008.0006

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychol. Assessment* 6, 284–290. doi: 10.1037/1040-3590.6.4.284

Coie, J. D., Dodge, K. A., and Coppotelli, H. (1982). Dimensions and types of social status: a cross-age perspective. *Dev. Psychol.* 18, 557–570. doi: 10.1037/0012-1649.18.4.557

DeLay, D., Zhang, L., Hanish, L. D., Miller, C. F., Fabes, R. A., Martin, C. L., et al. (2016). Peer influence on academic performance: a social network analysis of social-emotional intervention effects. *Prevent. Sci.* 17, 903–913. doi: 10.1007/s11121-016-0678-8

DiPerna, J. C., and Elliott, S. N. (2002). Promoting academic enablers to improve student achievement: an introduction to the mini-series. *School Psychol. Rev.* 31, 293–297. doi: 10.1080/02796015.2002.12086156

DiPerna, J. C., Volpe, R. J., and Elliott, S. N. (2002). A model of academic enablers and elementary reading/language arts achievement. *School Psychol. Rev.* 31, 298–312. doi: 10.1080/02796015.2002.12086157

Dishion, T. J., and Kavanagh, K. (2003). *Intervening in Adolescent Problem Behavior: A Family-Centered Approach*. New York, NY: The Guilford Press.

Driscoll, K. C., and Pianta, R. C. (2010). Banking time in head start: early efficacy of an intervention designed to promote supportive teacher-child relationships. *Early Education Dev.* 21, 38–64. doi: 10.1080/10409280802657449

DuPaul, G. J., Power, T. J., Anastopoulos, A. D., and Reid, R. (2016). ADHD rating scale-5 for children and adolescents: checklists, norms, and clinical interpretation. *Guilford Publications*. doi: 10.1037/t05638-000

Enders, C. K., and Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: a new look at an old issue. *Psychol. Methods* 12, 121–138. doi: 10.1037/1082-989X.12.2.121

Epstein, M., Atkins, M., Cullinan, D., Kutash, K., and Weaver, K. (2008). "Reducing behavior problems in the elementary school classroom," in *IES Practice Guide. (NCEE 2008-012)*. U.S. Department of Education, National Center for Education Statistics (Washington, DC: U.S. Government Printing Office). doi: 10.1037/e602222011-001

Evans, S. W., Owens, J. S., Wymbs, B. T., and Ray, A. R. (2018). Evidence-based psychosocial treatments for children and adolescents with attention-deficit/hyperactivity disorder. *J. Clin. Child Adolescent Psychol.* 47, 157–198. doi: 10.1080/15374416.2017.1390757

Farmer, T. W., Lines, M. M., and Hamm, J. V. (2011). Revealing the invisible hand: The role of teachers in children's peer experiences. *J. Appl. Dev. Psychol.* 32, 247–256. doi: 10.1016/j.appdev.2011.04.006

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., et al. (2012). *Teaching Adolescents to Become Learners: The Role of Noncognitive Factors in Shaping School Performance - A Critical Literature Review*. University of Chicago, Consortium on Chicago School Research.

Gardner, D. M., and Gerdes, A. C. (2015). A review of peer relationships and friendships in youth with ADHD. *J. Attention Disord.* 19, 844–855. doi: 10.1177/1087054713501552

Goodman, R. (1997). The strengths and difficulties questionnaire: a research note. *J. Child Psychol. Psychiatr.* 38, 581–586. doi: 10.1111/j.1469-7610.1997.tb01545.x

Greene, R. W., Beszterczey, S. K., Katzenstein, T., Park, K., and Goring, J. (2002). Are students with ADHD more stressful to teach? Patterns of teacher stress in an elementary school sample. *J. Emotional Behav. Disord.* 10, 79–89. doi: 10.1177/10634266020100020201

Greenwood, C. R., Horton, B. T., and Utley, C. A. (2002). Academic engagement: current perspectives on research and practice. *School Psychol. Rev.* 31, 328–349. doi: 10.1080/02796015.2002.12086159

Hamre, B. K., and Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Dev.* 72, 625–638. doi: 10.1111/1467-8624.00301

Harrist, A. W., and Bradley, K. D. (2003). "You can't say you can't play": Intervening in the process of social exclusion in the kindergarten classroom. *Early Childhood Res. Quarterly* 18, 185–205. doi: 10.1016/S0885-2006(03)00024-3

Hoza, B., Gerdes, A. C., Mrug, S., Hinshaw, S. P., Bukowski, W. M., Gold, J. A., et al. (2005). Peer-assessed outcomes in the multimodal treatment study of children with attention deficit hyperactivity disorder. *J. Clin. Child Adolescent Psychol.* 34, 74–86. doi: 10.1207/s15374424jccp3401_7

Hughes, J. N., Cavell, T. A., and Willson, V. (2001). Further support for the developmental significance of the quality of the teacher-student relationship. *J. School Psychol.* 39, 289–301. doi: 10.1016/S0022-4405(01)00074-7

Hughes, J. N., and Chen, Q. (2011). Reciprocal effects of student-teacher and student-peer relatedness: effects on academic self efficacy. *J. Appl. Dev. Psychol.* 32, 278–287. doi: 10.1016/j.appdev.2010.03.005

Hughes, J. N., and Kwok, O. (2006). Classroom engagement mediates the effect of teacher-student support on elementary students' peer acceptance: a prospective analysis. *J. School Psychol.* 43, 465–480. doi: 10.1016/j.jsp.2005.10.001

Iyer, R. V., Kochenderfer-Ladd, B., Eisenberg, N., and Thompson, M. (2010). Peer victimization and effortful control: Relations to school engagement and academic achievement. *Merrill-Palmer Quarterly* 56, 361–387. doi: 10.1353/mpq.0.0058

Jenkins, L. N., Floress, M. T., and Reinke, W. (2015). Rates and types of teacher praise: a review and future directions. *Psychol. Schools* 52, 463–476. doi: 10.1002/pits.21835

Kyriakides, L., Christoforou, C., and Charalambous, C. Y. (2013). What matters for student learning outcomes: a Meta-analysis of studies exploring factors of effective teaching. *Teach. Teach. Educat.* 36, 143–152. doi: 10.1016/j.tate.2013.07.010

Ladd, G. W., and Burgess, K. B. (2001). Do relational risks and protective factors moderate the linkages between childhood aggression and early psychological and school adjustment? *Child Dev.* 72, 1579–1601. doi: 10.1111/1467-8624.00366

Ladd, G. W., Herald-Brown, S. L., and Reiser, M. (2008). Does chronic classroom peer rejection predict the development of children's classroom participation during the grade school years? *Child Dev.* 79, 1001–1015. doi: 10.1111/j.1467-8624.2008.01172.x

Lekwa, A. J., Reddy, L. A., and Shernoff, E. S. (2019). Measuring teacher practices and student academic engagement: a convergent validity study. *School Psychol.* 34:109. doi: 10.1037/spq0000268

Leys, C., Ley, C., Klein, O., Bernard, P., and Licata, L. (2013). Detecting outliers: do not use standard deviation around the mean, use absolute deviation around the median. *J. Exp. Social Psychol.* 49, 764–766. doi: 10.1016/j.jesp.2013.03.013

Loe, I. M., and Feldman, H. M. (2007). Academic and educational outcomes of children with ADHD. *J. Pediatr. Psychol.* 32, 643–654. doi: 10.1093/jpepsy/jsl054

Mikami, A. Y., Griggs, M. S., Lerner, M. D., Emeh, C. C., Reuland, M. M., Jack, A., et al. (2013a). A randomized trial of a classroom intervention to increase peers' social inclusion of children with attention-deficit/hyperactivity disorder. *J. Consult. Clin. Psychol.* 81, 100–112. doi: 10.1037/a0029654

Mikami, A. Y., and Hinshaw, S. P. (2006). Resilient adolescent adjustment among girls: Buffers of childhood peer rejection and attention-deficit/hyperactivity disorder. *J. Abnormal Child Psychol.* 34, 825–839. doi: 10.1007/s10802-006-9062-7

Mikami, A. Y., Lerner, M. D., and Lun, J. (2010). Social context influences on children's rejection by their peers. *Child Dev. Perspect.* 4, 123–130. doi: 10.1111/j.1750-8606.2010.00130.x

Mikami, A. Y., and Normand, S. (2015). The importance of social contextual factors in peer relationships of children with ADHD. *Curr. Dev. Disord. Rep.* 2, 30–37. doi: 10.1007/s40474-014-0036-0

Mikami, A. Y., Owens, J. S., Hudec, K. L., Kassab, H., and Evans, S. W. (2020). Classroom strategies designed to reduce child problem behavior and increase peer inclusiveness: does teacher use predict students' sociometric ratings? *School Mental Health* 12, 250–264. doi: 10.1007/s12310-019-09352-y

Mikami, A. Y., Reuland, M. M., Griggs, M. S., and Jia, M. (2013b). Collateral effects of a peer relationship intervention for children with attention deficit hyperactivity disorder on typically developing classmates. *School Psychol. Rev.* 42, 458–476. doi: 10.1080/02796015.2013.12087466

Mikami, A. Y., Ruzek, E. A., Hafen, C. A., Gregory, A., and Allen, J. P. (2017). Perceptions of relatedness with classroom peers promote adolescents' behavioral engagement and achievement in secondary school. *J. Youth Adolescence* 46, 2341–2354. doi: 10.1007/s10964-017-0724-2

Osborne, J. W. (2000). Advantages of hierarchical linear modeling. *Pract. Assess. Res. Eval.* 7, 1–4. doi: 10.7275/pmgn-zx89

Owens, J. S., Allan, D. M., Kassab, H., and Mikami, A. Y. (2020a). Evaluating a short form of the academic competence evaluation scales: expanded examination of psychometric properties. *School Mental Health* 12, 38–52. doi: 10.1007/s12310-019-09347-9

Owens, J. S., Evans, S. W., Coles, E. K., Holdaway, A. S., Himawan, L. K., Mixon, C. S., et al. (2020b). Consultation for classroom management and targeted interventions: examining benchmarks for teacher practices that produce desired change in student behavior. *J. Emotional Behav. Disord.* 28, 52–64. doi: 10.1177/1063426618795440

Owens, J. S., Holdaway, A. S., Smith, J., Evans, S. W., Himawan, L. K., Coles, E. K., et al. (2018). Rates of common classroom behavior management strategies and their associations with challenging student behavior in elementary school. *J. Emotional Behav. Disord.* 26, 156–169. doi: 10.1177/1063426617712501

Pfiffner, L. J., Rooney, M., Haack, L., Villodas, M., Delucchi, K., and McBurnett, K. (2016). A randomized controlled trial of a school-implemented school–home intervention for attention-deficit/hyperactivity disorder symptoms and impairment. *J. Am. Acad. Child Adolescent Psychiatr.* 55, 762–770. doi: 10.1016/j.jaac.2016.05.023

Pianta, R. C., La Paro, K. M., and Hamre, B. K. (2008). *Classroom Assessment Scoring SystemTM: Manual K-3.* Paul H Brookes Publishing.

Robinson, K., and Mueller, A. S. (2014). Behavioral engagement in learning and math achievement over kindergarten: a contextual analysis. *Am. J. Educat.* 120, 325–349. doi: 10.1086/675530

Roorda, D. L., Jak, S., Zee, M., Oort, F. J., and Koomen, H. M. Y. (2017). Affective teacher–student relationships and students' engagement and achievement: a meta-analytic update and test of the mediating role of engagement. *School Psychol. Rev.* 46, 239–261. doi: 10.17105/SPR-2017-0035.V46-3

Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., and Oort, F. J. (2011). The influence of affective teacher-student relationships on students' school engagement and achievement: a meta-analytic approach. *Rev. Educat. Res.* 81, 493–529. doi: 10.3102/0034654311421793

Sandstrom, M. J., Deutz, M. H. F., Lansu, T. A. M., van Noorden, T. H. J., Karremans, J. C., and Cillessen, A. H. N. (2017). Unanimous versus partial rejection: How the number of excluders influences the impact of ostracism in children. *Aggressive Behav.* 43, 190–203. doi: 10.1002/ab.21674

Sette, S., Gasser, L., and Grütter, J. (2020). Links between teachers' liking of students, peer inclusion, and students' academic achievement: a two-wave longitudinal study. *J. Youth Adolescence* 49, 747–756. doi: 10.1007/s10964-019-01048-5

Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., and Sugai, G. (2008). Evidence-based practices in classroom management: considerations for research to practice. *Educat. Treatment Child.* 31, 351–380. doi: 10.1353/etc.0.0007

Steinbrenner, J. R. D., and Watson, L. R. (2015). Student engagement in the classroom: the impact of classroom, teacher, and student factors. *J. Autism Dev. Disord.* 45, 2392–2410. doi: 10.1007/s10803-015-2406-9

Van den Berg, Y. H. M., and Stoltz, S. (2018). Enhancing social inclusion of children with externalizing problems through classroom seating arrangements: a randomized controlled trial. *J. Emotional Behav. Disord.* 26, 31–41. doi: 10.1177/1063426617740561

Wasik, B. H. (1987). Sociometric measures and peer descriptors of kindergarten children: a study of reliability and validity. *J. Clin. Child Psychol.* 16, 218–224. doi: 10.1207/s15374424jccp1603_6

Wentzel, K. R. (2017). "Peer relationships, motivation, and academic performance at school," in *Handbook of Competence and*

Motivation: Theory and Application, eds D. S. Y. Andrew J. Elliot, Carol S. Dweck (New York, NY: The Guilford Press), 586–603.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

ORIGINAL RESEARCH
published: 20 January 2021
doi: 10.3389/feduc.2020.586709

Beyond Ethnic Diversity: The Role of Teacher Care for Interethnic Relations

Jeanine Grütter[1,2]*, *Bertolt Meyer*[3]*, *Michel Philipp*[4], *Sebastian Stegmann*[5] and *Rolf van Dick*[5]*

[1] Jacobs Center for Productive Youth Development, University of Zurich, Zurich, Switzerland, [2] Institute for Diversity in Education, Teacher University Lucerne, Lucerne, Switzerland, [3] Institute of Psychology, Chemnitz University of Technology, Chemnitz, Germany, [4] Institute of Psychology, University of Zurich, Zurich, Switzerland, [5] Institute of Psychology, Goethe University, Frankfurt, Germany

Drawing on the role of teachers for peer ecologies, we investigated whether students favored ethnically homogenous over ethnically diverse relationships, depending on classroom diversity and perceived teacher care. We specifically studied students' intra- and interethnic relationships in classrooms with different ethnic compositions, accounting for homogeneous subgroups forming on the basis of ethnicity and gender diversity (i.e., ethnic-demographic faultlines). Based on multilevel social network analyses of dyadic networks between 1299 early adolescents in 70 German fourth grade classrooms, the results indicated strong ethnic homophily, particularly driven by German students who favored ethnically homogenous dyads over mixed dyads. As anticipated, the results showed that there was more in-group bias if perceived teacher care was low rather than high. Moreover, stronger faultlines were associated with stronger in-group bias; however, this relation was moderated by teacher care: If students perceived high teacher care, they showed a higher preference for mixed-ethnic dyads, even in classrooms with strong faultlines. These findings highlight the central role of teachers as agents of positive diversity management and the need to consider contextual classroom factors other than ethnic diversity when investigating intergroup relations in schools.

Keywords: interethnic relations, teacher care, peer ecology, dyadic social networks, faultlines, ethnic diversity

OPEN ACCESS

Edited by:
Christoph Michael Müller, Université de Fribourg, Switzerland

Reviewed by:
Deb Agnew, Flinders University, Australia
Christina Rucinski, University of Massachusetts Amherst, United States

***Correspondence:**
Jeanine Grütter
jeanine.gruetter@jacobscenter.uzh.ch
Rolf van Dick
van.dick@psych.uni-frankfurt.de
Bertolt Meyer
bertolt.meyer@psychologie.tu-chemnitz.de

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *23 July 2020*
Accepted: *15 December 2020*
Published: *20 January 2021*

Citation:
Grütter J, Meyer B, Philipp M, Stegmann S and van Dick R (2021) Beyond Ethnic Diversity: The Role of Teacher Care for Interethnic Relations. Front. Educ. 5:586709. doi: 10.3389/feduc.2020.586709

INTRODUCTION

Ethnically heterogeneous classrooms are an important social context for facilitating intergroup contact among students from different social backgrounds. Interethnic classroom experiences can reduce students' prejudice (Turner and Cameron, 2016; Grütter and Tropp, 2018) and foster immigrant students' inclusion in the host society (Stefanek et al., 2014). However, while contact opportunities are an important prerequisite for students' interethnic friendships (Juvonen, 2017; Leman and Cameron, 2017; Graham, 2018), the mere presence of other ethnic groups does not automatically promote positive interethnic interactions (Moody, 2001; Verkuyten et al., 2010). Research has well-documented ethnic homophily, whereby students prefer to affiliate with classmates of the same ethnicity or nationality (Strohmeier, 2012; Bagci et al., 2014; Smith et al., 2014). Strong ethnic boundaries carry a high potential for conflict and isolation, especially for

students from ethnic minority groups, as recent international studies indicate (Oxman-Martinez et al., 2012; OECD, 2019). Since social isolation and negative peer experiences can harm student engagement (e.g., Umaña-Taylor et al., 2014), academic achievement (e.g., Ladd et al., 2017), and mental health (e.g., Schwartz et al., 2005), it is important to study social relations in interethnic classrooms.

Previous findings on interethnic relations in the context of increasing ethnic diversity are mixed (Thijs and Verkuyten, 2014; Schwarzenthal et al., 2017): Some studies found positive associations between diversity and cross-ethnic friendships, as well as lower levels of prejudice among majority group students and lower rates of discrimination among minority group students (e.g., Agirdag et al., 2011; Schachner et al., 2015; Titzmann et al., 2015). In contrast, other studies point to a higher risk of peer discrimination among ethnic minorities (e.g., Vervoort et al., 2011; Brenick et al., 2012; Baysu et al., 2014). Recently, researchers have moved beyond analyzing whether diversity is good or bad for interethnic relations and acknowledged that social inclusion requires more than just placing students from different social groups in the same classroom (Thijs and Verkuyten, 2014; Juvonen et al., 2019). Therefore, more recent work focuses on how diversity is dealt with within schools (e.g., Geerlings et al., 2017; Schwarzenthal et al., 2017).

Focusing on teachers' critical role for social inclusion (Juvonen et al., 2019), the current study aims to contribute to this recent work. First, by integrating theories on peer ecologies (e.g., Gest and Rodkin, 2011; Farmer et al., 2019) and research on intergroup relations, we study whether teachers influence interethnic peer relations in the classroom. Previous research has shown that teachers' interactions with students strongly impact how relationships form among students (e.g., Mikami et al., 2012; Farmer et al., 2019). However, there are only very few studies on teachers' role for students' social inclusion in ethnically diverse classrooms (e.g., Thijs, 2017). In order to address this research gap, we study whether perceived teacher-student relationships moderate students' interethnic relations by specifically investigating whether students favor ethnically homogenous over ethnically diverse relationships, depending on how caring they perceive their teacher. Second, we integrate faultline theory from organizational psychology with educational theories on teacher-student relations, which allows us to take a novel intersectional approach to investigating classroom diversity: We measure hypothetical dividing lines between relatively homogeneous subgroups on the basis of student ethnicity and gender, i.e., we measure gender-ethnicity faultlines (Lau and Murnighan, 1998) and use these to predict dyadic relationships, thereby highlighting the role of the overlap of several diversity attributes in diverse classrooms. Faultline research shows that negative consequences of diversity become more likely with strong faultlines—i.e., if subgroups form on the basis of multiple attributes (Thatcher and Patel, 2012; Homan and van Knippenberg, 2015). We assume that teachers' positive interactions with students might serve as a buffer for potential negative effects of faultlines.

Third, on the basis of the notion that processes related to different social categories require theory and analyses at the individual level (van Dijk et al., 2018), we employ a novel methodological approach, namely the analysis of dyadic social networks, to study students' interaction preferences through a personal social network lens (e.g., Snijders and Bosker, 1999). This approach leaves room for ethnic minority and majority group students' differing experiences of classroom diversity, which have rarely been analyzed within the same study (Vervoort et al., 2011; Tolsma et al., 2013; Thijs and Verkuyten, 2014; Leszczensky et al., 2018). This methodology allows us to draw separate conclusions for majority and minority students.

Interethnic Relations in Ethnically Diverse Classrooms

Diversity shapes relationships within classrooms through creating opportunities for cross-group friendships, by creating a power hierarchy among ethnic groups, and through potential intergroup competition resulting from perceived threat (Thijs and Verkuyten, 2014; Graham, 2018). Since ethnic minorities are more likely to become targets of negative peer interactions (e.g., Hughes et al., 2016), interventions to reduce ethnic discrimination have primarily targeted intergroup attitudes of majority group members (e.g., Turner and Cameron, 2016). Moreover, as majority group students usually hold a higher social status than minority group members, majority group students have more decision power over the formation of interethnic friendships (Verkuyten, 2007; Schwarzenthal et al., 2017). In this context, schools are important agents for reducing group biases, as they can provide opportunities for positive interethnic contacts among students (Strohmeier, 2012; Jones and Rutland, 2018; Juvonen et al., 2019). Previous findings show that such diverse opportunities can promote interethnic friendships (e.g., Titzmann and Silbereisen, 2009; Wilson and Rodkin, 2011; Graham et al., 2014; Knifsend and Juvonen, 2014; Jugert et al., 2017), which are strong predictors of improved intergroup attitudes, mental health, and school adaptation (Turner and Cameron, 2016; Graham, 2018).

However, students from different ethnicities do not always form cross-group friendships. Previous findings show strong same-ethnicity biases in friendship selection (e.g., McPherson et al., 2001; Moody, 2001; Titzmann and Silbereisen, 2009; Vermeij et al., 2009; Graham et al., 2014; Smith et al., 2014), particularly among majority group students (e.g., Stark, 2015). This is at least partly due to the fact that ethnic homophily promotes students' shared social identities (Wilson and Rodkin, 2011; Bagci et al., 2014). According to social identity theory, individuals define themselves through their membership with different social groups, which they internalize into their self-concept. As individuals are motivated to achieve and maintain a positive self-concept, they compare and positively distinguish their own group from other groups (Tajfel and Turner, 1979). This intergroup bias is stronger for groups with higher social status, since individuals strive to belong to a positively valued group (Brown and Bigler, 2002).

Contexts where ethnicity is salient render intergroup bias (i.e., the automatic devaluation of outgroup members in comparison to the own ingroup) especially likely (Tajfel and Turner, 1979).

Ethnicity can be particularly salient in contexts characterized by low levels of diversity, where a specific ethnic group is in the numeric minority (Bigler and Liben, 2007; Juvonen et al., 2019). In such contexts, there is typically an imbalance of power between members of different ethnicities. The imbalance of power theory (Graham, 2006) assumes that ethnic classroom diversity (i.e., a more balanced representation of multiple ethnic groups) can diminish such negative peer effects as power is distributed more evenly between multiple ethnic groups with an increasing number of groups and with increasing group size. Indeed, ethnic minority group students experience less peer victimization, less loneliness, and feel safer in classrooms with higher levels of ethnic diversity (Juvonen et al., 2006; Agirdag et al., 2011; Graham, 2018).

However, in addition to numerical imbalance, ethnic groups also differ with regard to their societal status (Jackson et al., 2006; Verkuyten, 2007). Thus, when social minorities grow in numbers, they can present a threat for majority group members (e.g., Durkin et al., 2012). According to ethnic group competition theory (Blalock, 1967; Scheepers et al., 2002), increasing levels of diversity cause feelings of threat and social competition among ethnic majority group students (Durkin et al., 2012). In order to maintain their higher status, these students are more likely to affiliate with in-group members (Scheepers et al., 2002; Vervoort et al., 2011). Accordingly, ethnic majority group students show higher same-ethnic friendship preferences with increasing levels of diversity (Kawabata and Crick, 2008; Wilson and Rodkin, 2011; Bagci et al., 2014; Jugert et al., 2017). Moreover, increasing proportions of minority group students in classrooms are associated with majority students' aggressive behavior and discrimination against ethnic minority group students (Verkuyten and Thijs, 2002; Vervoort et al., 2011; Durkin et al., 2012; Barth et al., 2013). In contrast, ethnic minority group students can feel more confident to challenge the out-groups' superiority when their numbers increase, which can in turn lead to more bullying and fights (Jackson et al., 2006; Vervoort et al., 2011; Barth et al., 2013).

Moderate levels of ethnic classroom diversity are especially likely to exacerbate negative peer relations (Bellmore et al., 2012), as they can highlight group distinctions and incite groups to attain higher social positions (Moody, 2001; Brenick et al., 2012). Such dynamics are likely to result in negative peer relations, negative climate (Benner and Graham, 2013), and perceived threat (Duffy and Nesdale, 2008). In this context, a recent study showed that prejudice moderated the relation between diversity and peer victimization (Thijs et al., 2014). Taken together, prior findings show that the salience of perceived group distinctions shapes the nature of interethnic relations in classrooms.

