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The relationship between young children's personal values and their teacher-rated behaviors in the classroom

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There has been little research on the relationships between children's personal values and the behaviors that express such values in the school context. In the present study, we examined for the first time with children at this young age, the relations between values and their value-related behaviors, i.e., supportive, disciplined, learning-oriented, and achievement-oriented, in the primary school context. The sample consisted of 952 primary school children (51.5% boys; M_{age}=7.93; SD=0.35). Data used in this study were collected in 2022 in Switzerland. A multilevel analysis confirmed the hypothesis that systematic relationships between values and teacher-rated behaviors can be demonstrated with young children. However, gender was the strongest predictor of teacher-rated children's classroom behaviors. The results highlight the significance of understanding children's value-behavior relations, teachers' possible gender stereotypes of children's behaviors, and its practical importance in the school context.

KEYWORDS

personal values, teacher-rated behaviors, classroom behavior, value-behavior relations, gender stereotypes, multilevel approach

1. Introduction

One of the main aims of education is to instill values in children and even incorporate in national curricula (Oeschger et al., 2022). But are values related at all to children's behavior at young ages? Although many studies established that personal values relate to behavior in adulthood (reviewed, e.g., Sagiv and Roccas, 2021) and some in adolescence (e.g., Knafo et al., 2008; Benish-Weisman, 2015), research on young children's values and their relations to behavior in the school context is lacking. The current research aims to start closing this gap, studying value-behavior relations of children at a young age in the school context with a large and varied sample, and using teachers' ratings of behaviors to avoid common method variance (Podsakoff et al., 2003).

1.1. What are values?

The concept of values is used in various disciplines and contexts. We bring a psychological perspective to the education field, to enable a new approach to study an important aspect of

children's behavior at school. A common psychological definition in the current scientific literature on value research is the one according to Schwartz (1994). Theory of Schwartz (1994, 2003) emerged in the field of social psychology to study individual differences in value priorities and their effects on attitudes as well as behavior. His account of values is one of the most researched and has been confirmed in hundreds of studies from different corners of the globe (Schwartz, 2012; Sagiv and Schwartz, 2021). Values express broad life goals that are important to individuals in life and what they strive for (e.g., security, achievement). They are at the core of a person's self-concept and identity (Hitlin and Piliavin, 2004). As such, values are quite stable across situations and time (Leijen et al., 2022). Schwartz proposed and found that personal values are organized in a circular structure (Schwartz, 1992; see Figure 1). In this structure, single values are included in the following 10 value types: *Universalism*, *Benevolence*, *Tradition*, *Conformity*, *Security*, *Power*, *Achievement*, *Hedonism*, *Stimulation*, and *Self-direction*. These basic values are arranged as a circular continuum, in which values that are adjacent to each other have similar motivational goals and opposing basic values have conflicting motivational goals. The core values of *Universalism* and *Benevolence*, for example, focus on accepting and helping others, whereas the core values of *Achievement* and *Power* focus on promoting oneself. The more distant the values are from each other, the more they differ. Due to this structure, values that relate positively to one value tend to also relate positively to neighboring values. That is, a person who finds one value important also finds neighboring values quite important, and vice versa regarding opposite values in the circle. Schwartz distinguishes in his theory of personal values between four broad goals, which are represented by the poles of two bipolar continua. The first continuum represents the two opposing poles of *Self-transcendence* and *Self-enhancement*. The second continuum comprises the two poles *Openness to Change* and *Conservation*. While the focus of *Self-transcendence* and *Conservation* values is on social interests, *Self-enhancement* and *Openness to change* values involve a focus on the interests of the individual.

This structure shows why it may be difficult, for example, to encourage children to be successful and to strive to be the best in the class (*Self-enhancement*) but at the same time motivate the children to support and help others (*Self-transcendence*), because these opposing values have conflicting motivational goals and thus can induce a conflict. Nonetheless, it is possible to encourage children to be kind to one another while also mastering challenges of learning and

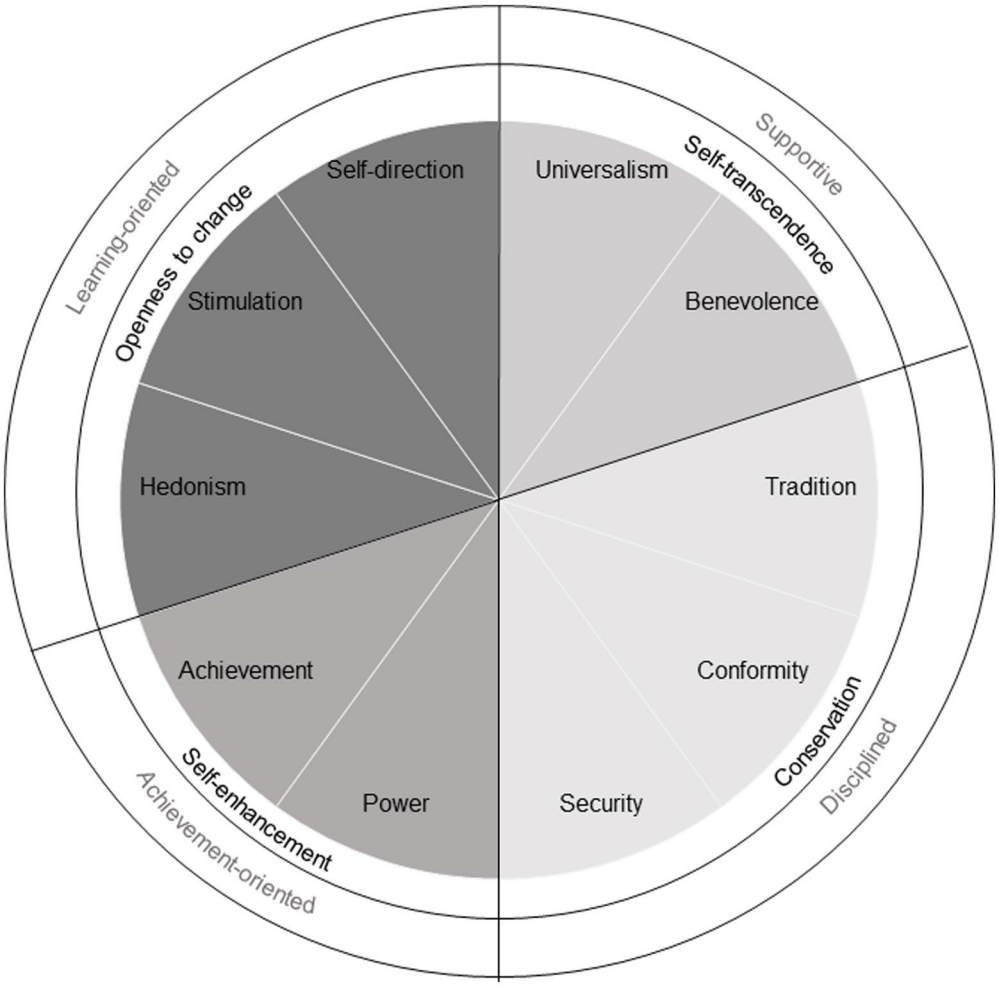

FIGURE 1
Value-behavior relations (own illustration based on Schwartz, 1992; Berson and Oreg, 2016).

understanding (*Openness to change* values). Value transmission is regarded as a key task both within the family and within the broader society (Rohan and Zanna, 1996; Roest et al., 2010). Values of children are of special importance because children shape the world of the future and values are the goals that direct their behavior (Jennings, 2004). Yet, values are not concrete goals, but abstract motivations that can motivate different behaviors (e.g., Schwartz, 1994). Why do human values develop? As people develop, they come to realize that they cannot pursue conflicting values, so they decide which is more important and this way the circle develops (Schwartz, 1992, 2012). The most prominent mechanism of value change is adjustment, and so part of development is adjustment of life circumstances (Bardi and Goodwin, 2011). Adolescents, for instance, show an increase in self-direction as part of adjusting to better abilities to make their own choices (see, e.g., Daniel et al., 2020). Moreover, according to Schwartz and Bardi (1997) reinforcement strategies potentially affect values, i.e., if you are able to pursue a value, you are more likely to hold it. While these are not developmental theories, the change that occurs in development can be subsumed under any change. Research informed by Schwartz's theory of human values in a developmental framework has revealed that, like adults, children also have a clear and differentiated understanding of human values (Döring et al., 2010). Findings imply that as early as 5 years of age, children can report the importance of values identified in the Schwartz's model (Döring et al., 2016; Abramson et al., 2018). However, younger children were found to be more inconsistent in ordering the values than older children (Cieciuch et al., 2016; Uzefovsky et al., 2016). The "stage of concrete operations" (Piaget, 1960; Fischer, 1980) or "the middle childhood" (Harter, 1999) is from a cognitive-developmental perspective the age between 6 and 11 years, in which a child has developed a basic understanding of who he or she is and increasingly learns to generalize (e.g., Harter, 1999; Thompson et al., 2006). In this period, children begin to organize elements into trait categories when they describe themselves and others (Harter, 1999). In doing so, a bridge from Piaget's theory to the development of the self-concept in childhood ("Who am I"), of which values are part of, can be built (Harter, 1999). In acting like an "intuitive moralist" (Thompson et al., 2006), children hold a basic concept of desirable goals—or of values as defined by Schwartz (1992) (Harter, 1999). In middle childhood, value priorities have been shown to be quite stable over time, i.e., the intra-individual stability of values in childhood improves as children grow older and usually only change moderately (Cieciuch et al., 2016; Daniel et al., 2020). Generally, children prioritize the same values as adults, with self-transcendence being the most important value (Döring et al., 2015). Nonetheless, it has also been shown that values of children in middle childhood do change, i.e., while conservation values decrease in importance, openness to change values increase (Cieciuch et al., 2016). Another aspect showing that the age span between 5 and 12 can be considered as a crucial period to focus in research on value development is the fact that children acquire the inter-relations between values, i.e., the underlying motivations of a value. During middle childhood, children's value priorities and structure has been shown to be as coherent as adults (Abramson et al., 2018; Daniel et al., 2022). Nevertheless, value priorities (i.e., how important a child finds each value compared to the rest of their values) can differ by several factors, such as socialization, social structure (Leaper and Friedman, 2007), life experience, or significant life events (e.g., war, immigration; Bardi and Goodwin, 2011) and individual characteristics (e.g., gender; Schwartz and Rubel, 2005). Gender is considered as one of the most basic social categories and a powerful predictor of human development throughout the life span (e.g., Liben, 2016). Previous research on values revealed variance in value priorities of the four higher-order values as well as the 10 basic values among adults (e.g., Schwartz and Rubel, 2005; Schwartz, 2012; Borg et al., 2017), adolescence (e.g., Benish-Weisman, 2015; Tamm and Tulviste, 2015), and children (Döring et al., 2015, 2018; Collins et al., 2017). Women tend to find *Self-transcendence* values (social focus) more important than men, who are more likely to prioritize *Self-enhancement* values (focus on self). But all genders tend to give the highest priority to *Self-transcendence* values (Schwartz and Rubel, 2005; Benish-Weisman and McDonald, 2015). This is also true for adolescence' and children's value priorities, where differences in value priorities have been found in girls and boys (Knafo and Spinath, 2011; Bilsky et al., 2013; Döring et al., 2016; Makarova et al., 2018; Scholz-Kuhn et al., 2021).

1.2. Value formation in the school context

Values have played an important object of inquiry in theories and research about children's social development (Killen and Smetana, 2015). Like research on value development, moral developmentalist theory, guided by Social Domain Theory, has demonstrated that morality is rather domain-specific than domain-general (Turiel, 2002; Smetana, 2006) and therefore from a developmental psychological perspective, one can argue that young children have complex social and moral judgments, beliefs, and attitudes (Reed et al., 1996; Killen and Smetana, 2015). As moral development research on normative development and individual differences shows (e.g., Smetana et al., 2012), values can be regarded as important as moral judgments, identification with social groups, and autonomy from early on, and therefore they can be regarded as omnipresent throughout children's social development (see Harter, 1999). Before proceeding to examine value-behavior relations in the school context, it is important to introduce a framework that helps to understand the formation of values and distinguishes between different social contexts, in which values are formed. These contexts can be systematically conceptualized using a model of ecosystems within which individuals develop, such as that proposed by Bronfenbrenner (2005) and Bronfenbrenner and Morris (2006). The different levels of reality (micro-, meso-, exo-, macro-, and chronosystem), which Bronfenbrenner defines in his approach, are interconnected, and constitute an ecosystem of human development, enabling a differentiated view of developmental contexts in which children's values are formed (Bronfenbrenner, 2005). Children grow up in a social and cultural environment, in which certain values prevail. The family and the school environment play a key role in the formation and transmission of values to the growing generation. Within the family, important reference persons such as parents or grandparents pass on their values to the children. Current research points out that children play an active role in this process and have an astonishingly differentiated understanding of their goals from a relatively early age and therefore can provide information about their values themselves (Makarova et al., 2018). When children start school, they enter a new social and institutional learning environment, in which both knowledge and values are formed and transmitted. The school environment can be divided into four ecological systems-levels of human development, which are interconnected (Bronfenbrenner, 2005). On the so-called macrosystem, the legal, societal, and educational policy guidelines are decisive for the school environment.