Faultlines and Interethnic Relations in Classrooms

Individuals are more likely to perceive others as members of social groups if several categories align, such that they create clear demarcations between groups with reference to several categories in a given social context (Turner et al., 1987). Organizational psychology calls this alignment of multiple categories faultlines, i.e., hypothetical dividing lines splitting a group of individuals into relatively homogeneous subgroups on the basis of multiple attributes (Lau and Murnighan, 1998). Groups with strong faultlines are characterized by homogeneous subgroups with regard to multiple attributes. For example, a four-person group consisting of two young American women and two older German men is characterized by a strong faultline with regard to age, gender, and nationality. Faultlines exacerbate intergroup bias between subgroups and lead to group conflict in organizations (see Thatcher and Patel, 2012, for a meta-analysis). Specifically, other demographic attributes than ethnicity, such as gender, have been found to increase tensions between ethnic groups if these other categories align with ethnicity, i.e., in the case of faultlines with regard to ethnicity or nationality and other demographic attributes (see Carton and Cummings, 2013, for a review). This is also relevant for classroom settings: For example, Turkish girls may have a higher risk for being perceived as out-group members if most of their classmates are German boys—compared to a situation where both groups of Turkish and German students are of mixed gender. In this study, we specifically focus on the overlap of ethnicity and gender because adolescents exhibit strong gender homophily (Veenstra and Dijkstra, 2011). Therefore, if gender and ethnic categories align in classrooms, gender-ethnicity faultlines are likely to exacerbate intergroup bias and conflicts. Moreover, ethnic similarity can be more important for girls than for boys (Baerveldt et al., 2004; Sigal and Nally, 2004), whereby girls from ethnic minorities have a higher risk for victimization and negative perceptions than boys from ethnic minorities (Kistner et al., 1993; Putallaz et al., 2007; Vervoort et al., 2011). Investigating classroom diversity with faultlines also yields to calls for intersectional approaches in the study of classroom diversity (e.g., Ghavami and Peplau, 2012; Juvonen, 2017). In a nutshell, previous research shows that stronger faultlines intensify feelings of cohesion within a given subgroup and increase the devaluation of the "other" subgroup (e.g., Lau and Murnighan, 2005). Therefore, we predict *that faultlines on the basis of ethnicity and gender are positively related to ethnic homophily among students, such that students will express stronger ethnic homophily in classrooms with stronger faultlines (Hypothesis 1).*

However, the way in which individuals deal with diversity appears to be a stronger predictor for diversity-related outcomes than diversity itself (Juvonen et al., 2019). Given the central role of teachers for social processes in classrooms, we examine the role of teacher-student relationships for students' interethnic relations.

The Role of Teacher-Student Relationships for Interethnic Peer Ecologies

Teachers play a critical role for students' peer experiences and their social acceptance (Juvonen et al., 2019) as they have a strong potential to scaffold positive interactions among students (Farmer et al., 2011; Gest and Rodkin, 2011). Particularly through their interactions with students, teachers are role models for students' social interactions, set norms on how to treat each other, and provide emotional security for openness toward diversity

(Hendrickx et al., 2016; Thijs, 2017; Farmer et al., 2019). We believe that this is the case for several reasons.

First, students are highly sensitive to how the teacher interacts with their classmates and infer from these interactions how to evaluate and treat classmates with specific traits or attributes (McAuliffe et al., 2009; Mikami et al., 2010; Farmer et al., 2011). Teachers' praise for a student, for instance, communicates their social value; accordingly, teachers' personal liking for a student predict their social acceptance in the classroom (Hughes et al., 2001). Additional longitudinal evidence from an ethnically diverse sample shows that peer ratings of liking among students are predicted by the quality of teacher-student relationships (Hughes and Chen, 2011; Sette et al., 2019). Therefore, teacher-student relationships have a strong impact on how classmates see each other (Mikami et al., 2010, 2012; Farmer et al., 2011; Hughes et al., 2014; Hendrickx et al., 2016). Moreover, if the teacher positively interacts with ethnic minority group students, they can highlight positive behavior that can disconfirm negative stereotypes (Juvonen et al., 2019).

Second, student-teacher relationships provide orientations and norms on how to treat each other. Thus, by treating students equally positively, independent of their social background, teachers can provide positive role models for dealing with diversity (Mikami et al., 2010, 2012; Thijs and Verkuyten, 2012; Schwarzenthal et al., 2017; Farmer et al., 2019; Juvonen et al., 2019). If students perceive that their teacher encourages students from different ethnicities to get along, there is less ethnic discrimination (Benner and Graham, 2013). Similarly, evidence suggests that pupils in ethnically diverse classrooms report less racist bullying when they trust that their teacher reacts if a student was victimized (Verkuyten and Thijs, 2002). In particular, emotionally supportive teacher-student interactions can inspire students to treat each other with respect and warmth, regardless of any differences in ethnic background. In line with this reasoning, findings show that in classrooms where teachers provided high emotional support to students, classroom hierarchies were less pronounced, such that children with lower social positions had a higher chance to increase their social acceptance (Mikami et al., 2012). Moreover, in classrooms where teachers provide high levels of emotional support, students score higher in social competencies (Brock et al., 2008), show lower relational aggression (Luckner and Pianta, 2011; Merritt et al., 2012), and have more reciprocal friendships (Gest and Rodkin, 2011). Emotional support refers to the degree of care, respect, and confidence in students' abilities, and has been identified as an important predictor for students' social and academic development throughout their school career (Hamre and Pianta, 2005).

Third, if teachers provide high emotional support to students, they not only have a role model for positive relational skills, but students also have a secure base for taking social and emotional risks in peer interactions (Gest and Rodkin, 2011; Luckner and Pianta, 2011). This is particularly relevant for interethnic relations, due to the high tendency to affiliate with peers from same ethnic groups. Exploring relations outside one's ethnicity may require openness toward diversity and may pose a risk for negative peer experiences. If teachers provide emotional security, students can have more positive expectations about intergroup interactions (Geerlings et al., 2017; Thijs, 2017). Supporting this assumption, previous research showed that emotional teacher support predicted acceptance for diversity among students (Sanders and Downer, 2012). A recent study showed that majority group students' perceived closeness to their teacher was associated with positive ethnic attitudes toward minority groups, independent of classroom diversity and even after controlling for multicultural school norms (Geerlings et al., 2017). The authors argued that secure student-teacher relationships result in cultural openness. Teacher-student relationships can be particularly relevant in classrooms with higher ethnic tensions. For example, a study with preadolescents suggests that perceived closeness and warmth with the teacher had a protective effect on ethnic minority group students' outgroup attitudes in relatively segregated classrooms (Thijs and Verkuyten, 2012). However, only few studies have investigated the role of teacher-student relationships for students' interethnic relations, and the few existing studies either focused on ethnic minority or ethnic majority groups, but not both in the same study.

In order to provide more insights, we aim to examine the role of teacher care for interethnic relations. Teacher care reflects the degree to which students feel respected, supported, and valued by their teacher and is usually assessed from the perspective of the individual student (Doll et al., 2004). Additionally, perceived care also reflects secure attachment to the teacher (Thijs and Fleischmann, 2015). We thus specifically focus on teacher care to examine how individual perceptions of students' relationships with their class teacher shape their dyadic social networks. In this way, we are able to consider that students from ethnic minority and majority groups may have different perceptions of their teacher.

Teachers' emotional support typically predicts students' perception of teacher care (Gasser et al., 2018). Similar to emotional support, perceived teacher care positively predicts academic and social school adjustment (e.g., Suldo et al., 2009; Wentzel et al., 2010) and positive classroom climate (e.g., Murray-Harvey and Slee, 2010). Accordingly, we predict *that perceived teacher care positively relates to students' peer ratings (Hypothesis 2a).* Moreover, extending prior work (e.g., Geerlings et al., 2017), we predict *a negative relation between perceived teacher care and ethnic homophily, such that higher perceived teacher care relates to less ethnic homophily among students (Hypothesis 2b).* Lastly, based on the idea that teachers are particularly relevant in classrooms with strong ethnic biases (e.g., Thijs and Verkuyten, 2012), we hypothesize *that perceived teacher care moderates the relation between faultline strength and ethnic homophily, such that high levels of perceived teacher care mitigate negative effects of faultlines on students' interethnic relations (Hypothesis 3).*

Interethnic Relations in German Classrooms

This study was conducted with early adolescents (i.e., fourth graders, about 10 years old) in German primary schools. Due to concerns about ethnic discrimination, multicultural learning

became part of the official school curriculum in 1996 recognizing the potential of schools as agents of change (Civitillo et al., 2016; Schwarzenthal et al., 2017). More than twenty years later, creating school environments that build on diversity remains an important agenda. Germany has a long tradition of immigration; accordingly, classrooms are highly diverse with regard to students' ethnicity (Titzmann et al., 2015). Despite these opportunity structures in schools, cross-group friendships between German and immigrant students are not the norm (Jugert et al., 2011; Titzmann, 2014), whereby similar situations can be found in other European countries (Jones and Rutland, 2018).

Ethnic boundaries become increasingly important during early adolescence as a characteristic to distinguish in-groups from out-groups (Umaña-Taylor et al., 2014). As a consequence, friendship homophily increases with age (Strohmeier, 2012). In addition, research shows that adolescents take racist incidents less seriously as they get older (Mulvey et al., 2016) and that attention and conformity to peers and group norms increase (Knifsend and Juvonen, 2014). At the same time however, pathways of prejudice are more strongly moderated by the social context (van Zalk and Kerr, 2014). Therefore, by focusing on students at the transition to early adolescence, the current study focuses on a critical period in developing positive interethnic relations among students.

METHODS

Sample and Procedure

The sample consisted of 1,299 fourth graders (51% girls) from 70 school classes in Germany. The average classroom size was 22.6 children (SD = 3.7). Twenty-eight percent of the children were of non-German background, which means that they did not possess German citizenship. We obtained this information on children's nationality from the demographic part of the survey. Students also provided information about their country of birth. With one exception, all children with German citizenship were born in Germany[1]. The children without German citizenship came from 37 different countries, predominantly from so-called resettler states[2] (i.e., former Soviet Union and other Eastern European states, 42%), Turkey (34%), Southern Europe (12%) or other nationalities including the U.S., Western Europe, and Asian/Arab regions (12%).

For the data collection, a specific approval from the school authorities (i.e., the respective ministry of education) was obtained to contact the schools. In addition, each school board decided whether to participate in the study, and if this was the case, class teachers were informed by their respective principal about the study goals. Written consent of the primary caregivers was obtained, whereby two percent of these primary caregivers refused the participation of their child in the study and these children were visiting other classrooms during the lesson at the time when the data collection took place. Before filling out the questionnaire, the research assistants, specifically trained for this data collection, explained that the study was about students' social experiences at school and how they perceived their peers and their teacher. Children were instructed that their participation was completely voluntary, that there were no negative consequences for non-participation, that there were no right or wrong answers, that they could leave out answers, that they could quit at any time, and that their data was treated confidentially. Besides gender and aspects related to nationality, no personal information was collected and children also rated themselves in the peer ratings to avoid disclosing personal information. The data was completely anonymized shortly after the data collection was completed. The data collection procedure was in line with the APA guidelines and the guidelines of the German Association of Psychology.

Measures

Peer Ratings

Students rated each of their classmates in how much they would like to sit next to this child on a 4-point Likert scale (1 = "not at all," 4 = "very much").

Ethnic Classroom Diversity

We calculated ethnic diversity using the Simpsons' Index, also called Blau Index (Simpson, 1949; Blau, 1977). This index takes the number of different groups and their numerical representation into account and ranges from 0 (i.e., no ethnic diversity, all students in the class are from the same ethnic group) to the maximal number of ethnicities present in the sample (i.e., total cultural diversity: if all the students would be from different ethnicities with an equal presence). For example, in a classroom of 20 students, this value would be 0.95 if all students were from different ethnicities. If there would be 4 ethnic groups with equal presence, the value would be 0.75, and if there would be two groups, with one fourth of them of one ethnic minority group, Simpsons' index would be 0.375. In our sample, we used children's nationality to calculate ethnic classroom diversity, whereby the mean value was 0.41 (SD = 0.18). This value represented that in most classrooms, German students were the numerical majority, while the groups containing children of other nationalities were smaller (M = 0.27, SD = 0.16).

Gender Diversity

Gender diversity (M = 0.47, SD = 0.05) was represented through Blau's Index, whereby a value of 0 indicates that all the children in a classroom are girls or boys, respectively, and a measure of 0.5 indicates that boys and girls are numerically equally represented.

Faultlines

For each classroom, we computed the strength of the ethnicity-gender faultline that divides the classroom into subgroups with the average silhouette width (ASW) algorithm (Meyer and Glenz, 2013). ASW uses a cluster-analytic procedure to detect possible

[1]Children also provided information about the country of birth of their parents. Out of the 1,269 children who reported this information (3% missing), 4% of the students (N = 51) had at minimum one parent born not in Germany (which is the official definition of a migration background), but were of German nationality.

[2]Resettlers are ethnic German immigrants and represent one of the largest immigrant groups in Germany since 1990. They have lived in the former Soviet Union for many generations. Despite familiarity with German culture, former resettles face language barriers and are targets of prejudice and discrimination (Titzmann et al., 2015).

subgroups and their homogeneity in a group (Meyer and Glenz, 2013). In a stepwise procedure, the members are clustered into similar subgroups, whereby the algorithm first classifies each member as an own subgroup and then subsequently merges them according to their similarity, until there is only one subgroup left: the classroom. Fit measures are calculated for each student and each possible subgroup configuration. The average ASW value represents the average fit of all members to their subgroup. For each classroom, the algorithm chooses the subgroup configuration with the highest ASW value. This value ranges from 0 to 1, where a value of 1 denotes completely homogeneous subgroups. We determined faultline strength across the individual attributes gender and nationality, whereby we specifically focused on nationality as a criterion for social group membership, which has been shown to be important for social identification (Jugert et al., 2011; Titzmann et al., 2015). A faultline value of 1 would represent a classroom where all possible subgroups are completely homogeneous with regards to their gender (e.g., a classroom with only girls with German background and boys with non-German background), a value of 0 would mean that no homogeneous subgroups exist. Indeed, on average, classrooms were characterized by strong faultlines ($M = 0.97$, $SD = 0.04$), which reflects a strong tendency for clustering around gender and ethnicity.

Perceived Teacher Care

Children answered four items from the "Landauer Skalen für Sozialklima" (Saldern and Littig, 1987) regarding their perception of how sensitive and caring their teacher interacted with them (i.e., "The teacher comforts me if something is wrong," "The teacher cares about me when I have trouble following the lesson," "The teacher has enough time for me," "The teacher helps me when I have problems with other students in my class"). The subscale was created in accordance with the concepts of teacher support (van Ryzin et al., 2009) and teacher care (Gasser et al., 2018). Students answered each item on a 4-point Likert-scale (1 = "not at all," 4 = "very much"), $\omega = 0.70$, $M = 2.45$, $SD = 0.57$.

Data Analytic Strategy

Peer ratings of students were analyzed within a dyadic social network approach, whereby we studied each students' personal network. In these analyses, the focus of interest lies on the valued tie (i.e., the rating of the relationship) between the ego (i.e., the student who is rating their classmates) and the alters (i.e., the classmates who are rated) (see **Figure 1**). As each child rated each of his or her classmates, the ratings of the students were not independent on each other. Therefore, and in line with previous work (e.g., Snijders and Bosker, 1999; Vermunt and Kalmijn, 2006; de Miguel Luken and Tranmer, 2010), we analyzed personal networks within a multilevel framework. This procedure allows to disentangle ego effects, alter effects, and the relative characteristics of ego and alter (i.e., whether ego and alter have the same ethnicity) (de Miguel Luken and Tranmer, 2010). Specifically, we were interested in whether students' average ratings of their classmates depended on their and their classmates' ethnicity. Moreover, we analyzed whether these peer ratings depended on classroom faultlines and perceived teacher care. Therefore, the data spanned three levels: the peer ratings that a child gave, the child who gave the ratings (i.e., the ego) and the classroom of the child (see **Figure 1**).

We followed the modeling approach suggested by de Miguel Luken and Tranmer (2010), whereby we initially tested if there were significant differences between the ratings of the individual children and the average ratings in the classrooms. A model with random intercepts at the individual and the classroom level fit

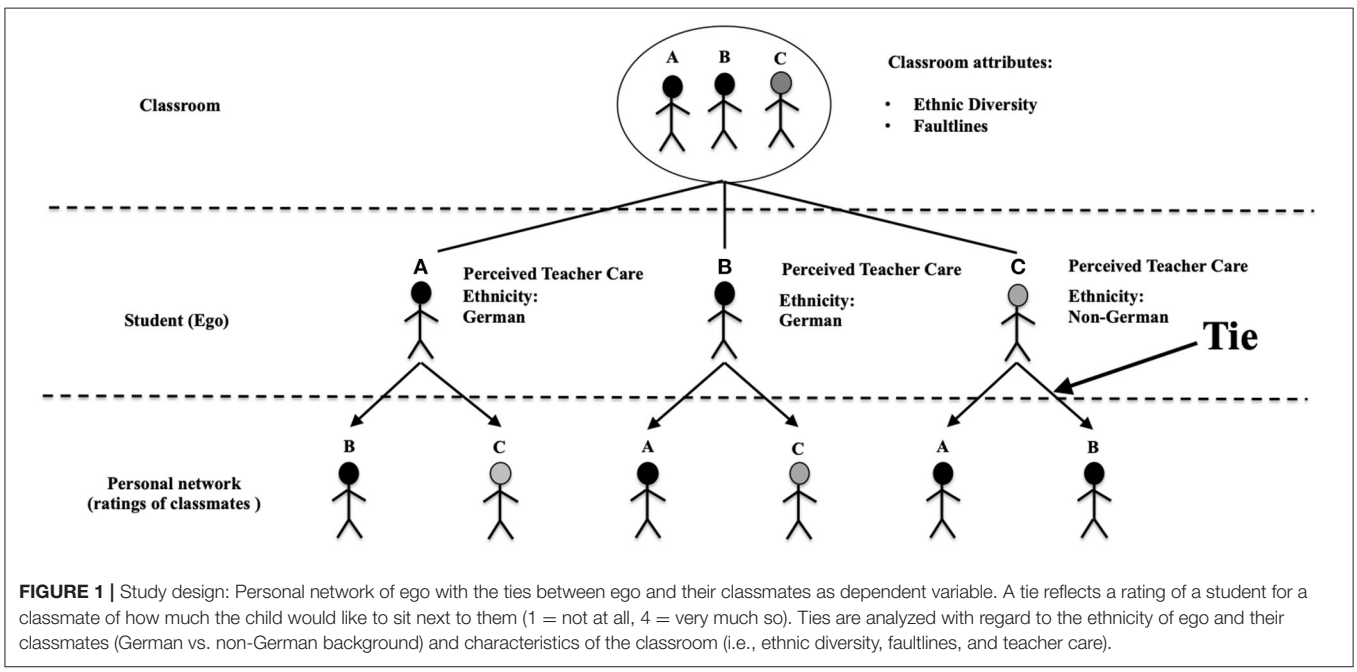

FIGURE 1 | Study design: Personal network of ego with the ties between ego and their classmates as dependent variable. A tie reflects a rating of a student for a classmate of how much the child would like to sit next to them (1 = not at all, 4 = very much so). Ties are analyzed with regard to the ethnicity of ego and their classmates (German vs. non-German background) and characteristics of the classroom (i.e., ethnic diversity, faultlines, and teacher care).

the data best ($\Delta_{\chi^2_1} = 25.17$, $p < 0.001$). Differences between classrooms explained five percent of the total variance in peer ratings while differences between children explained 52% of the total variance. In a next step, we added the characteristics of the ego (i.e., sex and ethnicity of the child who is giving the rating), the alter (i.e., sex and ethnicity of the child who is being rated), and the respective dyadic match (i.e., do ego and alter have the same sex? Do ego and alter have the same ethnicity?). Next, we entered the contextual variables (diversity, faultlines, and perceived teacher care) followed by their interactions with the dyadic match terms, whereby we first entered the 2-way interactions followed by the hypothesized 3-way interaction (see **Figure 1**). As we were interested in how individual perceptions of students' relationships with their class teacher shape their dyadic social networks, perceived teacher care was included at the level of the individual.

As the dependent variable of this study was a single item (i.e., "How much would you like to sit next to this student?"), the preconditions of normally distributed error terms for multilevel models were not met (Gelman and Hill, 2006). To consider the scale of the dependent variable, we used ordinal multilevel models and tested our analysis with cumulative link models of the ordinal package (Christensen, 2018a) in R (R Development Core Team, 2019). Cumulative link models assume that the response variable is ordinal and that any observation Y_i falls within a category $j = 1$ to J categories (Christensen, 2018b). For our analysis, the model estimated the probability of how likely an observation falls into a category that is smaller than or equal to the values from 1 to 4 as a function of the predictors. Based on the combination of predictors, the respective combination of estimated effects can be expressed as a latent variable. Higher values of this latent variable reflect a smaller probability that a category falls within a category that is equal to or smaller than j. In other words, higher values represent higher probabilities that children positively evaluated their peers. More information on cumulative link models can be found in the **Supplementary File** (see S0).

RESULTS

Preliminary Analyses: Ethnic and Gender Homophily in Early Adolescents' Peer Ratings

In a first step, we examined whether peer ratings depended on ethnicity and gender. **Table 1** (step 1) shows the model that

TABLE 1 | Results of the multilevel cumulative link models predicting students' inclusion preferences ($N = 23{,}727$ peer ratings by 1,299 early adolescents in 70 classrooms).

	Step 1 γ (*SE*)	Step 2 γ (*SE*)	Step 3 γ (*SE*)	Step 4 γ (*SE*)
FIXED EFFECTS LEVEL 2: EGO ATTRIBUTES				
Sex (0 = male)	−0.11 (0.06)†	−0.10 (0.06)	−0.10 (0.06)†	−0.10 (0.06)†
Ethnicity (0 = German)	0.13 (0.07)†	−0.20 (0.03)***	0.05 (0.07)	0.06 (0.07)
FIXED EFFECTS LEVEL 2: ALTER ATTRIBUTES				
Sex (0 = male)	−0.20 (0.03)***	0.09 (0.07)	−0.20 (0.03)***	−0.20 (0.03)***
Ethnicity (0 = German)	−0.54 (0.04)***	−0.54 (0.04)***	−0.57 (0.04)***	−0.57 (0.04)***
DYADIC MATCH OF ALTER AND EGO				
Dyadic: Same sex	2.18 (0.03)***	2.17 (0.03)***	2.17 (0.03)***	2.17 (0.03)***
Dyadic: Same ethnicity	0.26 (0.04)***	0.27 (0.04)***	0.21 (0.04)***	0.22 (0.04)***
FIXED EFFECTS LEVEL 3: CLASSROOM ATTRIBUTES				
Gender diversity		1.14 (0.85)	1.14 (0.85)	1.18 (0.86)
Ethnic diversity		1.12 (0.03)***	0.58 (0.31)†	0.60 (0.31)†
Faultlines		1.29 (0.47)**	0.87 (0.52)†	0.89 (0.52)†
Teacher care		0.18 (0.05)***	0.26 (0.07)***	0.33 (0.07)***
Teacher care * ethnic diversity			−0.67 (0.45)	
Teacher care * faultlines			0.61 (0.70)	
DYADIC MATCH OF ALTER AND EGO AND CLASSROOM ATTRIBUTES				
Dyadic: Ethnic diversity * same ethnicity			0.85 (0.24)***	0.82 (0.24)***
Dyadic: Faultlines * same ethnicity			0.76 (0.38)*	0.78 (0.38)*
Dyadic: Teacher care * same ethnicity			−0.12 (0.06)*	−0.19 (0.06)**
Dyadic: Teacher care * same ethnicity*ethnic diversity				0.65 (0.41)
Dyadic: Teacher care * same ethnicity*faultlines				−1.75 (0.62)**
AIC	49699.43	47635.81	47623.92	
Cond. H	88	8400	8200	

The variables gender diversity, ethnic diversity, faultlines, and teacher care were mean-centered.
*†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001, two-tailed.*

contains characteristics of the ego, characteristics of the alter and the dyadic information about gender and ethnic match. The results showed that, on average, German students had a higher probability of receiving more favorable ratings as compared to students with non-German background. Additionally, girls were less likely than boys to receive favorable peer ratings. Moreover, the results (see **Table 1**, step 1) point to ethnic and gender homophily. Fourth graders with the same ethnicity and with the same gender preferred to sit next to each other. Thus, in line with prior findings (e.g., Veenstra and Dijkstra, 2011), dyadic gender match was included as a control variable in our model[3]. In a next step, we added gender diversity, ethnic diversity, faultlines, and perceived teacher care to the model.

Preliminary Analyses: Ethnic Homophily and Ethnic Diversity

When analyzing faultlines, it is recommended by Lau and Murnighan (2005) to control for the diversity attributes included in the faultline measure. Thus, we included ethnic diversity and the interaction of ethnic diversity and ethnic dyadic match in all analyses. When looking at ethnic diversity, it is interesting to note that higher levels of ethnic diversity in classrooms were positively associated with a higher probability to rate classmates positively—when the dyadic composition was not taken into account. However, the results showed that same ethnic dyads had a higher probability to prefer each other in classrooms with higher ethnic diversity as compared to classrooms with lower ethnic diversity. *Post-hoc* tests[4] revealed that this difference was significant, $z = 5.12$, $p < 0.001$. Moreover, in classrooms with higher ethnic diversity, peer ratings were significantly higher for same ethnic dyads than for interethnic dyads, $z = 16.74$, $p < 0.001$. These interaction patterns are displayed in **Figure 2**.