The reference to values at this level can be found, for example, in the framework of educational laws and curriculum content. A recent study investigated how value-driven the Swiss educational curriculum (*Lehrplan 21*, D-EDK, 2016) is. The findings showed that the values, which had the highest average score within the curriculum, were classified as Schwartz' higher-order values of *Openness to change*, *Conservation* and *Self-transcendence* (Oeschger et al., 2022). The mesosystem describes the direct school environment, in which the children develop. At this level, values are found in the lived school culture (see Berson and Oreg, 2016) and are often represented in the school's Mission Statement as shared goals that are considered particularly important by the school. The microsystem is the system within which the child is an active member, such as the family or in the school context the classroom environment. The learning processes that are intrinsic to the acquisition of competencies take place in the context of classroom activities. Values play a central role here because they influence the pedagogical actions of the teachers and the behaviors of the children in class (see Berson and Oreg, 2016; Benish-Weisman et al., 2017). Finally, the chronosystem refers to time and is according to a temporary level of Bronfenbrenner (1980), which consists of all the experiences that a person has had during his or her lifetime, including environmental events and major life transitions (e.g., Bardi and Goodwin, 2011) and thus also the time children spend in school. That value priorities do change as children grow older and that the longitudinal stability of values tends to increase with age has been shown (see Döring et al., 2016). However, in this paper, we focus on one time during this development, young children at early stages of primary school, and test whether already at such an early stage, children's values are manifested in the child's behavior sufficiently so that a teacher's rating of the child's behavior would be related to the child's personal value priorities. Due to the amount of time children spend in school and their active involvement, the microsystem has the greatest influence on a child's development and thus can be regarded as an important developmental context to study young children's value-behavior relations. At this system of personal relationships, children interact with their teachers and peers to shape their own developmental conditions. Further investigation on the child's immediate environmental setting, i.e., the people and activities the children experience on a day-to-day basis is needed and hence the microsystem will be the focus of the current research.

1.3. The relationship between children's values and their behaviors

"The natural way to pursue important values is to behave in ways that express them or promote their attainment. People pursue security values by acting in ways that promote their personal safety, and they pursue hedonism values by engaging in pleasurable activities." (Bardi and Schwartz, 2003, p. 1208). This quote points out what has been established across many studies: the relationship of basic values and prototypical behaviors (e.g., Benish-Weisman, 2015; Vecchione et al., 2016; Abramson et al., 2018). Thus, values, i.e., the higher-order value types, can be recognized in the behaviors of individuals. The motivational conflicts and congruities among values, which are postulated in the Schwartz' value theory (see Figure 1), also account among behaviors as well as among value-behavior relations. Therefore, in the Schwartz' value circle, just like each value is systematically related to all values, each behavior is systematically related to all values, and vice versa. Additionally, using multi-dimensional scaling, in a 'map' derived from correlations, behaviors were positioned close to the values they express and close to those with whom they share the same motivation. Behaviors and values that are not compatible were located most remotely (Bardi and Schwartz, 2003).

Bardi and Schwartz (2003) found differences between values in how strongly values correlate with certain behaviors. That is, some values correlate more strongly with the behaviors that express them. While values such as *Stimulation* and *Tradition* related strongly to the behaviors that express them, *Hedonism*, *Power*, *Universalism*, and *Self-direction* values related moderately and *Security*, *Conformity*, *Achievement,* and *Benevolence* values related only weakly. The research found evidence to suggest that values are related less strongly to behaviors under strong normative pressures, i.e., when there are normative pressures to behave in a certain way or to hold the value as highly important.

Moreover, Benish-Weisman (2015) found in her study with adolescents that the behavior aggression has clear systematic associations with values (see also Knafo et al., 2008). Vecchione et al. (2016) measured 11-year-old children's values longitudinally and found that both values and behavior were relatively stable over time, and they predicted each other over time. Concurrent correlations between values and behaviors that share the same motivational goals were positive and significant. However, values and behaviors that stem from conflicting motivational goals had negative correlations. According to Vecchione et al. (2016, p. 542), these reciprocal value-behavior relations "may suggest that the different elements of the self-concept develop in coherence with one another, rather than in isolation. As children gradually develop an image of who they are, the things they find important and the behavior they consider typical of themselves converge."

1.4. Value-behavior relations and their significance in the school context

In contrasting with the substantial evidence of values in the family and the importance that has been shown by the previous explanations, only few studies have investigated associations of children's behaviors and values in the school context. However, the school is next to the family a microsystem, and should be considered as a predictor of children's behaviors and values. Hence, the promotion of prosocial values of children in school could be a mean to encourage a positive school climate, an effective learning environment and especially an approach to reduce negative and disruptive behaviors in class, which has always been one of the predominant challenges to effective teaching-learning processes (Turhan and Akgül, 2017). Previous research indicates the association between disruptive behavior and individual demographics such as gender and ethnicity (Kellam et al., 1998; Pas et al., 2010, 2011). Furthermore, it has been shown that process characteristics (e.g., the quality of relationships within a classroom) are more important than structural characteristics (e.g., percentage of girls in class) to explain behavior problems (Schönbächler et al., 2011). The largest study to date on how primary schools shape children's values was conducted by Berson and Oreg (2016) on children aged 7–11 at T1. They formulated four prototypical behaviors of children for the higher-order value types using teacher-rated behaviors reports (see Figure 1). Although value-behavior correlations were small, they were significant, e.g., pupils who value

Conservation tended to be *disciplined*, while pupils with *Openness to change* values were *learning-oriented* (Berson and Oreg, 2016). Other studies of children provide further insights and confirmed the relationship between the school climate and children's value-related behaviors (Daniel et al., 2013; Luengo Kanacri et al., 2017). Benish-Weisman et al. (2021) recently found, that except for *Self-transcendence* values, that children's values have a direct effect on the corresponding child behavior.

2. The current study

Considering the theoretical and conceptual background, this study sought to fill the gaps in value research by examining relationship between young children's personal values and their teacher-rated behaviors of the early years of primary school. In the present study, the first research goal is to investigate the relationship between children's value priorities and their *corresponding* as well as their *opposing* value-related behavior on a large sample of Swiss pupils. The second research goal is to investigate whether gender differences can be found in the behaviors of young children in the school context. To reach these objectives, this study proposes three hypotheses, which are represented in Figure 2. At the individual level, we hypothesize that children's value priorities will be related to their prototypical value-related behavior. Thus, children's value-related behaviors will be positively associated with their *corresponding* higher-order value types, which can be recognized in the behaviors of individuals (H1; see Berson and Oreg, 2016). Therefore, *supportive behavior* will be positively associated with *Self-transcendence* (H1a), *disciplined* with *Conservation* (H1b), *achievement-oriented* with *Self-enhancement* (H1c), and *learning-oriented* with *Openness to change* (H1d; see Figure 2). Furthermore, we investigate if the value-behavior relations according to the value model of Schwartz (1992, 1994) are also true for the *opposing* higher-order value types and test whether children's value-related behavior is negatively or non-significantly associated with its *opposing* higher-order value type (H2). The circular structure provides a basis for the following hypotheses: Accordingly, we hypothesize that *Supportive behavior* will be negatively associated with *Self-enhancement* values (H2a). *Disciplined behavior* will be negatively with *Openness to change* values (H2b). *Achievement-oriented behavior* will be negatively with *Self-transcendence* values (H2c). *Learning-oriented behavior* will be negatively with *Conservation* values (H2d). In addition to testing the value-behavior relations of the overall sample, we analyze if gender differences can be found in the behaviors. Consequently, we will add gender as a predictor, hypothesizing that there will be gender differences in teacher-rated children's behavior according to gender differences (H3).

3. Methods

This study adopted a quantitative research design. Data were taken from a broader research project. The focus of a previous publication was on different hypotheses and mechanisms (Oeschger et al., 2022). Detailed information of participants and procedures used in this study will be elaborated in the following section.

3.1. Participants

The total sample comprised 1,124 primary school children aged between 7 and 10 (M_{age} = 7.85; SD = 0.58; 51.4% girls). Since not all teachers filled out the questionnaire, i.e., the behavior scale, which was used to assess children's behavior, the effective sample size of the children was N = 952, who were nested within 80 classrooms in Switzerland, in urban and rural areas. The mean number of children per class was 11.90 in our study.

3.2. Procedure

Schools were invited by the research team to participate in the research project by email and telephone. The request was only made in cantons from which the cantonal authorities gave their consent to

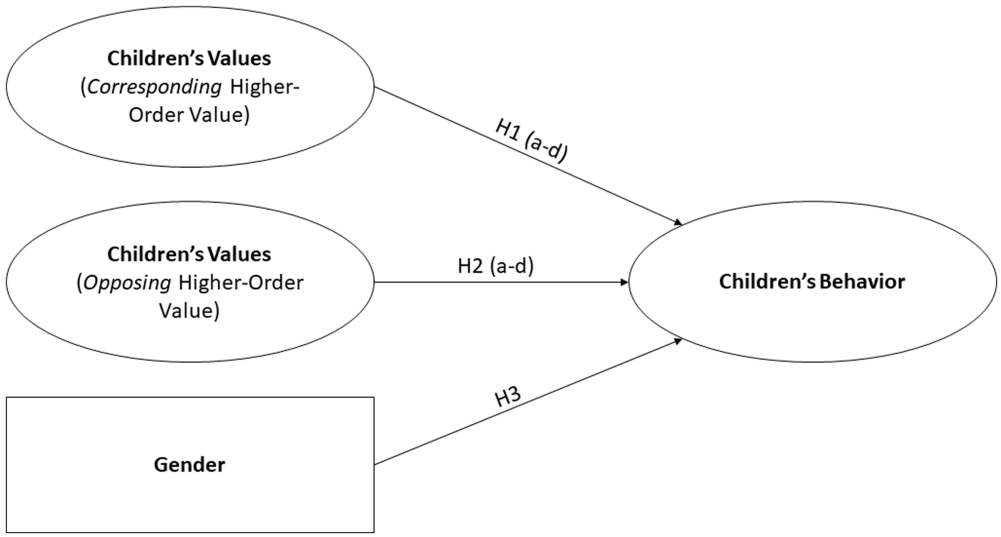

FIGURE 2
Hypothesized relationships between children's behavior, children's values, and the gender of the child. H = hypotheses.

the project. Consent forms were sent to parents in the target grade level; only those children whose parents gave their consent were able to participate in the project. Furthermore, on the day of the data collection, consent was obtained also from the children. Data were collected by trained research assistants during two school lessons on the same day. Pupils completed a paper-pencil questionnaire. With the help of a standardized instruction, all questions were worked on one after the other with the whole class. If there were any questions or ambiguities, the children could ask the research team at any time. Children received a sticker for their participation. At the same time, their class teachers completed their behavior questionnaire online. Ethical approval was obtained from the Ethics Committee of the University of Basel.

3.3. Measures

3.3.1. Demographic variables

Students reported their age and gender (coded as 0 = boy, 1 = girl).

3.3.2. Personal values

Children's value structure and priorities were assessed by using the Picture-based Value Survey for Children (PBVS-C, Döring et al., 2010). This instrument is an adaptation of the Portrait Values Questionnaire (PVQ; Schwartz, 2003), which was designed for the cognitive developmental level of younger children (Döring, 2010; Döring et al., 2010). The level of abstraction of the values was lowered using pictorial items that illustrate human values, which the child ranks according to how important they consider them. This simplification allows abstract values to be visually translated and presented as concrete behaviors in situations (Döring, 2010). The PBVS-C comprises 20 pictures in which a gender-neutral main character performs a value-relevant action, so that every child can identify with the figure. Each of the 10 basic values according to Schwartz (1992) is depicted twice in a different situation. In one picture, for example, the main character helps a child to get up after a bicycle accident (represented value: *Benevolence*). In addition to the pictures, the measurement procedure includes a gradual response scale consisting of a five-point Likert scale ranging from "very important" to "not at all important." Due to the odd number of possible answers, the middle is neutral. The children must decide which picture fits best to which level. This is a so-called Q-sort procedure, since the children must gradually assign a certain number of items to certain scales and the distribution of answers is predetermined (Döring, 2010). In the process, the children must select the picture item that applies most to them at the respective level. This assignment of the picture items to five levels creates a ranking order and yields a score for each child on each of the higher-order values *Self-transcendence*, *Conservation*, *Self-enhancement*, and *Openness to change*. Young children's responses to abstract items such as pictures, as well as the Q-sort ranking procedure, which are both used in the Picture-based Value Survey for Children, result in lower levels of internal consistency (Döring et al., 2015; Cieciuch et al., 2016; Uzefovsky et al., 2016). In such ipsative measures, correlations between items tend to be negative on average, whereas Likert-type of scales tend to produce positive correlations. This negatively affects Cronbach's alpha and can be seen looking at correlation (see Tables 1, 2). For this reason, instead of Cronbach's alpha, the first step in the analyses was to conduct multi-dimensional scaling (MDS) to assess measuring characteristics (Kruskal and Wish, 1978) and to calculate whether the value structure corresponds to the theoretical model as suggested by Schwartz (1992). According to Borg (2010), the MDS includes different procedures with which objects are represented as points in a coordinate system in a two-dimensional space based on the Pearson correlations among the importance scores of each pair of values. The distances between the points should reflect the proximity of the objects as accurately as possible. Thus, a multidimensional scaling analysis (Davison, 1983) was conducted on the matrix of correlations of the 20 items of the PBVS-C (Döring et al., 2010). The results of these analyses largely confirmed the theoretical structure as proposed by Schwartz (1992), being organized in a circular pattern, and forming the two opposing poles. As expected, we found support for the expectation that children of primary school age already have a value structure that corresponds to value model of Schwartz (1992). The results of the MDS are reported in Supplementary Figures 1, 2.