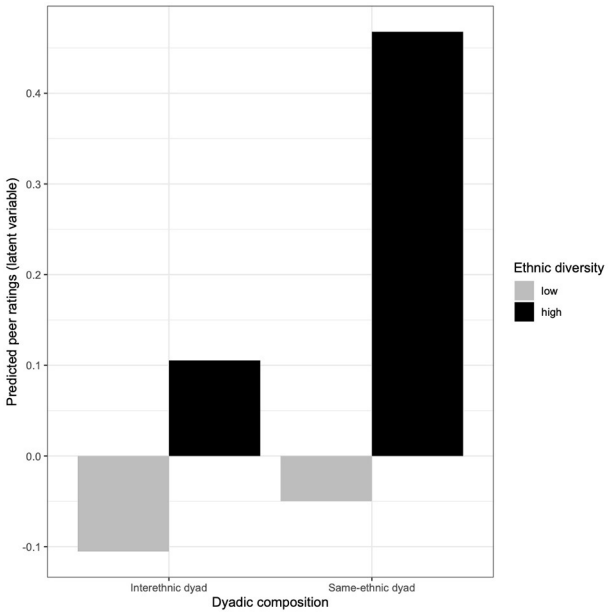

FIGURE 2 | Students' ratings of their classmates ("How much would you like to sit next to X?") for interethnic and same-ethnic dyads and classrooms with weak vs. strong ethnic diversity. The latent variable represents the probability for choosing higher categories.

Ethnic Homophily and Faultline Strength

To test our first hypothesis that faultlines are related to increasing ethnic homophily (Hypothesis 1), we added the interaction of faultlines x dyadic ethnic match to the previous model. The significant interaction (see **Table 1**, step 3) is shown in **Figure 3A**. Same-ethnic dyads had a higher probability to prefer each other in classrooms with strong faultlines—as compared to classrooms with weak faultlines. *Post-hoc* tests revealed that this difference was significant, $z = 3.28$ $p = 0.006$.

Ethnic Homophily and Perceived Teacher Care

In line with Hypothesis 2a, perceived teacher care was positively related to students' peer ratings (see **Table 1**, step 2). Moreover, as assumed in hypothesis 2b, perceived teacher care moderated the relation between faultline strength and ethnic homophily (see **Table 1**, step 3). **Figure 3B** demonstrates that there was a stronger homophily effect when students perceived their teacher as low caring. *Post-hoc* tests showed that students rated same-ethnic classmates significantly more positively compared to classmates with a different ethnicity, $z = 15.50$, $p < 0.001$, when teacher care was low. However, even when teacher care was high, students showed a significant preference for same-ethnic classmates as compared to interethnic dyads, $z = 13.32$, $p < 0.001$. Importantly, in this condition, peer ratings were on average more positive rather than when teachers were perceived as low caring. In addition, when looking at peer ratings that classmates received in mixed dyads, there was a significant difference between low and high teacher care, such as peer ratings for interethnic dyads were significantly more positive when teacher care was high, $z = 3.88$, $p < 0.001$. Taken together, Hypothesis 2b was partially supported, as on one hand the results still showed a pattern of ethnic homophily even if teacher care was high, but on the other hand, ethnically mixed dyads were more positively evaluated when students perceived their teacher as caring.

Finally, in order to test whether teacher care moderated the relation between ethnic homophily and faultlines (Hypothesis 3), we included the interaction term dyadic ethnic match x faultlines x teacher care to the previous model (see **Table 1**, step 4). The results showed a significant three-way interaction, revealing that teacher care and faultlines mattered for how students in same and mixed-ethnic dyads evaluated each other. **Figure 4** displays that in classrooms with strong faultlines and high teacher care, students still rated same-ethnic dyads as more positive as compared to interethnic dyads, $z = 9.23$, $p < 0.001$. However, the homophily effect in classrooms with strong faultlines was

[3]In order to control for the possibility that children with the same ethnicity *and* same gender would be more likely to prefer each other, we included this information in an alternative model. However, as this interaction was not significant, we did not control for same gender *and* same ethnicity homophily in the final model.

[4]We conducted *post-hoc* tests with the lsmeans-package in R (Lenth and Hervé, 2015) and adjusted for multiple comparisons by using the Tukey method.

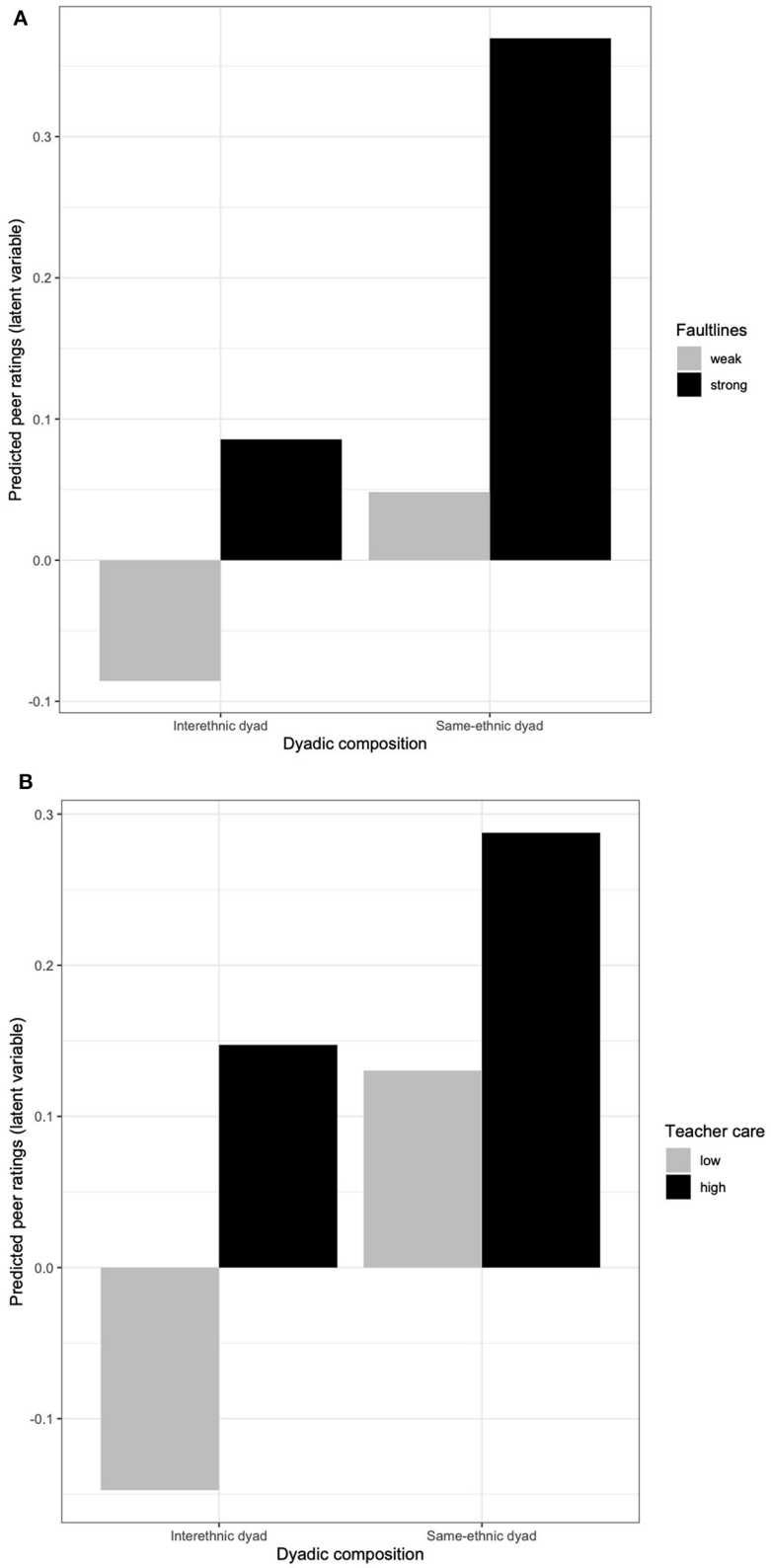

FIGURE 3 | (A) Students' ratings of their classmates ("How much would you like to sit next to X?") for interethnic and same-ethnic dyads and classrooms with weak vs. strong faultlines. The latent variable represents the probability for choosing higher categories. **(B)** Students' ratings of their classmates ("How much would you like to sit next to X?") for interethnic and same-ethnic dyads and classrooms with low vs. high teacher care. The latent variable represents the probability for choosing higher categories.

smaller compared to when teacher care was low, where the effect was, $z = 14.23$, $p < 0.001$. Moreover, students showed more in-group bias in classrooms with strong faultlines as compared to classrooms with weak faultlines when teacher care was low, $z = 3.64$, $p = 0.007$, while this was not the case when teacher care was high, $z = 1.64$, $p = 0.726$. Importantly, in classrooms with strong faultlines, early adolescents showed a higher preference for interethnic dyads if teacher care was high compared to when teacher care was low, $z = 3.93$, $p = 0.002$. In contrast, in classrooms with weak faultlines, there were no significant differences regarding pupils' preference for interethnic dyads for students who perceived high vs. low teacher care, $z = 2.62$, $p = 0.148$ (see **Figure 4**). Taken together, these findings provide support for Hypothesis 3, that high teacher care plays a protective role for negative effects of faultlines, although it cannot dissolve in-group bias.

Drivers of Ethnic Homophily: Who Is Choosing Whom?

We were particularly interested to find out whether ethnic majority group students expressed higher in-group bias than ethnic minority group students. Therefore, we conducted separate exploratory analyses including the dyadic match by ego interaction terms to the model (e.g., do German pupils rate classmates with a German background more positively relative to interethnic dyads? And similarly, do students with a non-German background rate non-German classmates more positively relative to interethnic dyads?). For these analyses, we created a factorial variable that expressed if both students were either of German or non-German background, or if the dyads were ethnically mixed.

The results (for details, see the **Supplementary File 2**) indicated that students with a German background expressed more in-group bias than students with a non-German background (nGb): While German students favored German students over interethnic dyads, nGb students rated nGb students less positively relative to interethnic dyads. Furthermore, the preference for ethnic homophily among students with a German background was stronger in classrooms with stronger faultline strength as compared to classrooms with weak faultlines, $z = 3.10$ $p = 0.024$ (see **Figure 5**). Even when perceiving high teacher care, German students still expressed in-group bias, $z = 12.22$, $p < 0.001$. However, this difference was smaller compared to when teacher care was low, $z = 14.97$, $p < 0.001$. In addition, further supporting Hypothesis 2b, students in interethnic dyads showed more positive peer ratings when teacher care was high as compared to when teacher care was low, $z = 4.02$, $p < 0.001$ (see **Supplementary Figure 3**). Lastly, the *post-hoc* contrasts revealed a trend that German students showed more in-group bias (i.e., relative to interethnic dyads) in classrooms with strong faultlines as compared to classrooms with weak faultlines when teacher care was low, $z = 3.20$, $p = 0.060$. However, this result did not reach statistical significance and requires replication in future studies. Lastly, when teacher care was high, students with a German background did not express more in-group bias in classrooms with strong faultlines, $z = 1.89$, $p = 0.764$. Importantly, in classrooms with strong faultlines, ethnically mixed dyads were rated significantly more positively when teacher care was high as compared to when it was low, $z = 3.91$, $p = 0.005$ (see **Figure 6**). These findings therefore provide additional support for Hypothesis 3.

Taken together, the more detailed explorative analyses further show that in-group bias was driven by German students and intensified by strong faultlines. In these classrooms, perceived teacher care had a protective effect, particularly since mixed ethnic dyads were rated more positively.

DISCUSSION

By combining ego-networks with a multilevel model for a fine-grained analysis of effects of classroom composition and teacher care, the current study allowed for new insights about driving forces involved in ethnic homophily. The current work demonstrates that contact opportunities in ethnically diverse classrooms do not necessarily go along with a higher desire for contact. This finding resonates well with previous work that found strong effects of ethnic homophily (e.g., Strohmeier, 2012; Bagci et al., 2014; Graham et al., 2014; Smith et al., 2014). The novel findings of the study point to the important role teachers play in shaping social relationships among ethnically diverse students: Fourth graders who perceived their teacher as supportive and caring were more positive toward mixed ethnic dyads and this was particularly the case in classrooms with stronger faultlines (i.e., stronger overlap of ethnicity and gender), where ethnic homophily was most salient. We build our discussion of potential explanations for this central finding on the analysis of how ethnic minority and majority group students rated their peers, as one of the novel aspects of this research was the joint investigation of students from ethnic minority and majority groups within dyadic social networks. Therefore, we discuss differential findings depending on social status with regards to diversity and faultlines in particular. Investigating faultline in the context of ethnically diverse classrooms, we were able to demonstrate how the intersectionality of different diversity attributes may negatively affect intergroup interactions in the school context.

Ethnic Homophily: The Role of Group Status

How ethnicity is evaluated is expressed and shaped through early adolescents' interactions with peers (Verkuyten, 2016; Leszczensky et al., 2019). During the transition to early adolescence, the meaning of ethnicity is explored, rendering ethnic identity salient (Umaña-Taylor et al., 2014). Hence, increasing ethnic homophily in friendship selection represents students' increased need for a shared social identity (Wilson and Rodkin, 2011; Strohmeier, 2012; Bagci et al., 2014; Graham, 2018). These affiliation processes may be different, depending on early adolescents' social status. In the current study, adolescents from the German majority group showed a stronger preference for ethnic homophily as compared to mixed ethnic dyads than the non-German minority group. Many previous studies have shown that ethnic majority group children are more likely to

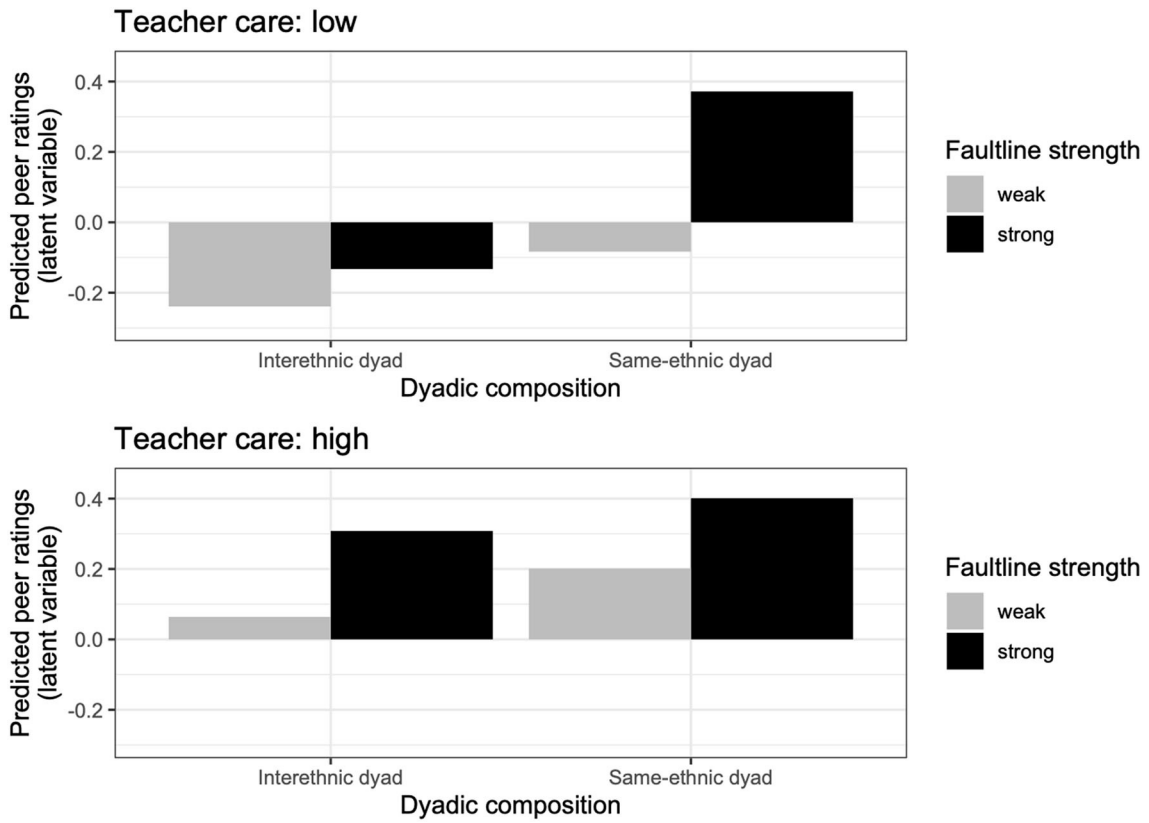

FIGURE 4 | Students' ratings of their classmates ("How much would you like to sit next to X?") for interethnic and same-ethnic dyads, depending on faultline strength, and teacher care. The latent variable represents the probability for choosing higher categories.

rate their ethnic in-group peers more positively than ethnic out-groups (e.g., Strohmeier et al., 2006; Vervoort et al., 2011), and have a stronger tendency to affiliate with same-ethnic peers than with peers from different ethnicities (Hamm et al., 2005).

In particular, ethnic majority groups were less open to cross-ethnic boundaries. In contrast, students with non-German background rated interethnic dyads with German students more positively compared other non-German classmates. Thus, German students received higher ratings overall, representing ethnic-hierarchy in the classroom. Ethnic hierarchy means that ethnic groups with a high social status in society hold a high status in the classroom (Jackson et al., 2006; Schachner et al., 2015). Ethnic minority group students may be aware of such status differences and may want to affiliate with higher status groups, reflecting their higher positiveness toward majority group classmates (Tajfel and Turner, 1979; Brown and Bigler, 2002). In line with this idea, prior studies found that ethnic minority children are more likely to report peers from ethnic majority groups as friends (e.g., Verkuyten and Martinovic, 2006; Vermeij et al., 2009; Schachner et al., 2015). Taken together, the results further strengthen previous evidence that the majority group seems to be the one to decide whether cross-group interactions and friendships occur (e.g., Schwarzenthal et al., 2017).

Ethnic Homophily: The Role of Ethnic Diversity and Faultlines

When considering the direct effect of ethnic diversity and faultlines, there seemed to be a positive effect on peer relations in the classroom. However, when looking at the dyadic intergroup level, these average positive effects were due to higher levels of ethnic homophily among German majority group members. Consequently, the present study highlights that effects of diversity should not neglect the dyadic level of intergroup interactions. With increasing ethnic diversity and stronger faultlines in particular, the power and higher status of ethnic majority group students may be perceived as compromised which could lead to a higher need for in-group affiliation. In order to keep the ability to control resources of the peer group, majority group students may become less open to cross-ethnic peers. Studies testing the ethnic competition theory have shown that increasing numbers of minority group students were associated with more negative peer relations and higher homophily among ethnic majority group students (Kawabata and Crick, 2008; Vervoort et al., 2011; Wilson and Rodkin, 2011; Durkin et al., 2012; Bagci et al., 2014).

The current study focused on gender-ethnicity faultlines, whereby both, ethnic and gender homophily revealed strong effects. When both categories align, demarcation of group

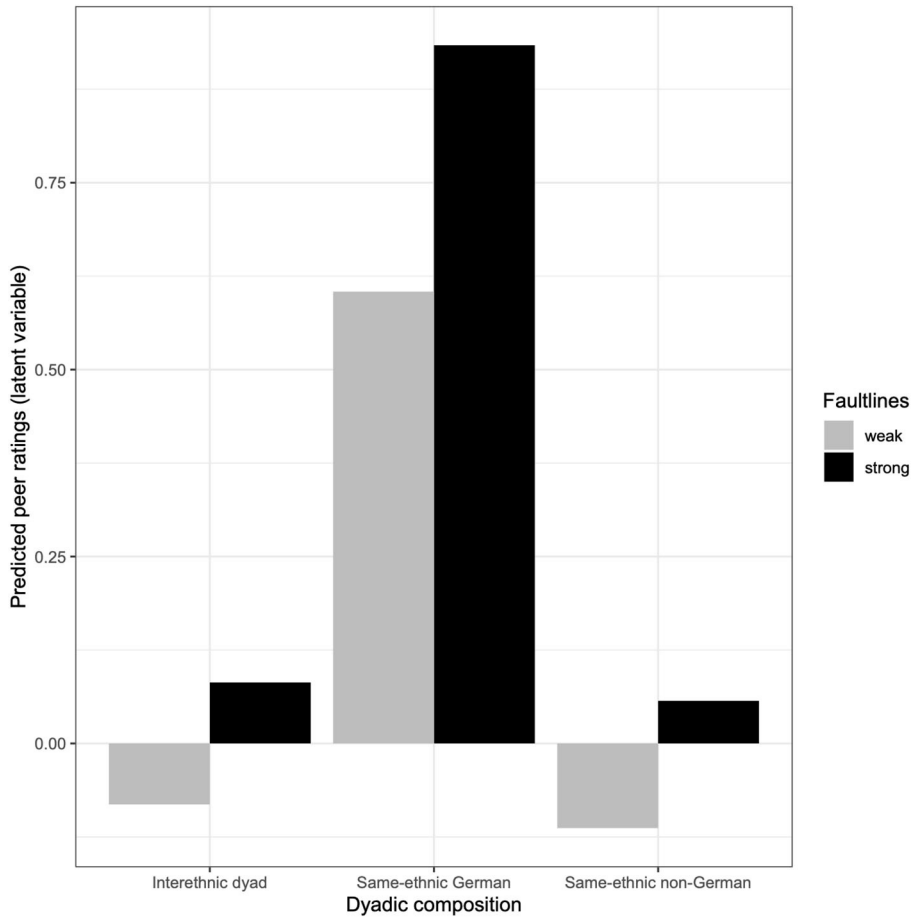

FIGURE 5 | Students' ratings of their classmates ("How much would you like to sit next to X?") for interethnic, non-German—non-German background, and German—German background dyads and classrooms with weak vs. strong faultlines. The latent variable represents the probability for choosing higher categories.

boundaries may be more salient to students, rendering ethnicity more salient. Moreover, stronger group boundaries may predict higher levels of perceived threat among majority group students (Turner et al., 1987; Thijs and Verkuyten, 2014), which in turn negatively relates to peer interactions (Duffy and Nesdale, 2008). To date, faultlines have not been investigated in classroom settings; however, research in organizational contexts has shown that when teams are divided into subgroups on the basis of identity-related attributes such as gender and ethnicity, group tensions between subgroups increase (Li and Hambrick, 2005; Carton and Cummings, 2013). Therefore, the findings of the current study suggest that it is important to consider multiple aspects of diversity and their intersection when studying classroom social relations. In classrooms with strong faultlines, students of minority groups may have more limited opportunities to be accepted by peers. Limited evidence on the intersectionality of gender and ethnicity revealed that students from multiple minority groups may have a higher risk for exclusion because the pressure to conform to the characteristics of the "average student" increases (Vervoort et al., 2011; Ghavami and Peplau, 2012; Juvonen, 2017). Accordingly, the majority group students in the current study expressed more in-group bias in classrooms with stronger faultlines while minority group students' peer ratings depended less on faultlines. Regardless of faultline strength, these students preferred dyads with German students relative to other students with non-German background. This finding may reflect that minority group students cannot afford to avoid majority group students (Leszczensky et al., 2018). However, it is in contrast to previous work that found more bullying and fights of ethnic minority group students when their numbers increased (e.g., Jackson et al., 2006; Vervoort et al., 2011). It is possible that there would be different effects for different subgroups of the non-German ethnic minority group (e.g., when investigating different nationalities or subcultures); however, due to limited numbers associated with limited statistical power, we could not distinguish between specific minority groups, which is an important area for future research.

The central finding of this study was that negative associations between faultlines and students' peer relations were less pronounced when perceived teacher care was high. Moreover, when students perceived their teacher as high in care, there was no difference in the magnitude of in-group bias between classrooms with weaker and stronger faultlines. Instead, peer ratings were generally higher. In contrast, when teacher care

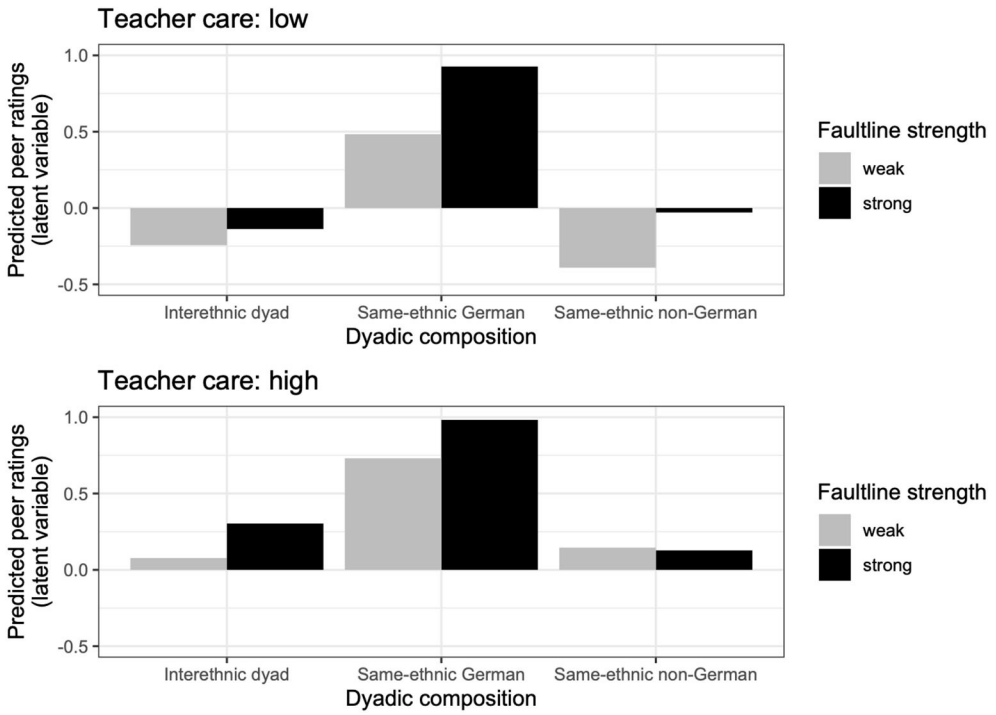

FIGURE 6 | Students' ratings of their classmates ("How much would you like to sit next to X?") for interethnic, non-German—non-German background, and German—German background dyads, depending on faultline strength and teacher care. The latent variable represents the probability for choosing higher categories.

was low, in-group bias was higher in classrooms with stronger than weaker faultlines. Hence, classroom composition did not matter as much for interethnic peer relations, when teachers were perceived as supportive and caring. This study therefore adds novel insights to the discussion of interethnic relations in ethnically diverse school classes that particularly highlight the competencies of teachers for students' inclusion (Thijs and Verkuyten, 2012; Geerlings et al., 2017; Juvonen et al., 2019).