3.3.3. Children's behaviors in class

Children's value-related behavior was rated by the teachers. For each participating child in her/his class, the class teacher completed the 11-item Schoolchildren's Behavior Scale (Berson and Oreg, 2016). The scale measures children's *disciplined* (e.g., "Obeys the rules in class."), *learning-oriented* (e.g., "Asks many good questions in class"), *supportive* (e.g., "Is sensitive to other children's needs."), and *achievement-oriented behavior* (e.g., "Is very competitive in class."). Berson and Oreg (2016) operationalized *supportive*, *achievement-oriented*, and *learning-oriented behavior* with three items, and *disciplined behavior* with two items. We translated the scale using a translation and back translation procedure. We also adjusted the scale (e.g., replacement of "grade" to "assessment," since first graders in Switzerland do not yet have school grades). The teachers rated the 11 items for each participating child on a five-point Likert scale from "not at all" to "very much." In addition, each category can be assigned to a higher-order value type according to Schwartz (1992). Thus, *supportive behavior* belongs to the higher-order value type *Self-transcendence*, *disciplined* to *Conservation*, *achievement-oriented* to *Self-enhancement* and *learning-oriented* to *Openness to change* (see Figure 1). Cronbach's alpha reliability scores for the scale were satisfactory with 0.85, 0.79, 0.71, and 0.77, for the *disciplined*, *learning-oriented*, *supporting*, and *achievement-oriented behavior*. Because the scale was modeled over the values scale, we further conducted multidimensional scaling to confirm the theoretical structure as proposed by Schwartz (1992). As previously reported for the value structure, also children's behaviors in class are arranged along the value model of Schwartz (1992). The results are provided in Supplementary Figure 3.

4. Data analysis

The data structure with children nested in classes suggested a multilevel approach to test our hypotheses. Multilevel modeling is suitable here for two reasons. First, it is possible to evaluate effects of a higher level (classroom level) on a lower hierarchical level (individual level). Second, multilevel analysis has the advantage that well-known techniques of multiple regression, such as simultaneous consideration of predictors, can be readily used. Thus, it allows to test psychological *and* sociological research questions within one modeling approach (Hosoya et al., 2014). If heterogeneity of individuals is not considered in the analysis, the researcher might commit the so-called ecological

TABLE 1 Means, standard deviations, and correlations among values and behaviors in total sample.

Variable		*M*[a]	*SD*	1	2	3	4	5	6	7	8
Value domain	1. Self-transcendence	3.58	0.49								
	2. Conservation	3.04	0.41	0.05							
	3. Self-enhancement	2.21	0.57	−0.53**	−0.37**						
	4. Openness to change	3.09	0.43	−0.34**	−0.66**	−0.13**					
Behavior domain	5. Supportive	3.65	0.93	0.09**	0.11**	−0.09**	−0.09**				
	6. Disciplined	3.93	0.95	0.14**	0.15**	−0.11**	−0.15**	0.04			
	7. Achievement	3.77	0.87	−0.18**	−0.09**	0.16**	0.07*	−0.75**	−0.38**		
	8. Learning	3.89	0.83	−0.02	−0.18**	0.01	0.17**	−0.43**	−0.49**	0.06	
	9. Gender[b]			0.30**	0.17**	−0.23**	−0.19**	0.26**	0.32**	−0.31**	−0.25**

*$p < 0.05$. **$p < 0.01$; The correlations among behaviors are higher since the teachers filled out this scale, while the personal values were rated by the children. According to Schwartz (2006), centered variables of values and behaviors are used only for the correlations. The fields in green indicate the behavior and the corresponding value set; the fields in orange show the behavior and the opposing value set. Due to the Q sort nature of the PBVS-C, the average correlations lead to being negative.

[a]The value scale is ranging from 1 (not like them at all) to 5 (very much like them). The same applies to the behavior scale (1 = not at all; 5 = a lot).

[b]Gender = gender (0 = boys; 1 = girls).

fallacy when interpreting the results (see, e.g., Robinson, 1950; Ditton, 1998; Eid et al., 2017). Due to the assignment of a child to a specific school class, it can be assumed that the individual data of the children within the class are more similar to each other than if one were to compare them with children from other school classes (Ditton, 1998). These certain characteristics of the aggregate units can lead to different results (i.e., regression constants and slope coefficients; Ditton, 1998; Eid et al., 2017). We present step-by-step different multilevel models and explain them based on the selected variables. As a first step, we present means, standard deviations, and correlations between the study variables. Before conducting the multilevel analysis, we tested if all residuals of linear regressions were normally distributed. Since we could only use complete data sets (children's value priorities *and* teacher's behavior rating of these children), we excluded missing data, when one set of these variables was missing. Thus, 15.3% of the children's value data set had to be excluded. The multilevel analysis was conducted using the R-package nlme (v3.1–152; Pinheiro et al., 2021). The analyses were performed bottom-up: we started with the simplest model that we extended with parameters successively (see Hox, 2010). As a first step of the analysis, an unconditional model (i.e., model without explanatory variables) was tested. This random-intercept-only model can be used to assess whether person heterogeneity exists with respect to the collected dependent variables. Based on this model, the intraclass correlation coefficients can be calculated, with which it is possible to assess how much variance in the dependent variable is due to heterogeneity of individuals (child and class level). Furthermore, with these unconditional models, the average of all four behaviors over all classes can be calculated. This model is first extended by one predictor (*corresponding* higher-order value) and then by another predictor (*opposing* higher-order value). These two resulting random intercept models can be used to examine whether the covariates are related to the dependent variables (behaviors), to test whether the theoretical model (Schwartz, 1992) can be confirmed and to address our first research goal. In a next step, this model is extended by adding three predictors simultaneously (*corresponding* and *opposing* higher-order value and gender), generating a third random intercept model. The third predictor gender is added to assess whether gender differences in the behaviors can be found in our sample and to address our second research goal. We used significance tests to compare all calculated models (Eid et al., 2017). Bayesian Information Criterion (BIC) for all calculated models are listed in the following results' section.

5. Results

5.1. Descriptive statistics and correlations

The first method used to identify value-behavior relations were frequency and mean comparisons as well as correlational analyses. Means, standard deviations, and sample size for the higher-order values as well as the behaviors are reported in Tables 1, 2. The pattern of means suggests that for the total sample, as well as for girls and boys separately, the same higher-order value is the most important (*Self-transcendence*) and the least important value (*Self-enhancement*), which is the same as usually found in adults (Schwartz and Bardi, 1997). However, gender differences in the higher-order values are also revealed (i.e., for girls *Conservation* and for boys *Openness to change* is in the second place). According to the guidelines for the use of Schwartz' values scale, we centered values scores prior to using them in our analyses by centering each participant's response on her or his mean response to control for response tendencies (Bardi and Schwartz, 2003; Schwartz, 2006). We also centered the scores for children's behaviors to eliminate individual differences in the use of the response scale before using them in our analyses (see Bardi and Schwartz, 2003). Due to our interest in the tradeoffs of the value circle, it is important to center the behaviors around the personal mean rather than the rater's mean, because there are also personality differences in levels of activities and in how much a child is visible to the teachers (both captured by the trait extraversion). We computed a matrix of intercorrelations of the four higher-order values and the four behaviors. In general, the observed pattern of correlations corresponded to the theory of Schwartz (1992): correlations that share the same motivational goals (e.g., *Self-transcendence* values and

TABLE 2 Means, standard deviations, and correlations among values and behaviors in girls' and boys' sample.