The Role of Perceived Teacher Care for Interethnic Peer Relations

When students perceived their teacher as highly caring and supportive, they were more open toward mixed-ethnic dyads (i.e., rated students of different ethnicity more favorably). This finding was significant above and beyond the effect that students were generally more positive toward their peers when perceiving high teacher care. By analyzing interethnic relations at the dyadic level, it was possible to disentangle these effects. Moreover, the analyses showed that ethnic homophily was still present, but weaker when teachers were perceived as high in care. This may be a consequence of the high significance of ethnic identity exploration and increasing attention to the intergroup peer world during early adolescence (Strohmeier, 2012; Umaña-Taylor et al., 2014). There are multiple explanations for the effects of teacher care, which can be explored in future longitudinal work.

First, it is possible that openness for cross-ethnic interactions (i.e., for choosing a seating partner from the ethnic minority or majority group) may be a result of emotional security provided in positive teacher-student relationships. Research in classrooms based on attachment theory shows that students who are securely attached to their teacher are more confident to master challenging situations and taking risks in peer interactions, as they trust their teacher would help and support if needed (Gest and Rodkin, 2011; Luckner and Pianta, 2011; Thijs and Fleischmann, 2015). There is some previous support with regards to intergroup situations, whereby students who perceived higher closeness to their teacher reported higher motivation for intercultural openness (i.e., to engage with cross-ethnic peers), which in turn predicted more positive out-group attitudes among ethnic majority group students (Geerlings et al., 2017). In addition, relationship security can reduce perceived out-group threat (Mikulincer and Shaver, 2001). Students who perceive their teacher as caring could have fewer negative expectations for cross-group interactions, rendering such interactions less threatening. In line with this idea, perceived teacher care was particularly relevant in classrooms with stronger faultlines, where group boundaries and threat may have been more salient. Thus, teachers may have an important role in facilitating perceived security of group relations, particularly when group boundaries are highly salient.

In addition to providing relational security, teachers can also shape peer ecologies through their interactions with students (McAuliffe et al., 2009; Audley-Piotrowski et al., 2015; Farmer et al., 2019). In caring teacher-student relationships, students feel respected, supported, and valued by the teacher (Doll et al., 2004). Therefore, it is plausible that students who perceived

high care received positive messages from their teacher, which in turn serves as a reference for other students about the social value of that specific student (e.g., Mikami et al., 2010, 2012; Hughes and Chen, 2011; Hendrickx et al., 2016). With regards to interethnic relations, teachers have power to positively shape the perceptions of minority and majority group students by communicating their social value (i.e., through praise; Hughes et al., 2001) and by disconfirming negative stereotypes and repairing negative reputations of students (Mikami et al., 2010; Juvonen et al., 2019). Peers are highly sensitive to cues about whether to judge a peer as deviant and toward potential conflicts of specific students with their teacher (Mikami et al., 2010). From an intergroup perspective, such negative interactions with the teachers may add to intergroup conflict in classrooms by perpetuating negative stereotypes about out-group students (e.g., when a minority group student is often disciplined by the teacher and seen as disruptive; Bigler and Liben, 2007; Juvonen et al., 2019). In addition, negative interactions may increase attention to the group level, which in turn is associated with higher in-group bias (Brown and Bigler, 2002; Thijs and Verkuyten, 2012). In line with this reasoning, ethnic homophily was much higher when perceived teacher care was low.

Some authors have argued that interactions of majority group teachers with minority group students may serve as a form of extended intergroup contact (i.e., observing how an in-group member positively interacts with out-group members; Thijs, 2017). Positive intergroup contact may facilitate trust and other positive emotions, which can transfer from the teacher to other out-group members (i.e., out-group students). There is some support with regards to ethnic minority group students (Thijs and Verkuyten, 2012), whereby these students expressed more positive attitudes toward the majority group in relatively segregated classrooms, if they perceived more closeness to their majority group teacher. In contrast, in the current study minority group students' peer ratings were less affected by teacher care than those of majority group students. When teacher care was high, students with non-German background were equally positive toward mixed and non-German dyads; when minority group students perceived teacher care as low, they rated peers more negatively, independent of their ethnicity. The current study did not assess the ethnicity of class teachers and can therefore not investigate whether the effects of perceived teacher care could be due to extended contact. However, perceived teacher care was generally related to more positive peer relations and more positive ratings of mixed-ethnic dyads; therefore, teachers' ethnicity may be less relevant than their behavior.

The general positive effect of perceived teacher care may be explained by a general positive peer climate. Teacher-child relationships have been discussed as important antecedents of students' peer acceptance and prosocial behavior (e.g., Hughes et al., 2001; Mikami et al., 2012; Sette et al., 2019). In particular, the relationship quality of students with their teacher longitudinally predicts classroom social hierarchies (Cappella and Neal, 2012). If classrooms are characterized by hierarchies, it is more likely that certain students are excluded (Schäfer et al., 2005; Mikami et al., 2010; Hendrickx et al., 2016). In contrast, if teachers provide higher emotional support to students, students are more likely to form reciprocal friendships (Gest and Rodkin, 2011). Hence, accepting classroom climates facilitate positive peer relations, whereby students have positive role models for dealing with diversity (Hendrickx et al., 2016; Thijs, 2017; Farmer et al., 2019). By treating all students equally positive, teachers communicate value of diversity and promote classroom norms of equality and acceptance. Such norms in turn are related to higher acceptance and less discrimination of minority group students (Verkuyten and Thijs, 2002; Sanders and Downer, 2012; Benner and Graham, 2013; Schwarzenthal et al., 2017). Moreover, by establishing that everyone is treated equally, existing power imbalances among different ethnicities present in the classroom may be reduced (Schwarzenthal et al., 2017; Juvonen et al., 2019). Such effects are more apparent at the classroom level; whereby usually teachers' emotional support toward all students is observed. The current study focused specifically on individual perceptions of teacher-student relationships since the aim was to investigate how specific perceptions of students from minority and majority groups relate to their peer ratings. Still, individual perceptions of students are longitudinally predicted by observed emotional support (Gasser et al., 2018) and may therefore be higher when students perceive high teacher support. Given the importance of teachers for interethnic classroom dynamics, future research could determine differential effects of emotional support at the classroom level (i.e., observations), teachers' perceptions, and student perceptions on interethnic relations in the classroom. Moreover, how emotional teacher support relates to other practices that foster inclusion (e.g., multicultural education, inclusive school norms) is another important area for future research.

Limitations

The study focused on students' ratings of each other as potential seating neighbors. Although such peer ratings are proxies for desired, sustained, and close contacts (seating neighbors in 4th grade spend a lot of time next to each other), the study cannot generate assumptions about cross-group friendships, prejudice or discrimination. Still, investigating social interactions is important, since a recent study showed similar patterns and effect sizes of ethnic homophily for social interactions and friendships (Fortuin et al., 2014). Ethnic homophily does not necessarily imply negative classroom relations; however, when students choose to affiliate only with same-ethnic peers, they withhold friendship opportunities and shared positive feelings from them (Juvonen et al., 2019). In order to better understand interethnic classroom dynamics, future longitudinal work could expand our cross-sectional findings and combine different aspects of dyadic peer relations with individual perceptions about classroom relations (e.g., perceived discrimination or school belonging).

Another limitation of this study was that we did not have enough power to answer our research questions with regards to contextual predictors of dyadic peer ratings for different groups of ethnic minority students. In particular, different subgroups of ethnic minority group students may have rated each other differently, leading to lower average in-group bias among minority group students. Ethnic identity may be particularly

relevant for ethnic minority group students (e.g., Leszczensky et al., 2019).

Therefore, it is possible that minority group students distinguished themselves from other minority groups (Verkuyten and Thijs, 2010). Since this study cannot test assumptions about specific minority subgroups, future research could focus on a detailed analysis of ethnic identification and group dynamics for specific minority groups within different classroom contexts. This could provide additional insights into the role of teachers for specific minority groups, as previous evidence shows differential effects of teachers depending on the minority groups studied (Murray et al., 2008). Moreover, ethnic minority students may identify with different social groups (i.e., based on their national identity, migration background, the host country, or display dual-identity configurations; Leszczensky et al., 2019). Thus, future work could expand our findings that were based on nationality and shed more light on the different types of ethnic identification involved in peer processes, with a specific focus on teacher characteristics.

Finally, as we were interested in how students' peer ratings depended on their own and their classmates' ethnicity and on classroom features (i.e., diversity, teacher care), we chose to prioritize the possibility for analyzing valued ties in relation to classroom features over the possibility to study the complete social network. Thus, we were not able to control for structural effects of the complete social network. It may be possible that there could be structural network effects that limit or strengthen opportunities for contact among students (e.g., Vermeij et al., 2009). Thus, future work may focus on disentangling social network processes, individual characteristics, and classroom characteristics from a longitudinal perspective.

CONCLUSION

The findings of the current study provide new insights that teacher-student relationships may be key to foster inclusion among students in ethnically diverse classrooms—particularly in situations in which ethnicity and gender form strong faultlines. Although there was still ethnic homophily when students perceived their teacher as highly supportive and caring, they were more open to intergroup contacts, and particularly when group boundaries were salient. Hence our results support the assumption that teachers have a protective role for preventing negative interethnic relations, which implies strengthening the reflection of their influence on intergroup peer ecologies. This may have long-term consequences on students' social development, since cross-group relations serve as social capital (Juvonen et al., 2019), build intercultural competence (Schwarzenthal et al., 2017) and are important forces to combat prejudice and exclusion (Turner and Cameron, 2016). Openness to diversity may build the foundation for sustained positive peer-interactions, since the likelihood for choosing cross-ethnic friends increases if students have one cross-ethnic friend (Martinovic et al., 2011). Therefore, teachers have inherent power in creating positive intergroup relations and dealing with ethnic diversity.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin. The data collection procedure was in line with the APA guidelines and the guidelines of the German Association of Psychology.

AUTHOR CONTRIBUTIONS

JG participated in the study conceptualization, prepared the social network data, and performed the statistical analyses, their visualization and interpretation and drafted the manuscript and revised it based on feedback from co-authors. BM provided feedback for the study conceptualization, data analyses, interpretation, and visualization and revised the manuscript for intellectual content. MP provided feedback for the statistical analyses, data interpretation and visualization, and revised the methodological parts of the manuscript. SS provided feedback for the data analyses and intellectual content of the manuscript. RD acquisitioned the data, participated in the conceptualization of the study, and provided feedback for its intellectual content. All authors read and approved the final manuscript.

FUNDING

This study has been founded by the Volkswagen Foundation, which aims to advance science and humanities (Grant No. AZ II/715 66).

ACKNOWLEDGMENTS

The authors are grateful to Ulrich Wagner, Iris Jünger and Thomas Petzel for their support with the data collection. We also thank Bsc. Fabienne Lochmatter for the support in formatting and thoughtful reading of the manuscript and Dr. Ariana Garrote for her feedback. Lastly, our gratitude goes to the teachers and students who participated in the present study.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2020.586709/full#supplementary-material

REFERENCES

Agirdag, O., van Houtte, M., and van Avermaet, P. (2011). Ethnic school context and the national and sub-national identifications of pupils. *Ethnic Racial Stud.* 32, 357–378. doi: 10.1080/01419870.2010.510198

Audley-Piotrowski, S., Singer, A., and Patterson, M. (2015). The role of the teacher in children's peer relations: making the invisible hand intentional. *Transl. Issues Psychol. Sci.* 1, 192–200. doi: 10.1037/tps0000038

Baerveldt, C., Van Duijn, M. A. J., Vermeij, L., and Van Hemert, D. A. (2004). Ethnic boundaries and personal choice. Assessing the influence of individual inclinations to choose intra-ethnic relationships on pupils' networks. *Soc. Netw.* 26, 55–74. doi: 10.1016/j.socnet.2004.01.003

Bagci, S. C., Kumashiro, M., Smith, P. K., Blumberg, H., and Rutland, A. (2014). Cross-ethnic friendships: are they really rare? Evidence from secondary schools around London. *Int. J. Intercult. Relations* 41, 125–137. doi: 10.1016/j.ijintrel.2014.04.001

Barth, J. M., McDonald, K. L., Lochman, J. E., Boxmeyer, C., Powell, N., Dilon, C., et al. (2013). Racial composition on interracial peer relationships. *Am. J. Orthopsychiatr.* 83, 231–243. doi: 10.1111/ajop.12026

Baysu, G., Phalet, K., and Brown, R. (2014). Relative group size and minority school success: the role of intergroup friendship and discrimination experiences. *Br. J. Soc. Psychol.* 53, 328–349. doi: 10.1111/bjso.12035

Bellmore, A., Nishina, A., You, J. I., and Ma, T. L. (2012). School context protective factors against peer ethnic discrimination across the high school years. *Am. J. Commun. Psychol.* 49, 98–111. doi: 10.1007/s10464-011-9443-0

Benner, A. D., and Graham, S. (2013). The antecedents and consequences of racial/ethnic discrimination during adolescence: does the source of discrimination matter? *Dev. Psychol.* 49, 1602–1613. doi: 10.1037/a0030557

Bigler, R., and Liben, L. (2007). Developmental intergroup theory: explaining and reducing children's social stereotyping and prejudice. *Curr. Direct. Psychol. Sci.* 16, 162–166. doi: 10.1111/j.1467-8721.2007.00496.x

Blalock, H. M. (1967). *Toward a Theory of Minority-Group Relations*. New York, NY: Wiley.

Blau, P. M. (1977). A macrosociological theory of social structure. *Am. J. Sociol.* 83, 26–54. doi: 10.1086/226505

Brenick, A., Titzmann, P. F., Michel, A., and Silbereisen, R. K. (2012). Perceptions of discrimination by young diaspora migrants. *Eur. Psychol.* 17, 105–119. doi: 10.1027/1016-9040/a000118

Brock, L. L., Nishida, T. K., Chiong, C., Grimm, K. J., and Rimm-Kaufman, S. E. (2008). Children's perceptions of the classroom environment and social and academic performance: a longitudinal analysis of the contribution of the Responsive Classroom approach. *J. School Psychol.* 46, 129–149. doi: 10.1016/j.jsp.2007.02.004

Brown, C. S., and Bigler, R. (2002). Effects of minority status in the classroom on children's intergroup attitudes. *J. Exp. Child Psychol.* 83, 77–110. doi: 10.1016/S0022-0965(02)00123-6

Cappella, E., and Neal, J. W. (2012). A classmate at your side: teacher practices, peer victimization, and network connections in urban schools. *School Mental Health* 4, 81–94. doi: 10.1007/s12310-012-9072-2

Carton, A. M., and Cummings, J. N. (2013). The impact of subgroup type and subgroup configurational properties on work team performance. *J. Appl. Psychol.* 95, 732–758. doi: 10.1037/a0033593

Christensen, R. H. B. (2018a). *"Ordinal—Regression Models for Ordinal Data." R package version 2018.8-25.* Available online at: http://www.cran.r-project.org/package=ordinal/

Christensen, R. H. B. (2018b). *Cumulative Link Models for Ordinal Regression with the R Package ordinal*. R package vignette. Available online at: https://CRAN.R-project.org/package=ordinal

Civitillo, S., Schachner, M. K., Juang, L. P., Van de Vijver, F. J. R., Handrick, A., and Noack, P. (2016). Towards a better understanding of cultural diversity approaches at school: a multi-informant and mixed-methods study. *Learn. Culture Soc. Interact.* 12, 1–14. doi: 10.1016/j.lcsi.2016.09.002

de Miguel Luken, V., and Tranmer, M. (2010). Personal support networks of immigrants to Spain: a multilevel analysis. *Soc. Netw.* 32, 253–262. doi: 10.1016/j.socnet.2010.03.002

Doll, B., Zucker, S., and Brehm, K. (2004). *Resilient Classrooms: Creating Healthy Environments for Learning*. New York, NY: Guilford Press.

Duffy, A. L., and Nesdale, D. (2008). Peer groups, social identity, and children's bullying behaviour. *Soc. Dev.* 18, 121–139. doi: 10.1111/j.1467-9507.2008.00484.x

Durkin, K., Hunter, S., Levin, K. A., Bergin, D., Heim, D., and Howe, C. (2012). Discriminatory peer aggression among children as a function of minority status and group proportion in school context. *Eur. J. Soc. Psychol.* 42, 243–251. doi: 10.1002/ejsp.870

Farmer, T. W., Hamm, J. V., Dawes, M., Barko-Alva, K., and Cross, J. R. (2019). Promoting inclusive communities in diverse classrooms: teacher attunement and social dynamics management. *Educat. Psychol.* 54, 286–305. doi: 10.1080/00461520.2019.1635020

Farmer, T. W., McAuliffe Lines, M., and Hamm, J. V. (2011). Revealing the invisible hand: the role of teachers in children's peer experiences. *J. Appl. Dev. Psychol.* 32, 247–256. doi: 10.1016/j.appdev.2011.04.006

Fortuin, J., van Geel, M., Ziberna, A., and Vedder, P. (2014). Ethnic preferences in friendships and casual contacts between majority and minority children in the Netherlands. *Int. J. Intercult. Relat.* 41, 57–65. doi: 10.1016/j.ijintrel.2014.05.005

Gasser, L., Grütter, J., Buholzer, A., and Wettstein, A. (2018). Emotionally supportive classroom interactions and students' perceptions of their teachers as caring and just. *Learn. Instruct.* 54, 82–92. doi: 10.1016/j.learninstruc.2017.08.003

Geerlings, J., Thijs, J., and Verkuyten, M. (2017). Student-teacher relationships and ethnic outgroup attitudes among majority students. *J. Appl. Dev. Psychol.* 52, 69–79. doi: 10.1016/j.appdev.2017.07.002

Gelman, A., and Hill, J. (2006). *Data Analysis Using Regression and Multilevel/Hierarchical Models*. Cambridge: University Press.

Gest, S. D., and Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *J. Appl. Dev. Psychol.* 32, 288–296. doi: 10.1016/j.appdev.2011.02.004

Ghavami, N., and Peplau, L. A. (2012). An intersectional analysis of gender and ethnic stereotypes: testing three hypotheses. *Psychol. Women Q.* 37, 113–127. doi: 10.1177/0361684312464203

Graham, S. (2006). Peer victimization in school: exploring the ethnic context. *Curr. Direct. Psychol. Sci.* 15, 317–321. doi: 10.1111/j.1467-8721.2006.00460.x

Graham, S. (2018). Race/ethnicity and social adjustment of adolescents: How (not if) school diversity matters. *Educat. Psychol.* 53, 64–77. doi: 10.1080/00461520.2018.1428805

Graham, S., Munniksma, A., and Juvonen, J. (2014). Psychosocial benefits of cross-ethnic friendships in urban middle schools. *Child Dev.* 85, 469–483. doi: 10.1111/cdev.12159

Grütter, J., and Tropp, L. R. (2018). How friendship is defined matters for predicting intergroup attitudes: Shared activities and mutual trust with cross-ethnic peers during late childhood and early adolescence. *Int. J. Behav. Dev.* 43, 128–135. doi: 10.1177/0165025418802471

Hamm, J. V., Bradford Brown, B., and Heck, D. J. (2005). Bridging the ethnic divide: Student and school characteristics in African American, Asian-Descent, Latino, and White adolescents' cross-ethnic friend nominations. *J. Res. Adolescence* 15, 21–46. doi: 10.1111/j.1532-7795.2005.00085.x

Hamre, B. K., and Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Dev.* 76, 949–967. doi: 10.1111/j.1467-8624.2005.00889.x

Hendrickx, M. M. H. G., Mainhard, M. T., Boor-Klip, H. J., Cillessen, A. H. M., and Brekelmans, M. (2016). Social dynamics in the classroom: teacher support and conflict and the peer ecology. *Teach. Teacher Educat.* 53, 30–40. doi: 10.1016/j.tate.2015.10.004

Homan, A. C., and van Knippenberg, D. (2015). "Faultlines in diverse teams," in *Current Issues in Work and Organizational Psychology. Towards Inclusive Organizations: Determinants of Successful Diversity Management at Work*, eds S. Otten, K. van der Zee, and M. B. Brewer (Psychology Press), 132–150.

Hughes, D., Del Toro, J., Harding, J. F., Way, N., and Rarick, J. R. (2016). Trajectories of discrimination across adolescence: associations with academic, psychological, and behavioral outcomes. *Child Dev.* 87, 1337–1351. doi: 10.1111/cdev.12591

Hughes, J. N., Cavell, T. A., and Wilson, V. (2001). Further support for the developmental significance of the quality of the teacher-student relationship. *J. School Psychol.* 39, 289–301. doi: 10.1016/S0022-4405(01)00074-7

Hughes, J. N., and Chen, Q. (2011). Reciprocal effects of student-teacher and student-peer relatedness: effects on academic self efficacy. *J. Appl. Dev. Psychol.* 32, 278–287. doi: 10.1016/j.appdev.2010.03.005

Hughes, J. N., Im, M. H., and Wehrly, S. E. (2014). Effect of peer nominations of teacher-student support at individual and classroom levels on social and academic outcomes. *J. School Psychol.* 52, 309–322. doi: 10.1016/j.jsp.2013.12.004

Jackson, M. F., Barth, J., Powell, N., and Lochman, J. E. (2006). Classroom contextual effects of race on children's peer nominations. *Child Dev.* 77, 1325–1337. doi: 10.1111/j.1467-8624.2006.00937.x

Jones, S., and Rutland, A. (2018). Attitudes toward immigrants among the youth: contact interventions to reduce prejudice in the school context. *Eur. Psychol.* 23, 83–92. doi: 10.1027/1016-9040/a000310

Jugert, P., Noack, P., and Rutland, A. (2011). Friendship preferences among German and Turkish preadolescents. *Child Dev.* 82, 812–829. doi: 10.1111/j.1467-8624.2010.01528.x

Jugert, P., Rutland, A., Brown, R., Cameron, L., Nigbur, D., Watters, C., et al. (2017). Increasing ethnic diversity moderates longitudinal effects of individual differences on friendship homophily. *J. Commun. Appl. Soc. Psychol.* 27, 411–423. doi: 10.1002/casp.2319

Juvonen, J. (2017). "The potential of schools to facilitate and constrain peer relationships," in *Handbook of Peer Interactions, Relationships, and Groups*, eds W. Bukowski, K. Rubin, and B. Laursen (Guildford), 491–509.

Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H. L., and Smith, D. S. (2019). Promoting social inclusion in educational settings: challenges and opportunities. *Educat. Psychol.* 54, 250–270. doi: 10.1080/00461520.2019.1655645

Juvonen, J., Nishina, A., and Graham, S. (2006). Ethnic diversity and perceptions of safety in urban middle schools. *Psychol. Sci.* 17, 393–400. doi: 10.1111/j.1467-9280.2006.01718.x

Kawabata, Y., and Crick, N. R. (2008). The role of cross-racial/ethnic friendships in social adjustment. *Dev. Psychol.* 44, 1177–1183. doi: 10.1037/0012-1649.44.4.1177

Kistner, J. A., Metzler, A., Gatlin, D., and Risi, S. (1993). Classroom racial proportions and children's peer relations: race and gender effects. *J. Educat. Psychol.* 85, 446–452. doi: 10.1037/0022-0663.85.3.446

Knifsend, C. A., and Juvonen, J. (2014). Social identity complexity, cross-ethnic friendships, and intergroup attitudes in urban middle schools. *Child Dev.* 85, 709–721. doi: 10.1111/cdev.12157

Ladd, G. W., Ettekal, I., and Kochenderfer-Ladd, B. (2017). Peer victimization trajectories from kindergarten through high school: differential pathways for children's school engagement and achievement? *J. Educat. Psychol.* 109, 826–841. doi: 10.1037/edu0000177

Lau, D. C., and Murnighan, J. K. (1998). Demographic diversity and faultlines: the compositional dynamics of organizational groups. *Acad. Manage. Rev.* 23, 325–340. doi: 10.5465/amr.1998.533229

Lau, D. C., and Murnighan, J. K. (2005). Interactions within groups and subgroups: the effects of demographic faultlines. *Acad. Manage. J.* 48, 645–659. doi: 10.5465/amj.2005.17843943

Leman, P. J., and Cameron, L. (2017). Growing up with diversity: psychological perspectives. *J. Community Applied Soc. Psychol.* 27, 339–346. doi: 10.1002/casp.2330

Lenth, R. V., and Hervé, M. (2015). *Package 'Lsmeans'*. cran.r-project.org/web/packages/lsmeans/lsmeans.pdf

Leszczensky, L., Flache, A., Stark, T. H., and Munniksma, A. (2018). The relation between ethnic classroom composition and adolescents' ethnic pride. *Group Proces. Intergroup Relat.* 21, 997–1013. doi: 10.1177/1368430217691363

Leszczensky, L., Jugert, P., and Pink, S. (2019). The interplay of group identifications and friendships: evidence from longitudinal social network studies. *J. Soc. Issues* 75, 460–485. doi: 10.1111/josi.12321

Li, J., and Hambrick, D. C. (2005). Factional groups: a new vantage on demographic faultlines, conflict, and disintegration in work teams. *Acad. Manage. J.* 48, 794–813. doi: 10.5465/amj.2005.18803923

Luckner, A. E., and Pianta, R. C. (2011). Teacher–student interactions in fifth grade classrooms: relations with children's peer behavior. *J. Appl. Dev. Psychol.* 32, 257–266. doi: 10.1016/j.appdev.2011.02.010

Martinovic, B., van Tubergen, F., and Maas, L. (2011). Acquisition of cross-ethnic friends by recent immigrants in Canada: a longitudinal approach. *Int. Migration Rev.* 45, 460–488. doi: 10.1111/j.1747-7379.2011.00854.x

McAuliffe, M. D., Hubbard, J. A., and Romano, L. J. (2009). The role of teacher cognition and behavior in children's peer relations. *J. Abnormal Child Psychol.* 37, 665–677. doi: 10.1007/s10802-009-9305-5

McPherson, M., Smith-Lovin, L., and Cook, J. (2001). Birds of a feather: homophily in social networks. *Annual Rev. Sociol.* 27, 415–444. doi: 10.1146/annurev.soc.27.1.415

Merritt, E. G., Wanless, S. B., Rimm-Kaufman, S. E., Cameron, C., and Peugh, J. L. (2012). The contribution of teachers' emotional support to children's social behaviors and self-regulatory skills in first grade. *School Psychol. Rev.* 41, 141–159. doi: 10.1080/02796015.2012.12087517

Meyer, B., and Glenz, A. (2013). Team faultline measures: a computational comparison and a new approach to multiple subgroups. *Organizat. Res. Methods* 16, 393–424. doi: 10.1177/1094428113484970

Mikami, A. Y., Griggs, M. S., Reuland, M. M., and Gregory, A. (2012). Teacher practices as predictors of children's classroom social preference. *J. School Psychol.* 50, 95–111. doi: 10.1016/j.jsp.2011.08.002

Mikami, A. Y., Lerner, M. D., and Lun, J. (2010). Social context influences on children's rejection by their peers: context of peer rejection. *Child Dev. Perspect.* 4, 123–130. doi: 10.1111/j.1750-8606.2010.00130.x

Mikulincer, M., and Shaver, P. R. (2001). Attachment theory and intergroup bias: evidence that priming the secure base schema attenuates negative reactions to out-groups. *J. Personal. Soc. Psychol.* 81, 97–115. doi: 10.1037/0022-3514.81.1.97

Moody, J. (2001). Race, school integration, and friendship segregation in America. *Am. J. Sociol.* 107, 679–716. doi: 10.1086/338954

Mulvey, K. L., Palmer, S. B., and Abrams, D. (2016). Race-based humor and peer group dynamics in adolescence: bystander intervention and social exclusion. *Child Dev.* 87, 1379–1391. doi: 10.1111/cdev.12600

Murray, C., Waas, G. A., and Murray, K. M. (2008). Child race and gender as moderators of the association between teacher-child relationships and school adjustment. *Psychol. Schools* 45, 562–578. doi: 10.1002/pits.20324

Murray-Harvey, R., and Slee, P. T. (2010). School and home relationships and their impact on school bullying. *School Psychol. Int.* 31, 271–295. doi: 10.1177/0143034310366206

OECD (2019). *The Road to Integration: Education and Migration. OECD Reviews of Migrant Education.* Paris: OECD Publishing.

Oxman-Martinez, J., Rummens, A. J., Moreau, J., Choi, Y. R., Beiser, M., Ogilvie, L., et al. (2012). Perceived ethnic discrimination and social exclusion: newcomer immigrant children in Canada. *Am. J. Orthopsychiatr.* 82, 376–388. doi: 10.1111/j.1939-0025.2012.01161.x

Putallaz, M., Grimes, C. L., Foster, K. J., Kupersmidt, J. B., Coie, J. D., and and Dearing, K. (2007). Overt and relational aggression and victimization: multiple perspectives within the school setting. *J. School Psychol.* 45, 523–547. doi: 10.1016/j.jsp.2007.05.003

R Development Core Team (2019). *R: A Language and Environment for Statistical Computing*. Computer Software. Vienna. Available online at: http://www.R-project.org (accessed April 5, 2019).

Saldern, M. V., and Littig, K. E. (1987). *Landauer Skalen zum Sozialklima für 4.-13. Klassen (LASSO 4-13).* Göttingen: Hogrefe.

Sanders, K., and Downer, J. (2012). Predicting acceptance of diversity in pre-kindergarten classrooms. *Early Childhood Res. Quarterly* 27, 503–511. doi: 10.1016/j.ecresq.2011.12.001

Schachner, M. K., Brenick, A., Noack, P., van de Vijver, F. J. R., and Heizmann, B. (2015). Structural and normative conditions for interethnic friendships in multiethnic classrooms. *Int. J. Intercult. Relat.* 47, 1–12. doi: 10.1016/j.ijintrel.2015.02.003

Schäfer, M., Kron, S., Brodbeck, F. C., Wolke, D., and Schulz, H. (2005). Bullying roles in changing contexts: the stability of victim and bully roles from primary to secondary school. *Int. J. Behav. Dev.* 29, 323–335. doi: 10.1177/01650250544000107

Scheepers, P., Gijsberts, M., and Coenders, M. (2002). Ethnic exclusionism in European countries. Public opposition to civil rights for legal migrants as aresponse to perceived ethnic threat. *Eur. Sociol. Rev.* 18, 17–34. doi: 10.1093/esr/18.1.17

Schwartz, D., Gorman, A. H., Nakamoto, J., and Toblin, R. L. (2005). Victimization in the peer group and children's academic functioning. *J. Educat. Psychol.* 97, 425–435. doi: 10.1037/0022-0663.97.3.425

Schwarzenthal, M., Juang, L. P., Schachner, M. K., van de Vijver, F. J. R., and Handrick, A. (2017). From tolerance to understanding: exploring the development of intercultural competence in multiethnic contexts from early to late adolescence. *J. Community Appl. Soc. Psychol.* 27, 388–399. doi: 10.1002/casp.2317

Sette, S., Gasser, L., and Grütter, J. (2019). Links between teachers' liking of students, peer inclusion, and students' academic achievement: a two-wave longitudinal study. *J. Youth Adolescence* 49, 747–756. doi: 10.1007/s10964-019-01048-5

Sigal, J., and Nally, M. (2004). "Cultural perspectives on gender," in *Praeger Guide to the Psychology of Gender*, ed M. A. Paludi (Praeger Publishers/Greenwood Publishing Group), 27–40.

Simpson, E. H. (1949). Measurement of diversity. *Nature* 163:688. doi: 10.1038/163688a0

Smith, S., Maas, I., and van Tubergen, F. (2014). Ethnic ingroup friendships in schools: testing the by-product hypothesis in England, Germany, the Netherlands and Sweden. *Social Netw.* 39, 33–45. doi: 10.1016/j.socnet.2014.04.003

Snijders, T. A. B., Bosker, R., (1999). *Multilevel Analysis. An Introduction to Basic and Advanced Multilevel Modelling*. Thousand Oaks, CA: Sage.

Stark, S. T. H. (2015). Understanding the selection bias: Social network processes and the effect of prejudice on the avoidance of outgroup friends. *Social Psychol. Quarterly* 78, 127–150. doi: 10.1177/0190272514565252

Stefanek, E., Strohmeier, D., and van de Schoot, R. (2014). Individual and classroom predictors of same-cultural friendship preferences in multicultural schools. *Int. J. Behav. Dev.* 39, 255–265. doi: 10.1177/0165025414538556

Strohmeier, D. (2012). "Friendship homophily among children and youth in multicultural classes," in *Migrations: Interdisciplinary Perspectives*, eds M. Messer, R. Schroeder, and R. Wodak (Vienna: Springer), 99–109. doi: 10.1007/978-3-7091-0950-2_9

Strohmeier, D., Nestler, D., and Spiel, C. (2006). Freundschaftsmuster, Freundschaftsqualität und aggressives Verhalten von Immigrantenkindern in der Grundschule. *Diskurs Kindheits- Und Jugendforschung* 1, 21–37.

Suldo, S., Friedrich, A., White, T., Farmer, J., Devon, M., and Michalowski, J. (2009). Teacher support and adolescents' subjective well-being: a mixed-methods investigation. *School Psychol. Rev.* 38, 67–85.

Tajfel, H., and Turner, J. C. (1979). "An integrative theory of intergroup conflicts," in *The Social Psychology of Intergroup Relations*, eds W. G. Austin and S. Worchel (Monterey, CA: Brooks-Cole), 33–47.

Thatcher, S. M. B., and Patel, P. C. (2012). Group faultlines: a review, integration, and guide to future research. *J. Manage.* 38, 969–1009. doi: 10.1177/0149206311426187

Thijs, J. (2017). "Student–teacher relationships and interethnic relations," in *The Wiley Handbook of Group Processes in Children and Adolescents*, eds A. Rutland, D. Nesdale, and C. S. Brown (Oxford: John Wiley and Sons, Ltd), 416–434. doi: 10.1002/9781118773123.ch20

Thijs, J., and Fleischmann, F. (2015). Student–teacher relationships and achievement goal orientations: Examining student perceptions in an ethnically diverse sample. *Learn. Individ. Diff.* 42, 53–63. doi: 10.1016/j.lindif.2015.08.014

Thijs, J., and Verkuyten, M. (2012). Ethnic attitudes of minority students and their contact with majority group teachers. *J. Appl. Dev. Psychol.* 33, 260–268. doi: 10.1016/j.appdev.2012.05.004

Thijs, J., and Verkuyten, M. (2014). School ethnic diversity and students' interethnic relations. *Br. J. Educat. Psychol.* 84, 1–21. doi: 10.1111/bjep.12032

Thijs, J., Verkuyten, M., and Grundel, M. (2014). Ethnic classroom composition and peer victimization: the moderating role of classroom attitudes. *J. Soc. Issues* 70, 134–150. doi: 10.1111/josi.12051

Titzmann, P. F. (2014). Immigrant adolescents' adaptation to a new context: ethnic friendship homophily and its predictors. *Child Dev. Perspect.* 8, 107–112. doi: 10.1111/cdep.12072

Titzmann, P. F., Brenick, A., and Silbereisen, R. K. (2015). Friendships fighting prejudice: a longitudinal perspective on adolescents' cross-group friendships with immigrants. *J. Youth Adolescence* 44, 1318–1331. doi: 10.1007/s10964-015-0256-6

Titzmann, P. F., and Silbereisen, R. K. (2009). Friendship homophily among ethnic German immigrants: a longitudinal comparison between recent and more experienced immigrant adolescents. *J. Family Psychol.* 23, 301–310. doi: 10.1037/a0015493

Tolsma, J., van Deurzen, I., Stark, T. H., and Veenstra, R. (2013). Who is bullying whom in ethnically diverse primary schools? Exploring links between bullying, ethnicity, and ethnic diversity in Dutch primary schools. *Soc. Netw.* 35, 51–61. doi: 10.1016/j.socnet.2012.12.002

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., and Wetherell, M. S. (1987). "A self-categorization theory," in *Rediscovering the Social Group: A Self-Categorization Theory*, eds J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, and M. S. Wetherell (Oxford: Blackwell), 42–64.

Turner, R. N., and Cameron, L. (2016). Confidence in contact: a new perspective on promoting cross-group friendship among children and adolescents. *Social Issues Policy Rev.* 10, 212–246. doi: 10.1111/sipr.12023

Umaña-Taylor, A. J., Quintana, S. M., Lee, R. M., Cross, W. E., Rivas-Drake, D., Schwartz, S. J., et al. (2014). Ethnic and racial identity during adolescence and into young adulthood: an integrated conceptualization. *Child Dev.* 85, 21–39. doi: 10.1111/cdev.12196

van Dijk, H., Meyer, B., and van Engen, M. (2018). If it doesn't help, it doesn't hurt? Information elaboration harms the performance of gender-diverse teams when attributions of competence are inaccurate. *PLoS ONE* 13:201180. doi: 10.1371/journal.pone.0201180

van Ryzin, M. J., Gravely, A. A., and Roseth, C. J. (2009). Autonomy, belongingness, and engagement in school as contributors to adolescent psychological well-being. *J. Youth Adolescence* 38, 1–12. doi: 10.1007/s10964-007-9257-4

van Zalk, M. H. W., and Kerr, M. (2014). Developmental trajectories of prejudice and tolerance toward immigrants from early to late adolescence. *J. Youth Adolescence* 43, 1658–1671. doi: 10.1007/s10964-014-0164-1

Veenstra, R., and Dijkstra, J. K. (2011). "Transformations in adolescent peer networks," in *Relationship Pathways: From Adolescence to Young Adulthood*, eds B. Laursen, and W. A. Collins (Los Angeles, CA: SAGE Publications Inc), 135–154. doi: 10.4135/9781452240565.n7

Verkuyten, M. (2007). Ethnic in-group favoritisms among minority and majority groups: testing the self-esteem hypothesis among preadolescents. *J. Appl. Soc. Psychol.* 37, 486–500. doi: 10.1111/j.1559-1816.2007.00170.x

Verkuyten, M. (2016). Further conceptualizing ethnic and racial identity research: the social identity approach and its dynamic model. *Child Dev.* 87, 1796–1812. doi: 10.1111/cdev.12555

Verkuyten, M., and Martinovic, B. (2006). Understanding multicultural attitudes: the role of group status, identification, friendships, and justifying ideologies. *Int. J. Intercultural Relat.* 30, 1–18. doi: 10.1016/j.ijintrel.2005.05.015

Verkuyten, M., and Thijs, J. (2002). Racist victimization among children in The Netherlands: the effect of ethnic group and school. *Ethnic Racial Stud.* 25, 310–331. doi: 10.1080/01419870120109502

Verkuyten, M., and Thijs, J. (2010). Ethnic minority labeling, multiculturalism, and the attitude of majority group members. *J. Language Soc. Psychol.* 29, 467–477. doi: 10.1177/0261927X10377992

Verkuyten, M., Thijs, J., and Bekhuis, H. (2010). Intergroup contact and ingroup reappraisal: examining the deprovincialization thesis. *Soc. Psychol. Quarterly* 73, 398–416. doi: 10.1177/0190272510389015

Vermeij, L., van Duijn, M. A. J., and Baerveldt, C. (2009). Ethnic segregation in context: social discrimination among native Dutch pupils and their ethnic minority classmates. *Soc. Netw.* 31, 230–239. doi: 10.1016/j.socnet.2009.06.002

Vermunt, J. K., and Kalmijn, M. (2006). Random effects models for personal networks. An application to marital status homogeneity. *Methodology* 2, 34–41. doi: 10.1027/1614-2241.2.1.34

Vervoort, M. H., Scholte, R. H., and Scheepers, P. L. (2011). Ethnic composition of school classes, majority-minority friendships, and adolescents' intergroup attitudes in the Netherlands. *J. Adolescence* 34, 257–267. doi: 10.1016/j.adolescence.2010.05.005

Wentzel, K. R., Battle, A., Russell, S. L., and Looney, L. B. (2010). Social supports from teachers and peers as predictors of academic and social motivation. *Contemp. Educ. Psychol.* 35, 193–202. doi: 10.1016/j.cedpsych.2010.03.002

Wilson, T., and Rodkin, P. C. (2011). African American and European American children in diverse elementary classrooms: social integration, social status, and social behavior. *Child Dev.* 82, 1454–1469. doi: 10.1111/j.1467-8624.2011.01634.x

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

frontiers in Education

REVIEW
published: 21 January 2021
doi: 10.3389/feduc.2020.587174

Supporting the Inclusion of Socially Vulnerable Early Adolescents: Theory and Illustrations of the BASE Model

Thomas W. Farmer[1], Brittany I. Sterrett[2], Kate E. Norwalk[3], Chen-Chih Chen[2], Molly Dawes[4], Jill V. Hamm[5], David L. Lee[6] and Adaline G. Farmer[7]*

[1] Department of Health and Human Development, University of Pittsburgh, Pittsburgh, PA, United States, [2] Department of Counseling and Special Education, Virginia Commonwealth University, Richmond, VA, United States, [3] Department of Psychology, North Carolina State University, Raleigh, NC, United States, [4] Department of Educational Studies, University of South Carolina, Columbia, SC, United States, [5] Applied Developmental Science and Special Education, University of North Carolina, Chapel Hill, NC, United States, [6] Department of Educational Psychology, Counseling, and Special Education, Pennsylvania State University, University Park, PA, United States, [7] College of Social Sciences and Humanities, Northeastern University, Boston, MA, United States

We focus on the inclusion of socially vulnerable early adolescents including students with special education needs (SEN). Building from multiple intervention and randomized control trials of a professional development model aimed at supporting teachers' management of the classroom social context, we provide an overview of the Behavioral, Academic, and Social Engagement (BASE) Model as a framework to foster social inclusion. We briefly review the conceptual foundations of this model and we present the delivery (i.e., directed consultation, the scouting report process) and content (i.e., Academic Engagement Enhancement, Competence Enhancement Behavior Management, Social Dynamics Management) components of BASE. We then briefly discuss the intervention support needs of subtypes of socially vulnerable youth and how these needs can be differentially addressed within the BASE framework.

Keywords: social inclusion, social dynamics, classroom management, students with special education needs, socially vulnerable children

OPEN ACCESS

Edited by:
Tim Mainhard,
Utrecht University, Netherlands

Reviewed by:
Marloes Hendrickx,
Eindhoven University of Technology, Netherlands
Nouchka Tick,
Utrecht University, Netherlands

****Correspondence:***
Thomas W. Farmer
tfarmer@pitt.edu

Specialty section:
This article was submitted to Educational Psychology, a section of the journal Frontiers in Education

Received: *25 July 2020*
Accepted: *15 December 2020*
Published: *21 January 2021*

Citation:
Farmer TW, Sterrett BI, Norwalk KE, Chen C-C, Dawes M, Hamm JV, Lee DL and Farmer AG (2021) Supporting the Inclusion of Socially Vulnerable Early Adolescents: Theory and Illustrations of the BASE Model. Front. Educ. 5:587174. doi: 10.3389/feduc.2020.587174

Many students are concerned about social difficulties during the late elementary and middle school years (Graham et al., 2006; Rice et al., 2011). This is particularly true for early adolescents with special education needs (SEN) who are at increased risk for peer rejection, social isolation, and involvement in peer victimization (Frederickson and Furnham, 2004; Estell et al., 2009a; Sullivan et al., 2015). The Behavioral, Academic, and Social Engagement (BASE) Model was developed as a holistic, ecological classroom management approach that teachers can use to support socially vulnerable youth during the transition to middle school. Our goal is to describe the application of the BASE model for supporting the inclusion of distinct subtypes of students with SEN during the late childhood and early adolescent school years.

We address five aims. We begin with an overview of the social inclusion of students with SEN. Then, we build upon a person-in context dynamic systems perspective to describe the theoretical foundations of the BASE model. Next, we summarize the intervention components and practice elements of the BASE model and their linkages to key social development process variables typically experienced by early adolescents. Building on research using latent profile analysis of interpersonal competence, we discuss three distinct configurations or subtypes of socially vulnerable youth: popular aggressive; passive; and low-adaptive (i.e., multi-risk). Finally, using these configurations and associated adjustment factors as a guide, we illustrate how teachers can use the BASE model to

adapt strategies and supports for each subtype. We focus on how teachers need to be attuned not only to the differential needs of sub-types of youth, but to also be aware that their management of the classroom experience of students characterized by different configurations may contribute to how subtypes of students are perceived by their classmates and their corresponding relationships and social roles in the peer ecology.

OVERVIEW OF THE SOCIAL INCLUSION OF STUDENTS WITH SEN

Compared to youth who do not receive special education, students with SEN have elevated rates of social difficulties. This includes increased risk for involvement in bullying both as a perpetrator and a victim (Blake et al., 2012; Chen et al., 2015; Rose and Gage, 2017) as well as feeling as though they do not belong in the classroom or school (Sullivan et al., 2015; Chen et al., 2019; Musetti et al., 2019). In addition, higher proportions of students with SEN are socially isolated (i.e., not a member of a peer group: Pijl et al., 2008; Farmer et al., 2011) or are not well liked by peers (i.e., rejected sociometric status: Estell et al., 2008; Pijl and Frostad, 2010; Bossaert et al., 2015). Further, of the students with SEN who are members of peer groups, many tend to affiliate with classmates who share their social difficulties and who may support and sustain their social problems (Estell et al., 2009a; Farmer et al., 2011; Banks et al., 2018).

Although, as a group, students with SEN are socially vulnerable and are at increased risk for poor inclusion in the classroom community, there is considerable variability in the social experiences of subtypes of youth with disabilities. For example, students with SEN are a socially heterogeneous group and are represented in a range of profiles and patterns of involvement in bullying including low or no involvement, decreasing involvement, and increasing involvement (e.g., Chen et al., 2015; Winters et al., 2020). Also, although students with SEN have elevated rates of low acceptance most do not have rejected status and many have positive social roles and reputations in the peer system (Stone and La Greca, 1990; Juvonen and Bear, 1992; Estell et al., 2008). Further, although 10–20% of students with SEN are socially isolated, the majority are members of peer groups and have close friendships that, in some cases, appear to support their adjustment in school (Pearl et al., 1998; Estell et al., 2009b). Using person-oriented analytic approaches, subtypes of youth, including students with SEN, have been identified who have distinct interpersonal competence patterns (ICPs) on teacher ratings of their academic, behavioral, and social functioning (Farmer et al., 1999; Chen et al., 2019). In turn, these ICPs are associated with different levels of school belonging and social experiences in inclusive classroom settings.

Variability in the inclusive experiences of students with SEN appears to reflect the interplay between the characteristics of students with SEN, the characteristics of the broader social system, the relationship and interactions of students with school adults, and the general functioning of the classroom ecology (Farmer et al., 2018c; Hymel and Katz, 2019; Juvonen et al., 2019). Building from a person-in-context dynamic systems perspective, it is possible to develop approaches in which teachers are attuned to the general classroom social dynamics and the experiences of students with SEN (Farmer et al., 2019). A person-in-context dynamic systems framework is critical for understanding how the academic, behavioral, and social experiences of students in the classroom come together to contribute to the social inclusion of students with SEN and their relations with their classmates. In turn, this information can be leveraged into a systematic approach for managing effective inclusive classroom ecologies.

A PERSON-IN-CONTEXT DYNAMIC SYSTEMS PERSPECTIVE OF INCLUSION

Social inclusion is not simply a process of putting students with SEN in the same general education classroom with peers who do not have SEN. On the contrary, social inclusion involves fostering the adaptive interplay between youth and contexts. This person-in-context perspective involves the integration of ecological and dynamic systems theories of youth development.

From an ecological-systems perspective, students are embedded in nested social systems including: the *microsystem* (i.e., proximal social settings, social roles, and relationships); the *mesosystem* (i.e., the interrelations among the major proximal social settings of the student); the *exosystem* (i.e., formal and informal social structure that do not directly contain the student, but influence the student's experiences); and the *macrosystem* (i.e., overall institutional structures including legal, political, and cultural factors that contribute to the other systems: Bronfenbrenner, 1977). From a dynamic systems perspective, youth develop as an integrated whole by engaging with these various ecological subsystems. Reflecting the concept of a system, the characteristics of individual students (e.g., biophysical, behavioral, cognitive, psychological, self-regulatory) are bidirectionally linked to each other and to the contexts in which they are embedded (e.g., family, peer group, classroom, school, community, culture, sociopolitical structures) such that they influence each other as they coactively contribute to the moment-to-moment functioning and adaptation of the student (Bronfenbrenner, 1996; Cairns, 2000; Smith and Thelen, 2003).

A person-in-context perspective is critical for understanding the complexity of social inclusion. Because individual and ecological factors operate together as a system, they tend to constrain each other and promote stability in patterns of behavior and functioning (Magnusson and Cairns, 1996). This means that efforts to change one factor (e.g., the student's social behavior, how peers perceive and treat classmates who are different from themselves) are likely to have a modest and short-lived impact if other factors (i.e., correlated constraints) do not change in corresponding ways (Cairns and Cairns, 1994; Farmer et al., 2021). In the classroom setting, moment-to-moment activities and interactions contribute to each student's overall experiences and functioning. There are three correlated domains of school functioning that are key for the inclusion of students with SEN in the classroom community: academic, behavioral, and social. Accordingly, building from a dynamic person-in-context perspective, it is beneficial for teachers to manage the classroom

ecology in ways that approach academic instruction, behavior support, and social engagement as an integrated system of correlated factors.

The direct intervention activities that teachers are most likely to engage in involve micro- and macro-ecological systems. Accordingly, the interventions outlined in this paper focus on more proximal ecological factors. However, exo- and macro-systems are equally important for effective intervention because structural, cultural, and socio-political factors can strongly impact social inclusion. To address the contributions or constraints of exo- and macro-system factors, it is necessary to have a dynamic and malleable professional development training and support system to help tailor intervention strategies across different communities and schools. This includes identifying the strategies that are most likely to be effective in a particular setting and guiding teachers in the adaptation of the practice elements of evidence-based programs to the strengths, resources, and needs of specific students, classrooms, schools, and communities. While our discussion centers on strategies teachers use in the classroom, we briefly describe professional development approaches (e.g., directed consultation, the scouting report) that intervention or inclusion specialists can use to support general education teachers as they work to effectively tailor strategies to the needs of students and classrooms.

THE BEHAVIORAL, ACADEMIC, AND SOCIAL ENGAGEMENT (BASE) MODEL

The BASE model was developed from research on classroom social dynamics in elementary and middle schools as well as intervention efforts to infuse a person-in-context dynamic systems perspective into teachers' management of the instructional, behavioral, and social functioning of students in moment-to-moment daily activities (see Farmer et al., 2013, 2019 for reviews). BASE has been evaluated in multiple small-scale randomized control trials involving two or more schools during intervention development activities as well as two large-scale cluster randomized trials (CRT) with 36 rural schools across 10 states in one CRT and 24 metropolitan schools across two states in a second CRT. Findings of these evaluations suggest that teachers trained in the base model are more attuned to classroom social dynamics and students' social roles and relationships (Farmer et al., 2010a; Hamm et al., 2011a), have a greater sense of their efficacy to support students (Farmer et al., 2010b), and are more likely to use positive instructional and classroom management strategies and are less likely to use reactive negative approaches (Motoca et al., 2014).

Collectively, evaluations of the BASE model suggest that in schools in which teachers were trained in BASE strategies, students were more likely to be productively engaged in the classroom community and to have positive social experiences. Academically and behaviorally struggling students were more likely to perceive that the peer culture is supportive of positive academic effort and acheivement (Hamm et al., 2014) and to perceive that the classroom is supportive of them and that they belong (Hamm et al., 2011a). Students with behavioral risks in BASE classrooms were more likely to develop postive peer affilations with prosocial classmates (Farmer et al., 2010b) and students with SEN perceived less peer support for bullying directed agianst them (Chen et al., 2015). Further, students from racial and ethnic minorities tend to have more positive experiences in BASE classrooms. Native American students in BASE classrooms viewed the peer culture to be more supportive of academic engagement and achievement and to be less socially risky and they tended to have greater academic engagement and demonstrated improvement in academic grades and test scores (Hamm et al., 2010). Likewise, African American and Latino youth in BASE schools reported less defiance toward teachers and a greater willingness to protect peers from bullying (Dawes et al., 2020) and they perceived less discrimination from peers or teachers (Marraccini et al., under review).

The core of the BASE model is to be responsive to the strengths, needs, and opportunities of students and teachers in relation to cultural, ecological, and socio-political factors (e.g., meso-system) that impact the resources and expectations of the school community (exosystem). To ensure that the BASE model can be tailored to specific communities, schools, teachers, and students, we use a professional development model known as directed consultation (DC) and an ecological assessment approach that is known as the Scouting Report. This work is typically conducted by an intervention or inclusion specialist as a resource to support general education teachers as they work to promote and maintain an inclusive classroom environment.

Directed Consultation

Directed consultation (DC) is a professional development and intervention support model designed to integrate practice elements of evidence-based programs (EBPs) into daily classroom activities (Farmer et al., 2013). Reflecting the need to be responsive to exo- and meso-system factors, the DC approach consists of four components that are conducted in an iterative and recursive fashion to tailor strategies to the specific features of students, classrooms, schools, and communities. As outlined in **Figure 1**, the DC process involves ongoing data collection; tailored general training; ongoing support; and implementation consultation (Motoca et al., 2014; Farmer et al., 2018b). The *ongoing data collection* component involves observations, interviews, and data use consultation to assess resources, strengths, needs, and current practices (see the scouting report below). The *tailored general training* component builds on information generated from the data collection and using this data to guide a series of professional development activities including workshops with tailored content and relationship building strategies that focus on matching practice elements of relevant EBPs to the resources, needs, and strengths within the classroom or other focal settings. The *ongoing support* component includes targeted online modules that are designed to address specific areas of need, the collection of implementation data, and guidance to address issues in implementation such as difficulty with the use of specific strategies, clarifying concerns about lack of fidelity, and resolving potential mismatches between strategies,

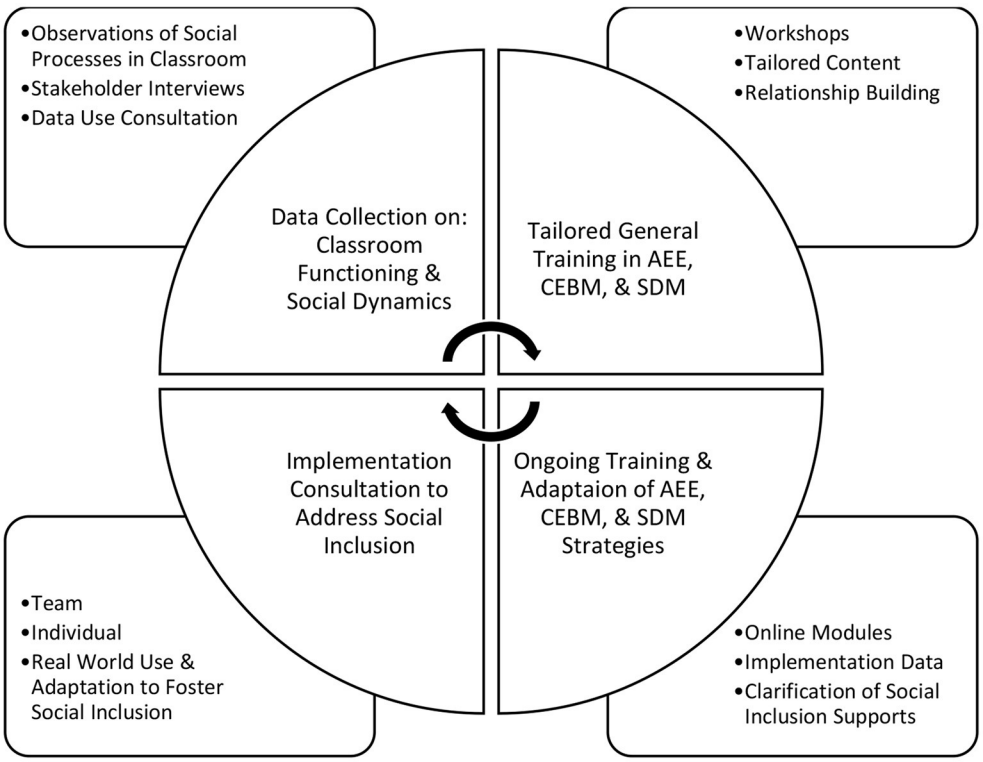

FIGURE 1 | The directed consultation process to facilitate social inclusion with the BASE model.

circumstances, and needs. The *implementation consultation* component is a structured problem-solving process aimed at tailoring assessments and interventions to specific issues, circumstances, and contexts. These strategies are typically conducted by an intervention or inclusion specialist who uses local data and data collected in the scouting report process to guide teachers in the adaptation of the practice elements of EBPs to the circumstances that need to be addressed in the specific context. Local data may include data on trends for key variables related to students' school functioning such as discipline, school absences, academic performance, services received, involvement in bullying, and other student school adjustment variables. These data can be considered for individual students in relation to students overall and students with SEN as well data linked to individual teachers. This information can help to contextualize the overall experiences of specific students as well as the support needs of specific teachers.

The Scouting Report

The Scouting Report is a data collection approach designed to operate within the directed consultation process to clarify the general social functioning of the classroom or school, the values and systems that are in place that contribute to the overall climate and culture of the focal ecology, community strengths and constraints, current teacher practices, resources and supports available to the teacher, and the intervention support needs of focal students (Farmer et al., 2016a). A major goal of the scouting report is to link the practice elements of EBPs to developmental leverage points and processes that are most likely to have an impact in relation to the current ecology and circumstances (Farmer et al., 2013, 2018b).

For the purposes of fostering social inclusion, it is helpful to assess the general social dynamics in the classroom early in the scouting report process (Farmer et al., 2019). This can involve a variety of formal surveys and sociometric assessment procedures to determine the social relations and social functioning of specific students as well as the overall classroom (Farmer et al., 2012; McKown, 2019). However, it is possible to gain actionable information to guide the intervention adaptation process by conducting: structured interviews; observations of the general focal context; observations of synchronous social interactions between focal students and other key players in the classroom; and post-observation interviews to further clarify what was observed (Farmer et al., 2016a, 2018a).

This work should be guided by the goal of assessing the overall functioning of the peer system and clarifying patterns of social synchrony (i.e., mutual support of each other's behavior) between the focal student, the teacher, students who are prominent and powerful in the social system, and students who are socially marginalized (Farmer et al., 2016b). The scouting report begins with pre-observation interviews in which teachers, students, and other stakeholders (e.g., principal, special education teacher) are asked about how the student gets along with others in the classroom including strengths and difficulties. This is followed by

observations that focus on: the placement of the focal student in the social ecology; the frequency and valence of the focal student's interactions with others; the teacher's active management of the social system; the identification of key social actors for the focal student; and the observer's impressions of the social processes that appear to influence or impact the student (Farmer et al., 2016a).

In addition, teachers are typically asked to keep weekly logs of all the peer groups they are aware of in the classroom (i.e., attunement) and to use this information to help guide instructional and behavior management strategies by effectively harnessing the power of peers in the intervention process (Farmer et al., 2019). Often social dynamics management is not the sole or primary intervention. Rather it tends to serve as a context intervention that is designed to augment, complement, and reinforce more explicit and individually focused social interventions (Farmer et al., 2018c; Bierman and Sanders, 2021). The goal is to help teachers become an "invisible hand" who infuse their knowledge of social dynamics into the moment-to-moment management of classroom activities in unobtrusive ways that facilitate important experiences and opportunities for children and youth who are socially vulnerable (Farmer et al., 2018a).

The BASE Model Theory of Change

The BASE Model theory of change is shown in **Figure 2**. As depicted by the bi-directional arrows at the top of the model, the BASE social inclusion model involves four domains of school functioning (i.e., the classroom functioning of students with SEN, behavioral engagement, academic engagement, and social engagement) that are linked to each other and that collectively contribute to the adjustment and adaptation of students with SEN and students who experience social difficulties. The fact that these factors are linked in a dynamic system means that teachers are not intervening with them in isolation. Rather, as teacher engage in one domain they must be attuned to and cognizant of the potential impact of their efforts on other domains and they should also consider how each of the other domains may constrain or influence their efforts on the focal domain. With directed consultation, interventions specialists provide professional development training that is tailored to the context and that focuses on promoting teachers' capacities to facilitate students with SEN's peer experiences and opportunities as they manage the behavioral, academic, and social domains at the individual student and classroom contexts levels. The goal is for the teacher to provide appropriate supports at each of these domains. Accordingly, the intervention specialist monitors teachers' implementation of needed strategies and collects data on student functioning and changes in their capacity and outcomes in relation to the use of specific strategies and the impact of the classroom context. The BASE model is designed so that the focus is not only doing everything in a lock-step fashion. Rather the goal is to tailor strategies and supports to the needs of the students, the characteristics of the context and the capacities of the teachers. The three intervention components of the BASE model are presented below individually but it is expected that they are integrated in delivery and implementation with the collective goal of enhancing the classroom functioning of students with SEN and students with or at-risk of social adjustment difficulties.

Academic Engagement Enhancement

How teachers interact with and engage students in instruction not only has an academic impact, it also contributes to students' peer relations and their social identity (Vollet et al., 2017; Hymel and Katz, 2019). Peer relations and peer cultures contribute to students' academic motivation, their academic effort, and their sense of belonging in the classroom (Hamm et al., 2014; Kindermann, 2016; Wentzel et al., 2017). How teachers manage the academic context, in part, depends on their ability to leverage the social context to promote a climate where students feel safe to take academic risks, engage in instruction, and collaborate to support each other's academic success (Hamm et al., 2012; Vollet et al., 2017). When teachers are attuned to classroom social dynamics and use this information to promote an academically supportive classroom society, they are better positioned to foster the successful inclusion of socially vulnerable youth (Gest et al., 2014; Farmer et al., 2019; Hymel and Katz, 2019). The BASE model is designed to harness the power of peer processes in instruction.

Academic instruction is the central focus of school classrooms. Accordingly, the Academic Engagement Enhancement (AEE) component is the foundation of the BASE model and its overarching goal is to create a classroom culture that promotes the productive academic engagement of all students. When providing supports for students with differential needs, it is critical to engage them in non-obtrusive ways that do not call attention to their differences. This means that things should be done in a matter-of-fact manner that does not hide differences, but that makes it normal that everyone in the class has different needs (McLesky and Waldron, 2007). Working within a Tiered System of Adaptive Supports (TSAS) framework, adaptive universal supports should be provided in Tier 1. This does not mean that everyone gets the same thing (Farmer, 2020). In a TSAS model, "universal" means that the context is structured to provide adaptive differential supports tailored to promote the routine daily functioning of all students whatever their needs may be (Sutherland et al., 2018; Hymel and Katz, 2019; Farmer et al., 2021).

As indicated in **Table 1**, the aims of the AEE component are to promote a positive and engaged climate, to promote a peer culture that supports academic engagement valuing, and to use data to guide the adaptation of routine daily strategies to the needs of individual students. To achieve this, the AEE component is organized into three distinct but complementary categories of instructional management strategies: academic context management, pacing activities for success, and reinforcing desired behaviors.

Academic Context Management

Academic context management is part of the general management of the classroom and should complement the context management features of the other two BASE components (i.e., behavioral, social). There are a variety of

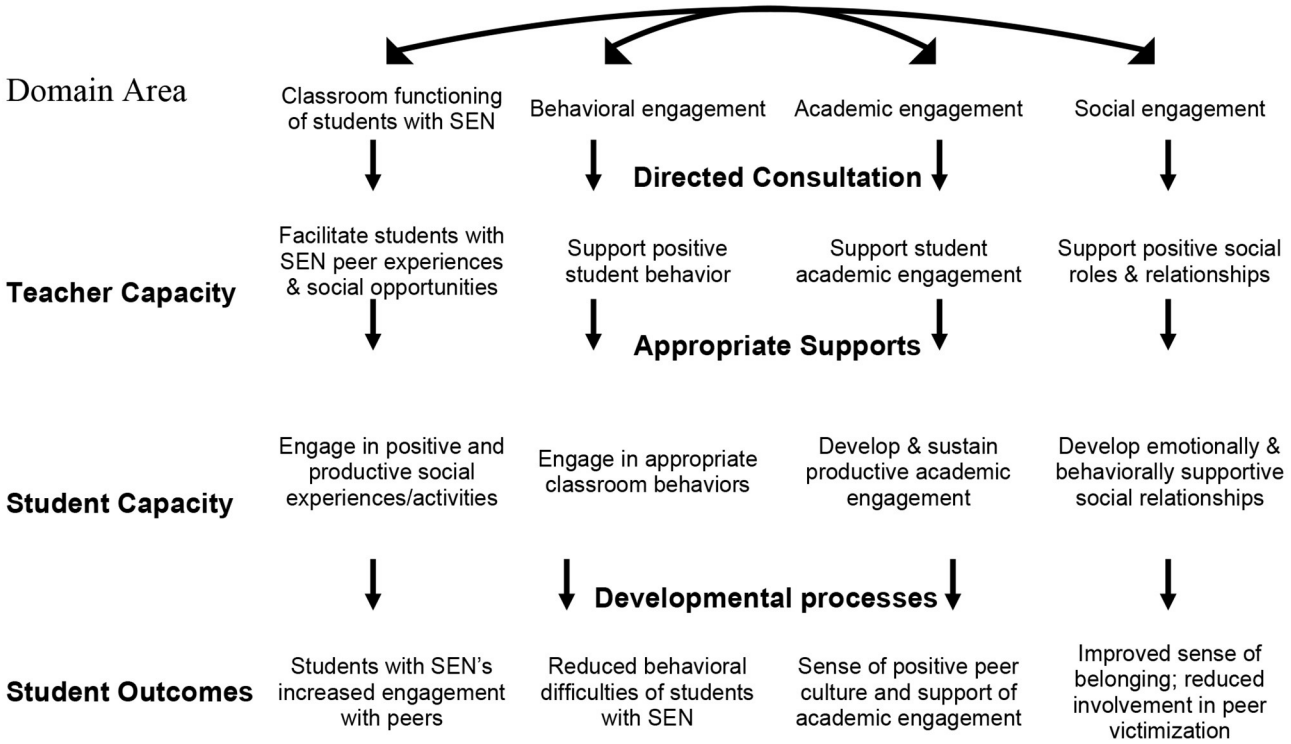

FIGURE 2 | BASE model theory of change to support the social inclusion of students with SEN.

strategies to manage the academic context. This includes: *rules and expectations* that are reviewed at the beginning of the instructional activity to provide the parameters for the expected behaviors and actions within a specific assignment; *routines and rituals* that provide an organizing framework for common tasks which communicates a sense of specialness and sacredness to specific events or processes and promotes a collective atmosphere where everyone feels a shared sense of connectedness; and *verbal and visual cues* to help students develop a collective positive mindset about instructional engagement by having quotes, slogans, and mission statements that communicate the value of academic effort and achievement that permeates the performance of daily activities. With each of these strategies, the purpose is to make academic life predictable, comfortable, and socially supported in ways that help all students feel like they belong and can be successful.

Pacing Activities for Success

An important part of managing the academic context involves structuring classroom experiences so that they result in successes that are meaningful and valued by students. Teachers can organize instruction and activities to ensure this is the case. To do this, it is helpful to have a range of pacing strategies that prepare the student for an activity, set the tone and mindset that the activity will be completed successfully, prompt and monitor the speed at which students are completing tasks, and break tasks down into doable parts that build toward sustained activity and success. Strategies to do this include: *routines to start and transition to new activities* to ensure students are prepared and to make the shift to a new task familiar, comfortable, and doable; *alternative or warm-up activities* for students who cannot start a new task independently and who will need individualized guided support from the teacher once the teacher has completed instruction for the larger group; *Behavior momentum or high p sequencing* of instructional tasks that are difficult for a student by using high probability tasks (i.e., preferred tasks the student can complete with success) to directly proceed and build up momentum to support the student's effort in low probability (i.e., less preferred tasks that the student struggles to complete successfully: Lee, 2006; Knowles et al., 2015); and a *Premack Schedule or grandma's law* (e.g., you can't eat your dessert until you finish your vegetables) to structure academic tasks where students work to complete a less preferred activity so they can do a high-preferred activity (Hosie et al., 1974; Billingsley, 2016).

When pacing activities, it is important to be cognizant that two distinct audiences are taking in information about the teacher's instructional interactions with individual students. These interactions communicate information to focal students (i.e., the students receiving the instruction) and classmates (i.e., students who are part of the public community in which the instruction is taking place). For focal students, they are aware of their own academic difficulties and they are aware that their instructional interactions with the teacher may impact how others view them, which, in turn, may impact their social roles

TABLE 1 | Intervention Component Goals, Aims, and Strategies.

Intervention Components	Goal	Aims	Strategies
Academic Engagement Enhancement	General classroom climate of collective support for productive engagement in instruction and valuing of academic effort while accepting differences	• Create a positive and engaged classroom climate • Support a positive peer culture for academic engagement/school valuing • Data driven adaptation of strategies to address individual student academic engagement	*Academic Context Management* • Review instructional rules and expectations • Class routines and rituals • Verbal/visual cues of the value of academic effort/achievement *Pacing Activities for Success* • Routines/cues to start and transition to new activities • Alternative activities • Behavior momentum sequences • Premacked schedule *Reinforcing Desired Behaviors* • Opportunities to respond • Academic behavior feedback • Using preferred peers to model and reinforce academic effort • End activity/class with success
Competence Enhancement Behavior Management	General classroom climate of productive and supportive behavior and the positive engagement of students with SEN in positive behavior patterns that foster and sustain positive social relationships	• Promote productive classroom behavior • Use EBPs with appropriate frequency and quality • Data driven adaptation to address individual student behavior needs • Teachers approach BM to communicates that the student is important	*Behavioral Context Management* • Review behavioral rules and specific task expectations • Routines for class activities • Classroom rituals / goals • Monitoring / modeling behavior *Elicit/reinforce Desired Behavior* • Goals/prompts/reminders • Behavior-specific direction /praise • Use of natural consequences • Contingencies and rewards *Behavioral Redirection* • Verbal group redirection • Non-verbal individual redirection • Proximity management • Antiseptic bouncing • Premacked schedule • Positive practice • Teaching desired behaviors
Social Dynamics Management	Peer support for academic engagement, productive behavior, and positive peer social system that promotes students' with SEN positive social relationships	• Reduce social hierarchies and coercive peer groups • Promote positive social roles and relationships for students with EBD • Support culture of peer support and protection against bullying	*Social Context Management* • Attunement to students' social roles, reputations, and peer groups • Rules and expectations for social behaviors and relationships • Model desired social interactions • Monitor/manage social hierarchy *Peer Affiliation and Group Supports* • Seating/proximity arrangements • Grouping strategies • Monitor/support positive intra- group relationships • Monitor support positive inter-group relationships *Managing Students' Roles/Relations* • Monitor social synchrony • Realign negative patterns • Strengthen positive patterns • Promote positive social opportunities and roles for students with EBD • Reframe negative identities

and relationships. For classmates, they are receiving information about the student but they are also gathering information about how to interact with others, whether the teacher will put them on the spot, and whether it is socially safe to be academically engaged and to take risks. When teachers take the time to pace and structure activities to ensure the success of all students, they are building the foundation for a supportive community that values the dignity of others and that understands they are part of a society in which the experiences, opportunities, and roles of individuals are important for the collective.

Reinforcing Desired Behaviors

The reinforcement of desired behaviors is critical for classroom management and for creating an inclusive, supportive, and egalitarian social system. However, reinforcement is often misunderstood and in, many cases, it is not applied effectively (Shores and Wehby, 1999). Teachers frequently interpret reinforcement to mean giving a student something that is pleasant; something they should like or want. In actuality, reinforcement is "defined objectively by two facts: a contingency between a behavior and its consequences, and a strengthening of the behavior (Cullinan et al., 1983, p. 77). Desired behaviors can be reinforced in a variety of ways. The BASE model focuses on four approaches that can be incorporated in classroom management strategies to support all students while being tailored to the needs of specific students. These strategies are opportunities to respond; academic behavior feedback; using preferred peers to model and reinforce academic effort; and ending specific activities and the class with success.

Opportunities to respond (OTR) involves giving students the chance to actively answer or perform academic requests (Sutherland and Wehby, 2001). There are various approaches to OTR including individual, choral, and mixed (Haydon et al., 2010). When teachers increase OTR, students with problem behavior tend to experience corresponding increases in task engagement and correct responses, and decreases in disruptive behavior (Sutherland et al., 2003). In many respects, opportunities to respond are both a pacing strategy and a reinforcing strategy. They pace the student by providing prompts and a structure for staying engaged. They also reinforce the student's behavior as the process of answering requests increases engaged behaviors (Sutherland and Wehby, 2001).

Academic behavior feedback is not about telling students whether or not they have the correct answer. Academic feedback teaches and motivates students about how to work to get the correct answer. Students develop mindsets about their ability to complete academic tasks that can promote or impede sustained engagement in instruction. Students self-efficacy for academic success is influenced by whether they view intelligence as a fixed quantity they either do or do not possess (i.e., a fixed mindset) or a malleable quantity that reflects a growth mindset in which they believe intelligence can be increased or improved with effort and learning (Dweck and Leggett, 1988). To foster a growth mindset, learning goals, and persistent on-task behavior, teachers can communicate to students that it is okay to struggle, effort is important, and that the focus is not the correct answer but learning how to get the correct answer. When providing instructional guidance, it is critical to consider whether a prompt elicits a growth or fixed mindset and learning or performance goals, and whether the outcome reinforces productive academic behavior. Through this lens, teachers can turn perceived difficulties into positive opportunities to learn and when a student gets something wrong can say "that's great because you are learning; now let's see what happens if you try it a different way."

Using preferred peers to model and reinforce academic effort is a strategy that recognizes that academic engagement tends to be a public event and uses the power of peers to promote students' productive effort. On one hand, students who struggle academically may be concerned about their performance and avoid engagement so others will not see their difficulties. On the other hand, students may be concerned that classmates will think it is not cool to work hard (Juvonen and Murdock, 1995; Ryan and Pintrich, 1997). It is often necessary for teachers to make academic engagement safe in two distinct ways. First, there is a need to make tasks doable by using differentiation and behavior momentum strategies to promote the likelihood of success. Second, it is necessary to help students see that engaging in instruction will not compromise their social image. When students view classmates as supportive of academic effort and tolerant of mistakes, they tend to report greater interest in school (Wentzel, 2003), have a more favorable sense of belonging (Hamm et al., 2010), and demonstrate greater academic initiative (Danielsen et al., 2010). To create this type of supportive culture and foster the productive engagement of students, it is helpful for teachers to be aware of classmates that struggling students look up to or are influenced by (a preferred peer) and use them as an ally to make instructional engagement safe and rewarding.

Ending a class on success seems intuitive and easy to achieve. This is often not the case. Teachers' and students' interaction patterns and relationships tend to be synchronized with the behavior of each influencing the behavior of the other (Farmer et al., 2018a; Sutherland et al., 2018). In some cases, a curriculum of non-instruction may occur where teachers and students develop an implicit truce in which the teacher does not expect the student to engage in activities the student is not comfortable doing and, in turn, the student will not escalate problem behavior (Gunter et al., 1993; Shores and Wehby, 1999). This approach does not promote success. It just avoids problems. In other cases, the teacher may become angry or feel a need to prove a point to the student. Rather than helping the student experience success, the teacher may challenge the student, thwart a sense of accomplishment, and promote coercive interchanges that at best alienates the student and may also prompt disruptive, aggressive, and explosive behavior patterns (Shores et al., 1993; van Acker et al., 1996). When teachers structure the beginning of class to ensure students start off productively, use momentum strategies along with supportive academic feedback and OTR to pace the student toward success, and use preferred peers and a Premacked schedule to sustain engagement, it should be possible to end an activity or class on success. The goal is to help struggling students see that they can be productive, build patterns of behavior that foster resilience, and increase the likelihood they will approach tomorrow's class ready to learn (Lee, 2006; Billingsley, 2016).