Variable		Girls sample										Boys sample									
		M[a]	*SD*	1	2	3	4	5	6	7		*M*[a]	*SD*	1	2	3	4	5	6	7	
Value domain	1. Self-transcendence	3.74	0.43									3.44	0.50								
	2. Conservation	3.11	0.38	−0.19**								2.98	0.42	0.14**							
	3. Self-enhancement	2.08	0.46	−0.46**	−0.24**							2.34	0.63	−0.53**	−0.42**						
	4. Openness to change	3.01	0.38	−0.19**	−0.67**	−0.22**						3.17	0.45	−0.37**	−0.64**	−0.15**					
Behavior domain	5. Supportive	3.99	0.79	0.03	−0.01	0.00	−0.01					3.35	0.94	0.01	0.13**	−0.06	−0.08				
	6. Disciplined	4.29	0.76	0.01	0.09	0.05	−0.13**	−0.11*				3.57	0.98	0.07	0.12**	−0.08	−0.09	−0.01			
	7. Achievement	3.74	0.83	−0.04	0.02	0.03	−0.01	−0.72**	−0.26**			3.79	0.92	−0.13**	−0.09	0.13**	0.05	−0.73**	−0.35**		
	8. Learning	3.94	0.78	0.01	−0.09	−0.09	0.15**	−0.34**	−0.39**	−0.12*		3.83	0.87	0.09	−0.18**	−0.03	0.13**	−0.43**	−0.49**	0.04	

*$p < 0.05$. **$p < 0.01$; The correlations among behaviors are higher since the teachers filled out this scale, while the personal values were rated by the children. According to Schwartz (2006), centered variables of values and behaviors are used only for the correlations. The fields in green indicate the behavior and the corresponding value set; the fields in orange show the behavior and the opposing value set.[a]The value scale is ranging from 1 (not like them at all) to 5 (very much like them). The same applies to the behavior scale (1 = not at all; 5 = a lot).

supportive behavior) were positive and significant, while correlations between values and behaviors that share the opposite motivational goals (e.g., *Self-enhancement* values and *supportive* behavior) were negative and significant. Table 1 presents the Pearson correlations between the behaviors and the *corresponding* as well as the *opposing* higher-order values sets that range from 0.09 for *supportive behavior* and its corresponding value *Self-transcendence* and 0.17 for *learning-oriented behavior* and its corresponding value *Openness to change* for the total sample. A comparison of the correlations among values and behaviors for girls and boys separately is illustrated in Table 2. As the table shows, the overall correlational pattern of value-behavior relations is similar to the total sample. However, the value-behavior relations are a little stronger for boys than for girls. The most surprising observation to emerge from the data comparison is the difference in the correlation of *achievement-oriented behavior* and its corresponding value *Self-enhancement*, which is much smaller in the girls' sample in comparison to the overall sample and the boys' sample.

5.2. Multilevel analysis

5.2.1. Relevance of child and classroom variables (preliminary analysis)

Initially, the intraclass correlation coefficients (ICCs) were calculated, with which it is possible to assess how much variance in the dependent variable is due to heterogeneity of individuals (child and class level). Since we tested the relations of four value-related behaviors and the four higher-order values, four different models were calculated in each step. The ICCs of the four different behaviors on class level ranking from 0.04 variance for *learning-oriented* to 0.13 for *supportive behavior*, which means that the value-related behaviors differ between the classes especially with respect to supportive behavior and to a lesser extend for learning-oriented behavior (see Table 3 and Figure 3). The value of 0.05 is given as a guideline for the lower limit of the ICC. However, multilevel analysis can also be estimated at a lower value if theoretical arguments support it (Tausendpfund, 2020). The calculated ICCs are low and since three of the four models show ICCs over 0.05, the application of a multilevel analysis can be justified and differences in the behavior between the classes can be found (see Bliese, 1998).

5.2.2. Average of behaviors over classes (intercept-only-model)

The starting point for the analysis of the results of the higher-order value types and the value-related behavior is the intercept-only model with the dependent variable being "behavior" (see Table 3). This model is used to check whether there are significant differences in the dependent variable between the aggregate units (fixed effect) in a first step without a predictor variable. In addition, the model divides the variance components of the dependent variable into two levels (Ditton, 1998; Eid et al., 2017). The first level is the within-class variance (residuals of the individual values of each child to the school mean; R^2 *within*) and the second level shows the between-class variance (residuals from the school mean to the overall mean; R^2 *between*; see *random parameters*, Table 3). In the intercept-only model, the overall means of the four behaviors are listed as fixed effects (intercept)—for all students and all classes

TABLE 3 Results of multilevel analyses predicting value-related behaviors.

		Model a		Model b		Model c		Model d	
		Supportive behavior		*Disciplined behavior*		*Achievement behavior*		*Learning behavior*	
Intercept only model		Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*
Fixed parameters	Intercept (γ_{00})	−0.14***	0.03	0.12***	0.03	−0.03	0.03	0.09***	0.02
Random parameters[a]	R^2 within	0.33		0.37		0.32		0.19	
	R^2 between	0.05		0.03		0.04		0.01	
	ICC	0.13		0.09		0.11		0.04	
	BIC	1750.5		1828.6		1713.4		1153.9	
Random intercept model 1									
Fixed parameters	Intercept (γ_{00})	−0.20***	0.04	0.11***	0.03	0.09**	0.04	0.08***	0.02
	Corresponding higher-order value (γ_{10a})	0.10**	0.05	0.27***	0.05	0.16***	0.03	0.18***	0.03
	BIC	1755.3		1809.8		1702.4		1136.1	
Random intercept model 2									
Fixed parameters	Intercept (γ_{00})	−0.20***	0.04	0.14***	0.03	0.09*	0.04	0.10***	0.02
	Opposing higher-order value (γ_{10b})	−0.08**	0.03	−0.25***	0.05	−0.22***	0.04	−0.20***	0.04
	BIC	1757.1		1,812		1694.2		1133.2	
Random intercept model 3									
Fixed parameters[b]	Intercept (γ_{00})	−0.30***	0.04	−0.06	0.04	0.22***	0.04	0.18***	0.02
	Corresponding higher-order value (γ_{10a})	−0.00	0.05	0.14*	0.06	0.05	0.04	0.08	0.04
	Opposing higher-order value (γ_{10b})	−0.01	0.04	−0.09	0.06	−0.08	0.04	−0.11*	0.04
	Gender (γ_{10c})	0.31***	0.04	0.38***	0.04	−0.34***	0.04	−0.19***	0.03
	BIC	1713.1		1729.6		1632.9		1103.4	

Number of obs: 952, groups: id_lp_short, 80; Gender = gender (0 = boys; 1 = girls); BIC, Bayesian Information Criterion. *$p < 0.01$; **$p < 0.05$; ***$p < 0.001$.

[a]Random parameters ($R2$ within and R^2 between) for all random intercept models slightly changed but not substantially and were therefore only reported once in the intercept-only model.

[b]All predictors were added to the model simultaneously.

($\gamma 00$, see Table 3). All the results are significant, indicating that there are significant differences in the behaviors between the classes, except for Model 3 (achievement-oriented behavior), which is non-significant. Furthermore, the variance components suggest that there are differences in behavior both within classes (R^2 *within*) and between classes (R^2 *between*). There are differences in the behaviors both within and between the classes in all intercept-only models and all upcoming random intercept models. Although the greater part of the variance lies at the individual level, the multilevel structure must still be considered due to the differences between the classes. The effect sizes and estimates of the variance explained by each set of variables (R^2 *within* and R^2 *between*) for all four behavior models for the intercept-only models are all reported in Table 3.

5.2.3. Relations of corresponding and opposing higher-order values to behaviors (random intercept model 1 and 2)

In the random intercept models 1 and 2, first the *corresponding* and second the *opposing* higher-order values to the four behaviors were included as predictors. It is assumed that the mean values of the dependent variables vary between the classes, but that the regression weights, i.e., the strength and direction of the effect, are identical in all classes. This model also determines the variance parts within and between the classes (Eid et al., 2017). These models are necessary to answer the question of how much variance in the children's behavior can be explained by the values of the children (see Eid et al., 2017). The intercepts in both models are all significant and show almost the same results (see $\gamma 00s$,

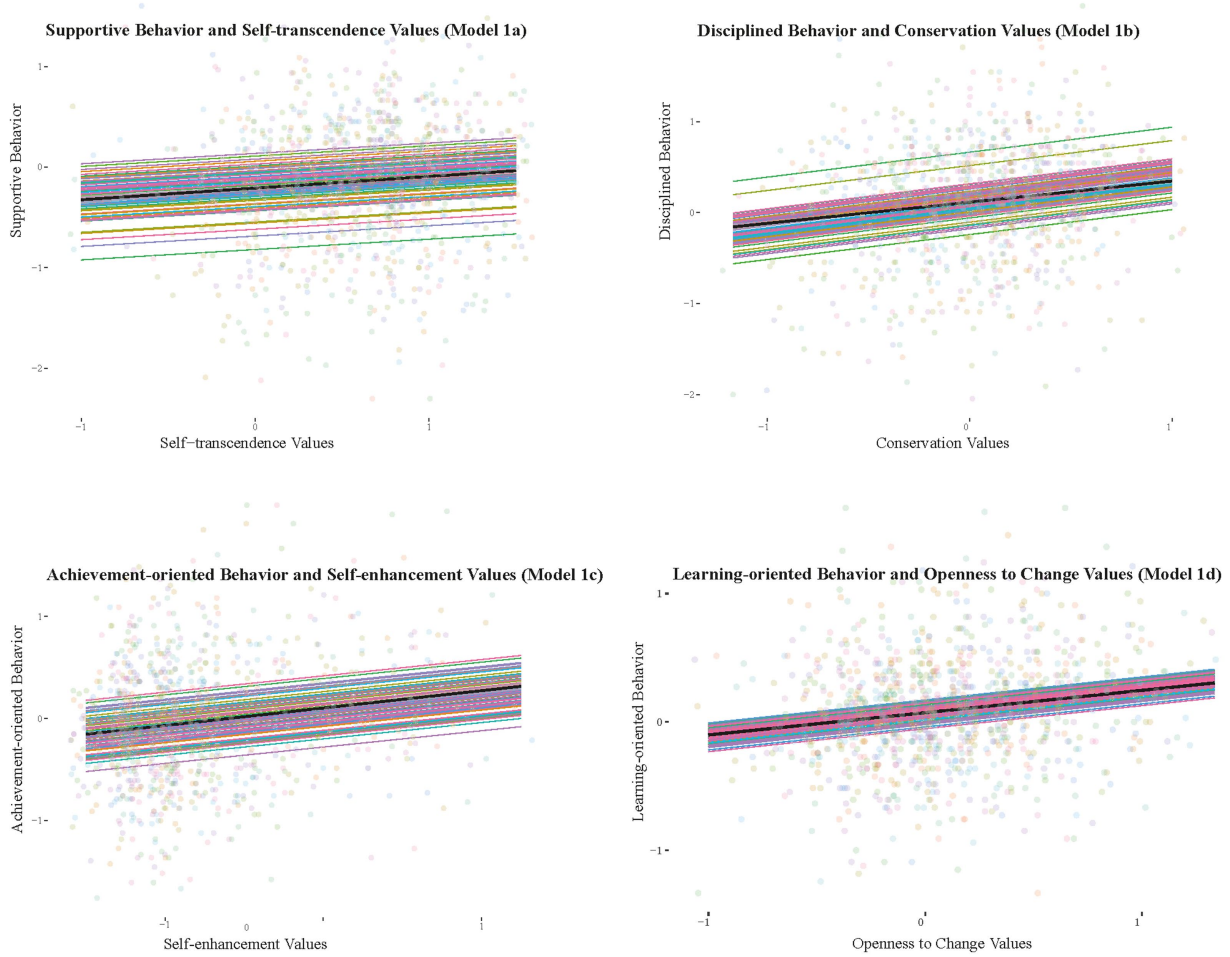

FIGURE 3
Random intercept models with behavior and the corresponding higher-order values of the four models (Random intercept model 1a–d see Table 3); The black line indicates the fixed effects of the models. Each dot shows one child, and each line shows the value-behavior relationship in one classroom.

Table 3). In model 1, the regression weights of the *corresponding* higher-order values and the behaviors indicate a significant positive linear relationship whereas in model 2, the regression weights of the *opposing* higher-order values and the behaviors indicate a significant negative linear relationship (see Table 3 and Figure 3). This means, for instance, that children's behavior becomes more *disciplined* as the importance of *Conservation* increases and the importance of *Openness to change* decreases. Interestingly, for *supportive* and *disciplined behavior*, the *corresponding* higher-order values are slightly stronger in predicting the behaviors, whereas for *achievement* and *learning-oriented behavior* the *opposing* higher-order values are slightly stronger in predicting the behaviors (see Table 3 and Figure 3). As expected, we found support for our hypotheses that on the individual level, children's value priorities are related to their prototypical value-related behavior (H1 and H2). Considering the correlations and the multilevel analysis, we confirmed that the *corresponding* has positive, and the *opposing* higher-order values has negative associations with the value-related behavior. All the models show significant results and thus, we confirmed our hypotheses in our sample (H1a–d and H2a–d).

5.2.4. Relation of corresponding and opposing higher-order values as well as gender to behaviors (random intercept model 3)

In the random intercept model 3, three predictors (*corresponding* as well as *opposing* higher-order values and gender) are added simultaneously. The models show that the intercepts of models a, c, and d are all significant, while model 2b (*disciplined behavior*) shows a non-significant intercept. Considering the *corresponding* and *opposing* higher-order values and in comparison to the previous random intercept models, only two fixed effects of the values are significant, i.e., *disciplined behavior* with a significant fixed effect of the *corresponding* higher-order value (model 3b) and *learning-oriented behavior* with a significant fixed effect of the *opposing* higher-order value (model 3d; see Table 3). Gender was added as a third predictor in the model to analyze if there are gender differences in the behaviors. Surprisingly, once gender was included as a predictor, by and large values did not predict behavior anymore. However, these models show highly significant results with a positive linear relationship for *supportive* (model 3a) and for *disciplined behavior* (model 3b). This means that girls were rated by teachers as 0.31 more highly *supportive* and 0.38 more highly *disciplined in behavior* compared to boys.