Competence Enhancement Behavior Management

The Competence Enhancement Behavior Management (CEBM) component of the BASE model centers on managing the classroom, the behavior of specific students, and the interplay between students and contexts in ways that make differences normal and behavioral supports non-stigmatizing (Farmer et al., 2006; McLesky and Waldron, 2007). This requires using EBPs and data driven practices to adapt strategies to balance the

needs of specific students and the general classroom ecology (Sutherland et al., 2018). In addition, it is helpful for teachers to approach behavior management with a positive mindset, have high expectations for students, use problems as opportunities to teach desired behaviors, and communicate to students that they are worth taking the time to ensure they learn to do things correctly (Farmer et al., 2006; Milner, 2018). It is also important to structure the classroom so there are natural rewards and consequences that promote a sense of community and a mindset that we are all in this together and need to support each other. The overarching goal of the CEBM component is to foster a general classroom climate of productive and supportive behavior. To accomplish this, the CEBM component is organized into three complementary categories: behavioral context management; eliciting and reinforcing desired behavior; and behavior redirection.

Behavioral Context Management

Behavioral context management focuses on creating a predictable and supportive environment. The goal is to provide students with guides for their behavior to prevent problems, while establishing a framework and tools for helping students to navigate difficulties when they do arise (Sutherland et al., 2018). It is helpful to have rules that are few in number, can be applied to a broad range of circumstances, and are valued by students (Barbetta et al., 2005). Teachers should *review rules and expectations* at the beginning of each class or activity. This provides a transition point and allows the teacher to set the context and create a necessary shift in tone if the new activity is different in content, activity level, and self-regulatory demands as compared to the prior activity (Farmer et al., 2006).

For many students with SEN class does not start—it just kind of happens. Teachers can prevent this by having *routines for classroom activities* that make them predictable and easy to negotiate (Leinhardt et al., 1987; Emmer and Stough, 2001). *Having classroom rituals and goals* that add meaning, value, and special identity to an activity can foster engagement and promote a student's sense of belonging (Long et al., 2007). Further, when managing the classroom context, teachers should *monitor their own behavior and model behaviors* they would like to see from students. Teachers should be aware that their own behavior can create a context that prompts and escalates behavior problems and contributes to students' negative social reputations (van Acker et al., 1996; Hendrickx et al., 2016).

Evoking and Reinforcing Desired Behavior

It is common for teachers to think that a student knows what the expected behavior is and how to perform it, and are mystified when the student does not do it (Barbetta et al., 2005). Many students need *goals, prompts, and reminders* to initiate a behavior. When the behavior does occur, corresponding teacher responses (i.e., consequences) that reinforce (i.e., strengthen) the behavior are also needed so that it is more likely to occur in the future when antecedent circumstances are presented (Farmer et al., 2006). When students do not engage in the desired behavior, teachers need to be careful that they do not draw attention to it in a way that punishes the likelihood the student will try to do it in the future. Rather, teachers should focus on setting up the circumstances that support the future occurrence of the behavior and foster positive interactions with classmates without contributing to a poor reputation with peers. Teachers can provide behavior specific guidance in non-obtrusive ways (Simonsen et al., 2016; Gage et al., 2017) while structuring circumstances so that natural consequences reinforce the occurrence of the behavior (Long et al., 2007).

Behavior Redirection

Behavior redirection involves changing the flow of a pattern of behavior in stream as it occurs. When problem behavior begins to emerge, some teachers have a tendency to call out a student in a public manner that disrupts class, promotes a negative identity for the student that has social and behavioral consequences, and set ups a context for coercive interactions between the student and the teacher that contributes to sustained disengagement of the student from instruction and productive activities (Gunter et al., 1993; Shores et al., 1993; Hendrickx et al., 2016). The goal of behavior redirection is to prevent this from occurring by refocusing the student or class away from an undesired behavior to a neutral or desired behavior in a manner that minimally disrupts class and allows the student to remain engaged or to become involved in a productive alternative activity.

An important consideration for behavior redirection involves simultaneously keeping the class on track while changing the behavior of the student. Although strategies that single out a student should be avoided, *verbal group redirection and acknowledgment of students meeting expectations* can be an effective way to pull students back on task and to create a shared sense of community about appropriate behavior. This involves reminding the class about the expectation, recognizing students who are meeting the expectation, and acknowledging the whole class for meeting expectations once students change their behavior. *Nonverbal individual redirection* can be used to stop or reframe a behavior with eye contact, a descriptive physical gesture, or pointing toward a rule or some other cue that is in the room. *Proximity management* involves moving closer to the student, direct monitoring of their activities, and perhaps moving the student to another area where he or she is more likely to be productively engaged. *Antiseptic bouncing* involves being aware that the student is about to encounter a situation that is likely to result in difficulties and engaging the student in a different activity that takes the student away from the problem stimulus. This might involve asking a student who is becoming frustrated with an assignment to run an errand (e.g., take a book to the library) to break up the negative pattern and reset the activity in a more positive light once the student has returned and frustration has decreased. It might also be used to get a student away from an escalating situation that he or she might otherwise become involved in (e.g., sending the student to get help when two other students are arguing and beginning to fight). The goal is to keep the context manageable while giving the student a productive activity to prevent their engagement in problems.

A major consideration in redirection involves being reflective and understanding what is being communicated to the student. With redirection, students may perceive that teachers are just

trying to "zing" her or him because they do not like them or are mad at them. It is critical for teachers to monitor their tone of voice and posture as well as the content of their words. Avoid arguments, but present the need for the redirection as being an important thing for the student to be able to do. When teachers make it clear they are following through on rules because they think that the student is important and because they want to ensure students learn to do what is best for the student, students can understand and value this. This is communicated through actions and fairness. Thus, it is important for teachers to understand what they feel, to manage their own emotions and behavior, and to redirect students in ways that focus on teaching and reinforcing behaviors that build the student's strengths. Students know when adults care.

Social Dynamics Management

The Social Dynamics Management (SDM) component of the BASE model centers on using knowledge of the classroom social system to harness the power of the peer group in the management of the instructional and behavioral context while fostering students' positive social roles and relationships. Classroom social dynamics refers to how classrooms are socially structured and how this structure effects and is affected by student interactions (Farmer et al., 2018c). Students coordinate their behaviors with each other, sort themselves into peer groups, create social hierarchies, and develop social roles (Adler and Adler, 1998; Ahn and Rodkin, 2014; Trach et al., 2018). Although social dynamics are peer driven, teachers can facilitate students' social experiences, opportunities, and roles (Gest et al., 2014; van den Berg and Stoltz, 2018). The goal of the SDM component is to create a classroom climate of peer support for academic engagement and productive behavior by fostering a positive social system to promote supportive social relationships for all students. The SDM component involves three categories: general social context management; monitoring and managing students' peer affiliations and group supports; and managing students' social roles and relationships.

General Social Context Management

When reviewing rules and expectations for academic activities and classroom behavior, it is helpful to review *rules and expectations about social behavior and relationships*. This should be brief and center on key words that signify expected behaviors and ways that students can get along and support each other. Depending on age level, terms such as sharing, being responsible for self and others, showing respect, being a good friend, and being a team player can key students into working with others to promote a productive and supportive classroom particularly when they are presented in a scaffolded manner to foster student autonomy (Baker et al., 2017; Bierman et al., 2017). This involves having expectations and concepts that are known by all, posted in visible places, valued by students, and serve as reminders about how to be supportive of and helpful to each other.

A critical aspect of SDM involves teachers' management of their own behavior (Farmer et al., 2006). By *modeling desired social interactions*, teachers can set the tone for how classmates view and respond to students (Shores and Wehby, 1999). Negative teacher-student relations are associated with peer difficulties (Hendrickx et al., 2016) and peer teacher support reputation contributes to students' academic and social outcomes (Hughes et al., 2014). For example, the peer relations of academically struggling students depend on whether classmates perceive that the teacher likes the student (van der Sande et al., 2017). When teachers develop positive relationships with socially struggling students and provide them with positive social opportunities, students tend to have a stronger sense of belonging and fewer behavioral difficulties (Farmer et al., 2010b; Gest et al., 2014; van den Berg and Stoltz, 2018). Therefore, it is critical for teachers to monitor their own interactions with struggling students and promote a classroom climate where peers can view them in a positive light (Trach et al., 2018).

The concept of *attunement to students' social roles, reputations, and peer groups* centers on teachers' awareness of the general classroom social ecology and students' placement in the peer system (Hamm et al., 2011a). When they are attuned to the ecology and students' relationships, teachers can use this information to support positive social opportunities, prevent peer experiences that contribute to behavioral difficulties, and promote injunctive peer group norms and a peer culture that reinforces academic engagement (Hamm et al., 2011b; Farmer et al., 2018a). Teacher attunement is associated with increased levels of students' sense of positive social-affective peer climate and enhances students' feelings of belonging (Hamm et al., 2011a; Norwalk et al., 2016). Yet, teachers are differentially attuned to youth who are perceived as aggressive by peers depending on whether they perceive a student has higher rates of internalizing, popularity, and friendliness features (lower levels of attunement) or higher levels of athleticism and attractiveness (higher levels of attunement: Dawes et al., 2017). Further, there is considerable variability across teachers' in terms of their attunement or awareness of students' peer group affiliations (Pearl et al., 2007). However, teachers' attunement increases significantly when they are taught about classroom social dynamics, are encouraged to observe students' social interactions in natural settings (i.e., cafeteria, hallway, playground), and are expected to keep logs about peer groups and students' social roles (Hamm et al., 2011a; Farmer et al., 2016a).

Monitoring and Managing the Classroom Social Hierarchy

Attunement to the classroom social system and monitoring dynamic relationships among students can be critical for fostering and maintaining inclusive classroom communities. In many classrooms, a peer social structure forms in which some students have higher status and peer influence than others (Adler and Adler, 1998; Ahn and Rodkin, 2014). When popularity and status is distributed hierarchically rather than in a decentralized and egalitarian manner, there is a greater tendency for bullying, social aggression, and enemy relationships across peer groups (Rodkin, 2011). Teachers can manage the social system and students' social opportunities to reduce hierarchies and promote peer ecologies where students are on more equal footing and perceive the social climate to be supportive and less threatening (Gest and Rodkin, 2011; Chen et al., 2015; Norwalk et al., 2016).

Monitoring and Managing Students' Peer Affiliations and Group Supports

Teachers can support students' positive peer relations. Propinquity (i.e., physical proximity) is a key factor that influences peer relationships. Students are more likely to develop friendships if they are in close proximity or have frequent contact with each other, and students tend to prefer to sit close to peers who are popular in the peer structure (Adler and Adler, 1998; van den Berg and Cillessen, 2015). Close proximity and frequent contact can also promote bullying, enemy relationships, or iatrogenic effects if students are on unequal footing or support problem behavior patterns in each other (Rodkin, 2011; Kornienko et al., 2018). *Seating charts/proximity arrangements* and *grouping strategies* are a primary means that teachers have available to impact students' peer opportunities and experiences. Emerging research suggests that when seating and grouping practices are carefully conducted and monitored with a focus on enhancing the behavior of struggling students, they produce positive social opportunities for the focal student without a negative impact on prosocial partner peers (Hektner et al., 2017; van den Berg and Stoltz, 2018). In addition, teachers need to *monitor inter-group relationships* to support positive interactions and prevent bullying relationships among youth who affiliate together. Likewise, there is a need to *monitor intra-group relationships* to support positive interactions and prevent enemy group relationships within and across classrooms (Rodkin, 2011; Farmer et al., 2018c).

Managing Students' Social Roles and Relationships

As teachers monitor and manage the general classroom social system and peer groups, it is necessary to keep a focus on individual students who have social risks and behavioral difficulties. To do this, it is necessary to *identify and monitor patterns of social synchrony* that support their behavior. Social synchrony involves interactional processes where the behavior of one person elicits and reinforces the behavior of the other person. This can occur through imitation, reciprocity, or complementarity (Farmer et al., 2018a). Teachers should identify specific peers who in some way prompt problem behaviors and/or reinforce such behaviors in the focal student (Farmer et al., 2016a). Once such students are identified, teachers can *realign negative patterns* by rearranging the context (i.e., change seating and grouping practices) and/or changing the behavior of supporting peers as well as the focal student (Farmer et al., 2018c). As part of this process, the focus should go beyond reducing problem behavior and identify ways *to strengthen positive patterns*. This can be done by changing the context, promoting more *social opportunities with positive and supportive peers,* and building from the student's strengths to promote new competencies. As part of this effort, it is important to be attuned to the student's social roles and reputations and to provide visible positive social opportunities to *reframe negative social identities* by helping peers view the student in a more positive light (Farmer et al., 2016a; Trach et al., 2018).

Interpersonal Competence Patterns and Subtypes of Socially Vulnerable Youth

Students with SEN and socially vulnerable students are a very heterogeneous group. When providing supports to foster social inclusion, it is important to avoid a "one size" fits all approach or to simply work one's way through a series of EBPs without considering the factors and processes that are contributing to an individual student's experiences. That said, it is possible to identify distinct subtypes of socially vulnerable youth, including youth with SEN, that have common social experiences and social supports needs that differentiate them from other students.

Person-oriented analysis (e.g., latent profile analysis, cluster analysis) that builds from a developmental systems conceptual framework is a valuable approach for identifying subtypes of socially vulnerable youth (Cairns and Cairns, 1994). Person-oriented approaches yield patterns or configurations of variables that operate as a "package" of developmental factors that contribute to youths' developmental trajectories and outcomes (Cairns, 2000; Bergman et al., 2009). Prior work with socially vulnerable students, including students with SEN have used teacher ratings of students' interpersonal competence in the classroom to identify distinct subtypes of youth (e.g., Cairns and Cairns, 1994; Rodkin et al., 2000; Farmer et al., 2003, 2011).

Throughout these and other studies, five configurations tend to emerge. *High adaptive students* (20–30% of all students; high teacher ratings across the academic, behavioral, and social domains) are generally well-integrated into the peer system, affiliate with other well-adapted classmates, and have average or high prominence (i.e., visibility) within the social hierarchy. *Low-adaptive students* (10–20% of students; low teacher ratings across the academic, social, and behavioral domains) tend to associate with peers who have adjustment problems and low status in the social hierarchy, are at increased risk of social isolation and, tend to be victims of bullying or bully-victims. *Popular-aggressive students* (10–15% of students: high teacher ratings for aggression, average to high ratings for popularity) to tend to be viewed by peers as cool and athletic, associate with other popular students, are perceived to bullies and leaders by their classmates, and tend to have elevated rates of being disliked but are unlikely to be socially isolated. *Average students* (30–45% of students: near the mean for each domain on teacher ratings) tend to be members of peer groups, near the class mean for social prominence and being liked by peers, and average rates of involvement in peer victimization. *Passive students* (10–20% of students: low average teacher ratings on academic and behavior domains with elevated ratings for shy-withdrawn and low ratings on social) tend to have elevated rates of social isolation or affiliate with passive classmates and they are at increased risk for being victimized by peers.

Although between 40 and 50% of students with SEN are identified in interpersonal risk configurations (i.e., popular-aggressive, passive, low-adaptive), the majority of students in these risk configurations are general education students (Farmer et al., 1999, 2011, 2019; Chen et al., 2019). In fact, in a recent sample of nearly 3,000 students across 26 middle schools, four times as many general education students (803) as students with SEN (197) were identified in risks configurations that are related

to a range of social vulnerabilities including poor adjustment to the middle school environment, feelings of not belonging, involvement in peer victimization, and experiencing academic and behavioral difficulties (Chen et al., 2019). Accordingly, efforts to support the inclusion of socially vulnerable youth may be enhanced by focusing on students in these configurations regardless as to whether they are identified for SEN.

Using the BASE Model to Foster the Inclusion of Subtypes of Socially Vulnerable Youth

With brief teacher ratings, it is possible to screen for youth at the beginning of the school year who are at elevated risk for differential social difficulties. As indicated above, such efforts would identify three distinct types of students: passive, low-adaptive, and popular-aggressive. Students in each of these three configurations need supports to address their social needs in the classroom. But they have very different needs and, in cases where each subtype of student is in the classroom, they are likely to contribute to and exacerbate the difficulties of each other. Thus, it is beneficial for teachers to be attuned to these subtypes of youth and to provide differential supports while managing the broader social ecology.

For passive youth, their tendency is to keep a low profile, avoid situations and circumstances that draw any attention to them or their self-perceived weaknesses, and to try to stay away from classmates who will socially scapegoat them, tease them, physically bully them, or make them engage in things that they are not comfortable doing. For such students, teachers need to balance between providing them with social opportunities and supports to enhance their identity and role in the social system without putting them on the spot and actually contributing to their victimization. This means being cognizant of who they are comfortable with and who they are not comfortable with, knowing their strengths, knowing what aspects of their strengths and personality that they are comfortable showing others, and giving them the space to socially explore and develop their own identity. Being careful not to place them physically near or in working groups with peers who will bully or take advantage of them is critical. Also, engaging them in activities that are comfortable and that help them to be seen in a positive light can be important. But it must be paced and monitored. It is also important for the teacher to be aware of who the student affiliates with. Are these affiliations supportive of social engagement with others or are they synchronized in ways that constrain the student's social opportunities and, in some ways, supports their social difficulties? The goal is not to break up existing relationships or to choose students' friends, the goal is carefully monitor and expand passive students' social experiences and opportunities in ways that help them to develop relationships that are personally and developmentally meaningful to them. For passive students, there is generally not an issue with problem behavior but they may have a learning disability or some other characteristic that they are uncomfortable with or trying to hide. Without being invasive, it is important to get to know passive students and to understand their comforts and discomforts.

Low-adaptive youth are likely to struggle across the academic, behavioral, and social domains and they are likely to have difficulty regulating their behavior and understanding how their own behavior contributes to their difficulties. Therefore, such students typically need tier 2 or tier 3 adaptive supports to help them to develop new skills and competencies (Farmer et al., 2021). However, individually focused interventions alone are not likely to "fix" the student and it is necessary to have real world, in-stream context focused interventions that complement more direct and explicit instruction in social skills (Farmer et al., 2018a; Bierman and Sanders, 2021). Thus, being aware of the student's academic, behavioral, and social difficulties and how they support each other is important. Carefully managing the instructional context and pacing the student for success will be important along with understanding behavioral triggers and the peer dynamics and interactional patterns that contribute to the student's difficulties. Low-adaptive youth can be quick to explode and can become the target of peers who set them up for difficulties with the potential aim of getting them in trouble. It is imperative to carefully monitor their physical proximity and to surround them with peers who will not engage them in negative ways (van den Berg and Stoltz, 2018). It is also important to monitor these arrangements and to sometimes change them up from time-to-time as their relations with others can become strained.

It is critical to provide low-adaptive students with positive roles and experiences that build from their strengths and that gives them the opportunity to develop a new identity. Just as with academics, it is important to pace their social activities and interactions, build success, and carefully transition them into a new activity before something that was going well suddenly blows up and results in strained relations, poor reputations and identities, and coercive patterns of behavior with peers. The peer affiliations of low-adaptive students are likely to be many but short-lived, as they work themselves through the classroom until there are no classmates that are comfortable doing things with them. Pacing and creating social opportunities is important, but it is not possible to make classmates to like them or to want to do something with them. Therefore, monitoring, scaffolding, and supporting their interactions early in the school year can help to prevent long-term negative relationships. Low-adaptive students have very elevated rates of being involved in peer victimization as both a bully and a victim. Efforts to manage the social dynamics of bullying early in the school year may create a context that limits the types of coercive interchanges that typically characterize the social relationships of low adaptive youth.

In some ways, popular aggressive youth do not have social difficulties as much as they create social difficulties for others. They tend to be socially powerful and dominant leaders who use their power to manipulate the social relationships of others and they often set the tone for the behavior of many classmates, particularly the students they affiliate with (Farmer et al., 2003; Witvliet et al., 2010; Shi and Xie, 2012). Because of this power and how they use it against others, popular-aggressive youth can be highly disliked even though classmates may want to affiliate with them or be like them (Vaillancourt and Hymel, 2006; Farmer et al., 2011; Rodkin, 2011). Rather than having poor social skills, popular aggressive youth may be bistrategic controllers who

competently employee aggressive and prosocial strategies as they selectively use distinct forms of aggression toward peers with different levels of status or popularity (Wurster and Xie, 2014). This means teachers must carefully monitor the interaction patterns of popular aggressive youth to determine if they are manipulating others and creating a hierarchical social system that is dominated by coercion and social struggles as students jockey for social position. Teachers themselves may be manipulated by popular-aggressive students and it is necessary to ensure they do not allow these students to create a culture that elicits and reinforces problem behavior in socially vulnerable classmates (Rodkin, 2011; Hoffman and Mueller, 2020). Thus, it is helpful for teachers to cultivate strong boundaries but positive relations with popular-aggressive students while creating opportunities for them to use their influence and leadership skills in positive and productive ways in the classroom (Shores and Wehby, 1999; Farmer et al., 2018a).

In conclusion, for all three subtypes, teachers need to be attuned to the overall dynamics of the classroom and to foster a context that is not hierarchical, that makes it safe for students to engage with others, and that rotates opportunities for all students to be in socially visible and desirable roles. But it is important to be cognizant that managing the general classroom peer ecology and social dynamics may have different leverage points and differential impact for the various subtypes. For passive students the focus is on providing a safe space where they can develop new experiences, relationships, roles, and identities that do not make it easy for them to be forgotten or scapegoated by others. For low-adaptive students, classroom context intervention efforts need to complement any individualized supports and training that they receiving related to the development of new social competencies and skills. This means continually monitoring their proximal context, reframing and redirecting difficult interchanges, providing them with opportunities for positive social experiences, and making the context predictable and one they feel they can successfully navigate rather than fight against. For popular-aggressive youth, it is necessary to guide their experiences toward positive and productive social roles and to help them use their social competencies and strengths in ways that reflect leadership in an egalitarian social system. In other words, social dynamics management means inconspicuously facilitating the social experiences of individuals and the capacity of contexts to foster a collective society where students find their own pathways to social identities, roles, and relationships that are meaningful to them and that prepare them for their futures. As the field moves forward, person-oriented approaches should be considered as one of many possible ways to help tailor intervention to the differential needs of subtypes of students who are socially vulnerable. Further, because student adaptation is correlated across multiple domains, the BASE model may help to enhance students' academic and behavioral adjustment as well as their social inclusion.

AUTHOR CONTRIBUTIONS

TF wrote the manuscript, conceptualized the research, and directed the research. BS, KN, and MD co-wrote the manuscript and contributed to the research. C-CC contributed to the research and co-wrote parts of the manuscript. JH contributed to writing the manuscript, co-conceptualized the research, and co-directed the research. DL contributed to the writing of the manuscript and co-directed the research. AF contributed to the conceptualization, creation of the figures, and to the writing of the manuscript. All authors contributed to the article and approved the submitted version.

FUNDING

This work was supported by grants from the Institute of Education Sciences (R305A040056; R305A160398; and R305A120812). The views expressed in this paper are those of the authors' and do not reflect the views of the granting agency.

REFERENCES

Adler, P. A., and Adler, P. (1998). *Peer Power: Preadolescent Culture and Identity.* New Brunswick, NJ: Rutgers University Press.

Ahn, H.-J., and Rodkin, P. C. (2014). Classroom-level predictors of the social status of aggression: friendship centralization, friendship density, teacher–student attunement, and gender. *J. Educ. Psychol.* 106, 1144–1155. doi: 10.1037/a0036091

Baker, A. R., Tzu-Jung, L., Chen, J., Paul, N., Anderson, R. C., and Nguyen-Jahiel, K. (2017). Effects of teacher framing on student engagement during collaborative reasoning discussions. *Contemp. Educ. Psychol.* 51, 253–266. doi: 10.1016/j.cedpsych.2017.08.007

Banks, J., McCoy, S., and Frawley, D. (2018). One of the gang? Peer relations among students with special educational needs in Irish mainstream primary schools. *Eur. J. Spec. Needs Educ.* 33, 396–411. doi: 10.1080/08856257.2017.1327397

Barbetta, P. M., Norona, K. L., and Bicard, D. F. (2005). Classroom behavior management: a dozen common mistakes and what to do instead. *Prevent. Sch. Fail.* 49, 11–19. doi: 10.3200/PSFL.49.3.11-19

Bergman, L. R., Andershed, H., and Andershed, A.-K. (2009). Types and continua in developmental psychopathology: problem behaviors in school and their relationship to later antisocial behavior. *Dev. Psychopathol.* 21, 975–992. doi: 10.1017/S0954579409000522

Bierman, K. L., Greenberg, M. T., Coie, J. D., Dodge, K. A., Lochman, J. E., and McMahon, R. J. (2017). *Social and Emotional Skills Training for Children: The Fast Track Friendship Group Manual.* New York, NY: The Guilford Press.

Bierman, K. L., and Sanders, M. T. (2021). Teaching explicit social-emotional skills with contextual supports for students with intensive intervention needs. *J. Emot. Behav. Disord.* doi: 10.1177/1063426620957623

Billingsley, G. M. (2016). Combating work refusal using research-based practices. *Interv. Sch. Clin.* 52, 12–16. doi: 10.1177/1053451216630289

Blake, J. J., Lund, E. M., Zhou, Q., Kwok, O. M., and Benz, M. R. (2012). National prevalence rates of bully victimization among students with disabilities in the United States. *Sch. Psychol. Q.* 27, 210–222. doi: 10.1037/spq0000008

Bossaert, G., de Boer, A. A., Frostad, P., Pijl, S. J., and Petry, K. (2015). Social participation of students with special educational needs in different educational systems. *Irish Educ. Stud.* 34, 43–54. doi: 10.1080/03323315.2015.1010703

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *Am. Psychol.* 32, 513–531. doi: 10.1037/0003-066X.32.7.513

Bronfenbrenner, U. (1996). "Foreward," in *Developmental Science,* eds R. B. Cairns, G. H. Elder, and E. J. Costello (New York, NY: Cambridge University Press), ix–xvii.

Cairns, R. B. (2000). "Developmental science: three audacious implications," in *Developmental Science and the Holistic Approach,* eds L. R. Bergman, R. B. Cairns, L-G. Nilsson, and L. Nystedt (Mahwah, NJ: LEA), 49–62.

Cairns, R. B., and Cairns, B. D. (1994). *Lifelines and Risks: Pathways of Youth in Our Time*. New York, NY: Harvester Wheatsheaf.

Chen, C.-C., Hamm, J. V., Farmer, T. W., Lambert, K., and Mehtaji, M. (2015). Exceptionality and peer victimization involvement in late childhood: subtypes, stability, and social marginalization. *Remed. Special Educ.* 36, 312–324. doi: 10.1177/0741932515579242

Chen, C. C.-C., Farmer, T. W., Hamm, J. V., Lee,. D. L., Dawes, M., and Brooks, D. S. (2019). Emotional and behavioral risk configurations, students with disabilities, and perceptions of the middle school ecology. *J. Emot. Behav. Disord.* 28, 180–192. doi: 10.1177/1063426619866829

Cullinan, D., Epstein, M. H., and Lloyd, J. W. (1983). *Behavior Disorders of Children and Adolescents.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Danielsen, A. G., Wiium, N., Wilhelmsen, B. U., and Wold, B. (2010). Perceived support provided by teachers and classmates and students' self-reported academic initiative. *J. Sch. Psychol.* 48, 247–267. doi: 10.1016/j.jsp.2010.02.002

Dawes, M., Chen, C.-C., Zumbrunn, S. K., Mehtaji, M., Farmer, T. W., and Hamm, J. V. (2017). Teacher attunement to peer-nominated aggressors. *Aggress. Behav.* 43, 263–272. doi: 10.1002/ab.21686

Dawes, M., Farmer, T. W., Hamm, J. V., Lee, D., Norwalk, K., Sterrett, B., et al. (2020). Creating supportive contexts during the first year of middle school: impact of a developmentally responsive multi-component intervention. *J. Youth Adolesc.* 49, 1447–1463. doi: 10.1007/s10964-019-01156-2

Dweck, C. S., and Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychol. Rev.* 95, 256–273. doi: 10.1037/0033-295X.95.2.256

Emmer, E. T., and Stough, L. (2001). Classroom management: a critical part of educational psychology, with implications for teacher education. *Educ. Psychol.* 36, 103–112. doi: 10.1207/S15326985EP3602_5

Estell, D. B., Farmer, T. W., Irvin, M. J., Crowther, A., Akos, P., and Boudah, D. J. (2009a). Students with exceptionalities and the peer group context of bullying and victimization in late elementary school. *J. Child Fam. Stud.* 18, 136–150. doi: 10.1007/s10826-008-9214-1

Estell, D. B., Jones, M. H., Pearl, R., and van Acker, R. (2009b). Best friendships of students with and without learning disabilities across late elementary school. *Except. Child.* 76, 110–124. doi: 10.1177/001440290907600106

Estell, D. B., Jones, M. H., Pearl, R. A., van Acker, R., Farmer, T. W., and Rodkin, P. R. (2008). Peer groups, popularity, and social preference: trajectories of social functioning among students with and without learning disabilities. *J. Learn. Disabil.* 41, 5–14. doi: 10.1177/0022219407310993

Farmer, T. W. (2020). Reforming research to support culturally and ecologically responsive and developmentally meaningful practice in schools. *Educ. Psychol.* 55, 32–39.

Farmer, T. W., Bierman, K. L., Hall, C. M., Brooks, D. S., and Lee, D. L. (2021). Tiered systems of adaptive supports and the individualization of intervention: merging developmental cascades and correlated constraints perspectives. *J. Emot. Behav. Disord.* doi: 10.1177/1063426620957651

Farmer, T. W., Chen, C.-C., Hamm, J. V., Moates, M. M., Mehtaji, M., Lee, D., et al. (2016a). Supporting teachers' management of middle school social dynamics: the scouting report process. *Interv. Sch. Clin.* 52, 67–76. doi: 10.1177/1053451216636073

Farmer, T. W., Dawes, M., Alexander, Q., and Brooks, D. S. (2016b). "Challenges associated with applications and interventions: Correlated constraints, shadows of synchrony, and teacher/institutional factors that impact social change," in *Handbook of Social Influences in School Contexts: Social-emotional, Motivation, and Cognitive Outcomes*, eds K. R. Wentzel and G. B. Ramani (New York, NY: Routledge), 423–435.

Farmer, T. W., Dawes, M., Hamm, J. V., Lee, D., Mehtaji, M., Hoffman, A. S., et al. (2018a). Classroom social dynamics management: why the invisible hand of the teacher matters for special education. *Remed. Special Educ.* 39, 177–192. doi: 10.1177/0741932517718359

Farmer, T. W., Estell, D. B., Bishop, J. L., O'Neal, K., and Cairns, B. D. (2003). Rejected bullies or popular leaders? The social relations of aggressive subtypes of rural African-American early adolescents. *Dev. Psychol.* 39, 992–1004.

Farmer, T. W., Goforth, J. B., Hives, J., Aaron, A., Hunter, F., and Sgmatto, A. (2006). Competence enhancement behavior management. *Prevent. Sch. Fail.* 50, 39–44. doi: 10.3200/PSFL.50.3.39-44

Farmer, T. W., Hall, C. M., Petrin, R. A., Hamm, J. V., and Dadisman, K. (2010a). Promoting teachers' awareness of social networks at the beginning of middle school. *Sch. Psychol. Quart.* 25, 94–106. doi: 10.1037/a0020147

Farmer, T. W., Hall, C. M., Weiss, M. P., Petrin, R. A., Meece, J. L., and Moohr, M. (2011). The school adjustment of rural adolescents with and without disabilities: variable and person-centered approaches. *J. Child Fam. Stud.* 20, 78–88. doi: 10.1007/s10826-010-9379-2

Farmer, T. W., Hamm, J. L., Petrin, R. A., Robertson, D. L., Murray, R. A., Meece, J. L., et al. (2010b). Creating supportive classroom contexts for academically and behaviorally at-risk youth during the transition to middle school: a strength-based perspective. *Exceptionality* 18, 94–106. doi: 10.1080/09362831003673192

Farmer, T. W., Hamm, J. V., Dawes, M., Barko-Alva, K., and Cross, J. R. (2019). Promoting inclusive communities in diverse classrooms: teacher attunement and social dynamics management. *Educ. Psychol.* 54, 286–305. doi: 10.1080/00461520.2019.1635020

Farmer, T. W., Hamm, J. V., Lee, D., Lane, K. L., Sutherland, K. S., Hall, C. M., et al. (2013). Conceptual foundations and components of a contextual intervention to promote student engagement during early adolescence: the supporting early adolescent learning and social success (SEALS) model. *J. Educ. Psychol Consult.* 23, 115–139. doi: 10.1080/10474412.2013.785181

Farmer, T. W., Hamm, J. V., Lee, D. L., Sterrett, B., Rizzo, K., and Hoffman, A. (2018b). Directed consultation and supported professionalism: promoting adaptive evidence-based practices in rural schools. *Rural Special Educ. Quart.* 37, 164–175. doi: 10.1177/8756870518781307

Farmer, T. W., Lane, K. L., Lee, D. L., Hamm, J. V., and Lambert, K. (2012). The social functions of antisocial behavior: considerations for school violence prevention strategies for students with disabilities. *Behav. Disord.* 37, 149–162. doi: 10.1177/019874291203700303

Farmer, T. W., Rodkin, P. C., Pearl, R., and van Acker, R. (1999). Teacher-assessed behavioral configurations, peer-assessments, and self-concepts of elementary students with mild disabilities. *J. Special Educ.* 33, 66–80. doi: 10.1177/002246699903300201

Farmer, T. W., Talbott, B., Dawes, M., Huber, H. B., Brooks, D. S., and Powers, E. (2018c). Social dynamics management: what is it and why is it important for intervention? *J. Emot. Behav. Disord.* 26, 1–10. doi: 10.1177/1063426617752139

Frederickson, N. L., and Furnham, A. F. (2004). Peer-assessed behavioral characteristics and sociometric rejection: differences between pupils who have moderate learning difficulties and their mainstream peers. *Br. J. Educ. Psychol.* 74, 391–410. doi: 10.1348/0007099041552305

Gage, N. A., MacSuga-Gage, A. S., and Crews, E. (2017). Increasing teachers' use of behavior-specific praise using a multitiered system for professional development. *J. Posit. Behav. Interv.* 19, 239–251. doi: 10.1177/1098300717693568

Gest, S. D., Madill, R. A., Zadzora, K. M., Miller, A. M., and Rodkin, P. C. (2014). Teacher management of elementary classroom social dynamics: associations with changes in student adjustment. *J. Emot. Behav. Disord.* 22, 107–118. doi: 10.1177/1063426613512677

Gest, S. D., and Rodkin, P. C. (2011). Teaching practices and elementary classroom peer ecologies. *J. Appl. Dev. Psychol.* 32, 288–296. doi: 10.1016/j.appdev.2011.02.004

Graham, S., Bellmore, A. D., and Mize, J. (2006). Peer victimization, aggression, and their co-occurrence in middle school: pathways to adjustment problems. *J. Abnorm. Child Psychol.* 34, 363–378. doi: 10.1007/s10802-006-9030-2

Gunter, P. L., Denny, R. K., Jack, S. L., Shores, R. E., and Neslon, C. M. (1993). Aversive stimuli in academic interactions between students with serious emotional disturbance and their teachers. *Behav. Disord.* 18, 265–274. doi: 10.1177/019874299301800405

Hamm, J. V., Farmer, T. W., Dadisman, K., Gravelle, M., and Murray, R. A. (2011a). Teachers' attunement to students' peer group affiliations as a source of improved student experiences of the school social-affective context following the middle school transition. *J. Appl. Dev. Psychol.* 32, 267–277. doi: 10.1016/j.appdev.2010.06.003

Hamm, J. V., Farmer, T. W., Lambert, K., and Gravelle, M. (2014). Enhancing peer cultures of academic effort and achievement in early adolescence: promotive effects of the SEALS intervention. *Dev. Psychol.* 50, 216–228. doi: 10.1037/a0032979

Hamm, J. V., Farmer, T. W., Robertson, D., Dadisman, K., Murray, A. R., Meece, J., et al. (2010). Effects of a developmentally-based intervention with teachers on

native American and White Early adolescents' schooling adjustment in rural settings. *J. Exp. Educ.* 78, 343–377. doi: 10.1080/00220970903548038

Hamm, J. V., Schmid, L., Farmer, T. W., and Locke, B. L. (2011b). The influence of injunctive and descriptive peer group norms on the academic adjustment of rural early adolescents. *J. Early Adolesc.* 31, 41–73. doi: 10.1177/0272431610384486

Hamm, J. V., Hoffman, A., and Farmer, T. W. (2012). "Peer cultures of academic success in adolescence: why they matter and what teachers can do to promote them," in *Peer Relationships and Adjustment at School*, eds A. Ryan and G. Ladd (New York, NY: Information Age Publishing), 219–250.

Haydon, T., Conroy, M. A., Scott, T. M., Sindelar, P. T., Barber, B. R., and Orlando, A.-M. (2010). A comparison of three types of opportunities to respond on student academic and social behaviors. *J. Emot. Behav. Disord.* 18, 27–40. doi: 10.1177/1063426609333448

Hektner, J. M., Brennan, A. L., and August, G. J. (2017). Incorporating well-adjusted peers in a conduct problems prevention program: evaluation of acceptability, fidelity, and safety of implementation. *Sch. Ment. Health.* 9, 66–77. doi: 10.1007/s12310-016-9199-7

Hendrickx, M. M., Mainhard, M. T., Boor-Klip, H. J., Cillessen, A. H., and Brekelmans, M. (2016). Social dynamics in the classroom: teacher support and conflict and the peer ecology. *Teach. Teacher Educ.* 53, 30–40. doi: 10.1016/j.tate.2015.10.004

Hoffman, V., and Mueller, C. M. (2020). Peer influence on aggression at school: how vulnerable are higher risk adolescents? *J. Emot. Behav. Disord.* doi: 10.1177/1063426620917225

Hosie, T. W., Gentile, J. R., and Carroll, J. D. (1974). Pupil preferences and the Premack principle. *Am. Educ. Res. J.* 11, 241–247. doi: 10.3102/00028312011003241

Hughes, J. N., Im, M. H., and Wehrly, S. E. (2014). Effect of peer nominations of teacher-student support at individual and classroom levels on social and academic outcomes. *J. Sch. Psychol.* 52, 309–322. doi: 10.1016/j.jsp.2013.12.004

Hymel, S., and Katz, J. (2019). Designing classrooms for diversity: fostering social inclusion. *Educ. Psychol.* 54, 331–339. doi: 10.1080/00461520.2019.1652098

Juvonen, J., and Bear, G. (1992). Social adjustment of children with and without learning-disabilities in integrated classrooms. *J. Educ. Psychol.* 84, 322–330. doi: 10.1037/0022-0663.84.3.322

Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H. L., and Smith, D. S. (2019). Promoting social inclusion in educational settings: challenges and opportunities. *Educ. Psychol.* 54, 250–270. doi: 10.1080/00461520.2019.1655645

Juvonen, J., and Murdock, T. B. (1995). Grade-level differences in the social value of effort: implications for self-presentation tactics of early adolescents. *Child Dev.* 66, 1694–1705. doi: 10.2307/1131904

Kindermann, T. A. (2016). "Peer group influences on students' academic motivation," in *Handbook of Social Influences in School Contexts: Social-Emotional, Motivation, and Cognitive Outcomes,* eds K. R. Wentzel and G. B. Ramani (New York, NY: Routledge Taylor and Francis Group), 31–47.

Knowles, C., Meng, P., and Machalicek, W. (2015). Task sequencing for students with emotional and behavioral disorders: a systematic review. *Behav. Modif.* 39, 136–166. doi: 10.1177/0145445514559927

Kornienko, O., Dishion, T. J., and Ha, T. (2018). Peer network dynamics and the amplification of antisocial to violent behavior among young adolescents in public middle schools. *J. Emot. Behav. Disord.* 26, 21–30. doi: 10.1177/1063426617742345

Lee, D. (2006). Facilitating academic transitions: an application of behavioral momentum. *Remed. Special Educ.* 27, 312–317. doi: 10.1177/07419325060270050601

Leinhardt, G. C., Weidmand, C., and Hammond, K. M. (1987). Introduction and integration of classroom routines by expert teachers. *Curr. Inquiry* 17, 135–176. doi: 10.1080/03626784.1987.11075284

Long, N. J., Morse, W. C., Fecser, F. A., and Newman, R. G. (2007). *Conflict in the Classroom: Positive Staff Support for Troubled Students,* 6th Edn. Austin, TX: Pro-Ed, Inc.

Magnusson, D., and Cairns, R. B. (1996). "Developmental science: principles and illustrations," in *Developmental Science,* eds R. B. Cairns, G. H. Elder Jr., and J. Costello (New York, NY: Cambridge University Press), 7–30.

McKown, C. (2019). Challenges and opportunities in the applied assessment of student social and emotional learning. *Educ. Psychol.* 54, 205–221 doi: 10.1080/00461520.2019.1614446

McLesky, J., and Waldron, N. L. (2007). Making differences ordinary in inclusive classrooms. *Interv. Sch. Clin.* 42, 162–168. doi: 10.1177/10534512070420030501

Milner, H. R. (2018). Development over punishment: an unhealthy fixation on punishment hurts underserved students. *Educ. Leadership* 75, 93–94.

Motoca, L., Farmer, T. W., Hamm, J. V., Byun, S.-Y., Lee, D., Brooks, D. S., et al. (2014). Directed consultation, the SEALS model, and teachers' classroom management. *J. Emot. Behav. Disord.* 22, 119–129. doi: 10.1177/1063426614521299

Musetti, A., Eboli, G., Cavallini, F., and Corsano, P. (2019). Social relationships, self-esteem, and loneliness in adolescents with learning disabilities. *Clin. Neuropsychiatry* 16, 165–172.

Norwalk, K. E., Hamm, J. V., Farmer, T. W., and Barnes, K. L. (2016). Improving the social context of early adolescence through teacher attunement to victimization: effects on school belonging. *J. Early Adolesc.* 36, 989–1009. doi: 10.1177/0272431615590230

Pearl, R., Farmer, T. W., Van Acker, R., Rodkin, P. C., Bost, K. K., Coe, M., et al. (1998). The social integration of students with mild disabilities in general education classrooms: peer group membership and peer-assessed social behavior. *Element. Sch. J.* 99, 167–185. doi: 10.1086/461921

Pearl, R., Leung, M.-C., van Acker, R., Farmer, T. W., and Rodkin, P. C. (2007). Teachers' awareness of their classroom's social network. *Element. Sch. J.* 108, 25–39. doi: 10.1086/522384

Pijl, S. J., and Frostad, P. (2010). Peer acceptance and self-concept of students with disabilities in regular education. *Eur. J. Special Needs Educ.* 25, 93–105. doi: 10.1080/08856250903450947

Pijl, S. J., Frostad, P., and Flem, A. (2008). The social position of pupils with special needs in regular schools. *Scand. J. Educ. Res.* 52, 387–405. doi: 10.1080/00313830802184558

Rice, F., Fredrickson, N., and Seymour, J. (2011). Assessing pupil concerns about transition to secondary school. *Br. J. Educ. Psychol.* 81, 244–263. doi: 10.1348/000709910X519333

Rodkin, P. C. (2011). Bullying and the power of peers. *Educ. Leadership* 69, 10–16.

Rodkin, P. C., Farmer, T. W., Pearl, R., and van Acker, R. (2000). Heterogeneity of popular boys: antisocial and prosocial configurations. *Dev. Psychol.* 36, 14–24. doi: 10.1037/0012-1649.36.1.14

Rose, C. A., and Gage, N. A. (2017). Exploring the involvement of bullying among students with disabilities over time. *Except. Child.* 83, 298–314. doi: 10.1177/0014402916667587

Ryan, A. M., and Pintrich, P. R. (1997). "Should I ask for help?" The role of motivation and attitudes in adolescents' help seeking in math class. *J. Educ. Psychol.* 89, 329–341. doi: 10.1037/0022-0663.89.2.329

Shi, B., and Xie, H. L. (2012). Socialization of physical and social aggression in early adolescents' peer groups: high-status peers, individual status, and gender. *Soc. Dev.* 21, 170–194. doi: 10.1111/j.1467-9507.2011.00621.x

Shores, R. E., Gunter, P. L., and Jack, S. L. (1993). Classroom management strategies: are they setting events for coercion? *Behav. Disord.* 18, 92–102. doi: 10.1177/019874299301800207

Shores, R. E., and Wehby, J. H. (1999). Analyzing the classroom social behavior of students with EBD. *J. Emotion. Behav. Disord.* 7, 194–199. doi: 10.1177/106342669900700401

Simonsen, B., Freeman, J., Dooley, K., Maddock, E., Kern, L., and Meyers, D. (2016). Effects of targeted professional development on teachers' specific praise rates. *J. Positive Behav. Intervent.* 19, 37–47. doi: 10.1177/1098300716637192

Smith, L. B., and Thelen, E. (2003). Development as a dynamic system. *Trends Cogn. Sci.* 7, 343–348. doi: 10.1016/S1364-6613(03)00156-6

Stone, W. L., and La Greca, A. M. (1990). The social status of children with learning disabilities: a reexamination. *J. Learn. Disabil.* 23, 32–37. doi: 10.1177/002221949002300109

Sullivan, T. N., Sutherland, K. S., Lotze, G. M., Helms, S. W., Wright, S. A., and Ulmer, J. (2015). Problem situations experienced by urban middle school students with high incidence disabilities that impact emotional and behavioral adjustment. *J. Emot. Behav. Disord,* 23, 101–114. doi: 10.1177/1063426614528243

Sutherland, K. S., Alder, N., and Gunter, P. L. (2003). The effects of varying rates of opportunities to respond to academic requests on the classroom

behavior of students with EBD. *J. Emot. Behav. Disord.* 11, 239–248. doi: 10.1177/10634266030110040501

Sutherland, K. S., Farmer, T. W., Kunemund, R. L., and Sterrett, B. I. (2018). "Learning, behavioral, and social difficulties within MTSS: a dynamic perspective of intervention intensification," in *Paving the Pathway for Educational Success: Effective Classroom Interventions for Students with Learning Disabilities*, eds N. D. Young, K. Bonanno-Sotiropoulos, and T. A. Citro (New York, NY: Rowman and Littlefield), 15–33.

Sutherland, K. S., and Wehby, J. H. (2001). Exploring the relationship between increased opportunities to respond to academic requests and the academic and behavioral outcomes of students with EBD – a review. *Remed. Special Educ.* 22, 113–121. doi: 10.1177/074193250102200205

Trach, J., Lee, M., and Hymel, S. (2018). A social-ecological approach to addressing emotional and behavioral problems in schools: focusing on group processes and social dynamics. *J. Emot. Behav. Disord.* 26, 11–20. doi: 10.1177/1063426617742346

Vaillancourt, T., and Hymel, S. (2006). Aggression and social status: the moderating roles of sex and peer-valued characteristics. *Aggress. Behav.* 32, 596–408. doi: 10.1002/ab.20138

van Acker, R., Grant, S. H., and Henry, D. (1996). Teacher and student behavior as a function of risk for aggression. *Educ. Treat. Children* 19, 316–334.

van den Berg, Y. H. M., and Cillessen, A. H. N. (2015). Peer status and classroom seating arrangements: a social relations analysis. *J. Exp. Child Psychol.* 130, 19–34. doi: 10.1016/j.jecp.2014.09.007

van den Berg, Y. H. M., and Stoltz, S. (2018). Enhancing social inclusion of children with externalizing problems through classroom seating arrangements: a randomized control trial. *J. Emot. Behav. Disord.* 26, 31–41. doi: 10.1177/1063426617740561

van der Sande, L., Hendrickx, M. M. H. G., Boor-Klip, H. J., and Mainhard, T. (2017). Learning disabilities and low social status: the role of peer academic reputation and peer reputation of teacher liking. *J. Learn. Disabil.* 51, 211–222. doi: 10.1177/0022219417708172

Vollet, J. W., Kindermann, T. A., and Skinner, E. A. (2017). In peer matters, teachers matter: Peer group influences on students' engagement depend on teacher involvement. *J. Educ. Psychol.* 109, 635–652. doi: 10.1037/edu0000172

Wentzel, K. R. (2003). Motivating students to behave in socially competent ways. *Theory Pract.* 42, 319–326. doi: 10.1207/s15430421tip4204_9

Wentzel, K. R., Muenks, K., McNeish, D., and Russell, S. (2017). Peer and teacher supports in relation to motivation and effort: a multi-level study. *Contemp. Educ. Psychol.* 49, 32–45. doi: 10.1016/j.cedpsych.2016.11.002

Winters, R. R., Blake, J. J., and Chen, S. (2020). Bully victimization among children with attention-deficit/hyperactivity disorder: a longitudinal examination of behavioral phenotypes. *J. Emot. Behav. Disord.* 28, 80–91. doi: 10.1177/1063426618814724

Witvliet, M., Olthof,. T., Hoeksma, J. B., Goossens, F. A., Smits, S. I., and Koot, H. M. (2010). Peer group affiliation of children: the role of perceived popularity, likeability, and behavioral similarity in bullying. *Soc. Dev.* 19, 285–303. doi: 10.1111/j.1467-9507.2009.00544.x

Wurster, T., and Xie, H. L. (2014). Aggressive and prosocial behaviors: the social success of bistrategic preadolescents. *Int. J. Behav. Dev.* 38, 367–377. doi: 10.1177/0165025414531463

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Advantages of publishing in Frontiers

OPEN ACCESS
Articles are free to read for greatest visibility and readership

FAST PUBLICATION
Around 90 days from submission to decision

HIGH QUALITY PEER-REVIEW
Rigorous, collaborative, and constructive peer-review

TRANSPARENT PEER-REVIEW
Editors and reviewers acknowledged by name on published articles

Frontiers
Avenue du Tribunal-Fédéral 34
1005 Lausanne | Switzerland

Visit us: www.frontiersin.org
Contact us: frontiersin.org/about/contact

REPRODUCIBILITY OF RESEARCH
Support open data and methods to enhance research reproducibility

DIGITAL PUBLISHING
Articles designed for optimal readership across devices

FOLLOW US
@frontiersin

IMPACT METRICS
Advanced article metrics track visibility across digital media

EXTENSIVE PROMOTION
Marketing and promotion of impactful research

LOOP RESEARCH NETWORK
Our network increases your article's readership