Significant negative linear relationships are indicated considering *achievement-oriented* (model 3c) and *learning-oriented behavior* (model 3d), suggesting that boys were rated by teachers as 0.34 more highly in *achievement-oriented* and 0.19 more highly in *learning-oriented behavior* compared to girls (see Table 3). There were meaningful differences between girls' and boys' behavior relations in our sample and already the means show differences in the value priorities. While girls follow the pattern of the overall sample and prioritize *Self-transcendence*, before *Conservation* and *Openness to change*, boys place *Openness to change* values as their second important higher-order value type. The multilevel analysis shows significant results after inserting gender as a third predictor. Thus, we found gender differences in the teacher-rated children's behaviors and can confirm our third hypothesis (H3).

6. Discussion

We examined, as a first research goal, the relationship between values and value-related behaviors in Swiss primary schools. In line with our expectations and results from previous research (i.e., Berson and Oreg, 2016; Vecchione et al., 2016; Abramson et al., 2018), we found evidence that children's values are related to prototypical behavior and these relations can be found in school. Supportive behavior showed the lowest associations with its *corresponding* and *opposing* higher-order values, which might be since this behavior is highly normative in classrooms. Similar results have been found in adults (Bardi and Schwartz, 2003). In general, our findings confirmed our expectations. For all models, the *corresponding* as well as the *opposing* higher-order values predicted the value-related behaviors. Compared to other studies (e.g., Berson and Oreg, 2016), the children in our study were young, and it is known that children's values may be more challenging to measure because they first must be consolidated. Thus, the period we chose for our study, which is a period not addressed before and thus a novelty, is a transition time, when children's values are still being formed and stabilized. However, there are many other factors in the school context, e.g., peers' values, socializing factors, or norms that influence behaviors in school and thus relations of small and moderate size were to be expected (e.g., Benish-Weisman et al., 2017). The findings of weak value-behavior relations in our study confirm that when behavior is rated by others (here: teachers) the links are always weaker, which has also been found in other studies (e.g., Bardi and Schwartz, 2003). Similar value-behavior correlations where the behavior (aggression) was rated by others in older children were found in previous studies (e.g., Benish-Weisman, 2015). Nevertheless, the small effects we found point out the importance of research on children's value-behavior relations with a focus on the school context as a predictor of children's behaviors and values, as another microsystem next to the family, in which children develop. To elaborate more on children's behavior in the school context we are taking in consideration that gender is a powerful predictor of human development throughout the life span (e.g., Liben, 2016), and thus analyzed as a second research goal, whether gender differences in behaviors were to be found in our sample. Interestingly, although children's values are associated with behaviors, which we have shown in our study, gender was the strongest predictor of teacher-rated children's behaviors in the school context. Gender is taking all the explained variance in predicting behavior in the models, which shows that the teachers' ratings of behavior might have been biased by gender-related stereotypes. Our findings are much higher than previous findings in individual differences research, which were correlation based, and found that the mean correlation in adults is 0.19 (see, e.g., Funder and Ozer, 2019). These gender differences in the current research could be rooted in evolutionary psychology, reflecting distinct cognitive and affective mechanisms that have been developed due to diverse evolutionary pressures on women and men (e.g., Geary, 1998; Pinker, 2002; Schwartz and Rubel, 2005). Thus, values as guides to behaviors could be considered one of these mechanisms. In the current research, the most striking difference can be found in the associations of *achievement-oriented behavior* and *Self-enhancement* values, i.e., *power* and *achievement*. Reasons for this may be differences of women and men in power and status positions (Daly and Wilson, 1983), time spend with children (Trivers, 1972), or the strive for social status (Betzig, 1986). In contrast, social role theorists interpret these gender differences as the result of the distribution of men and women into social roles within their society (Eagly et al., 2000). Due to the present division of labor, gender roles and stereotypes are produced that indirectly influence men and women (Eagly et al., 2004). Thus, another interpretation is that teachers' reports of behaviors were somewhat biased toward gender roles expectations and could mirror stereotypes of teachers. Previous research found that gender beliefs in society reflected pre- and prospective gender stereotypes. While communality and weakness were more associated with femininity and thus considered desirable for women, agentic traits were more associated with masculinity and considered less desirable for women (Lindner et al., 2022). Our findings imply the complex associations in this important transition period for children between internalizing gender roles, shaping one's own values, and coping in a new phase of life. On a practical side, our study supports evidence from previous research that it is of particular importance that the teacher succeeds in establishing trusting, appreciative and recognizing relationships to explain behavior problems (e.g., Schönbächler et al., 2011). Teachers in classes with less disruptive behavior seem to be more successful, which appears to be rewarded with pupils' benevolent behavior (Makarova et al., 2014). Considering this, our findings suggest that proactive classroom management could be supported through the establishment of respectful social relationships in class. Therefore, the promotion of prosocial values of children in school could lead to a good quality of relationships and hence it could be regarded as a mean to reduce disruptive behavior. Overall, this study strengthens the idea that focusing on value theory, understanding, development, and education might be a way out to reduce disruptive behavior and to create a positive school climate to foster children's learning. The question arises: how can teachers successfully establish behaviors which are conducive in classroom? The empirical findings in this study provide a new understanding of how children's values are related to their behaviors. Based on our results, we suggest teachers to be aware of personal values, how they are related and affect behaviors and to practically apply this knowledge in their proactive classroom management to improve teacher's and children's academic performance.

7. Strengths, limitations, and directions for future research

Our study provides the first comprehensive assessment of value-behavior relations of young children in the Swiss school

context. The assessment of such a large sample during the COVID-pandemic is a methodological strength. It is the beginning from where children can fill out the questionnaire and self-reports can be used. Furthermore, it is the start of their school career and thus an important developmental period accompanied by many social and cognitive changes. Moreover, since our study was situated in the school context, it enabled us not only to take a psychological but also an educational perspective. Value research with children at this young age has been done previously, however there is a lack of researching children's values in the school context. To the best of our knowledge, this is the first study focusing on this aspect in the Swiss school context. The generalizability of these results is subject to certain limitations. This study was based on children's self-reports (for the values) and teacher-ratings (for the behaviors). So far, the use of scales for measuring behavior is a common practice in values research and their validity has been proven (e.g., Berson and Oreg, 2016; Benish-Weisman et al., 2021). Yet, the use of teachers' rating to assess children's behavior can be regarded either as a strength since it avoids common method variance (see Podsakoff et al., 2003) and teachers are very familiar with their pupils, with whom they spend a lot of time in class, or it could also be a limitation due to the subjectivity of how teachers assess their pupils' behavior. Indeed, the overwhelming strength of gender as a predictor of behavior raises the suspicion that teachers' ratings of children's behavior may have not been as objective as anticipated, and may have been clouded by teachers' stereotypical perceptions of the genders. It would be beneficial if future research uses additional sources from multiple perspectives, more objective measures (e.g., the number of times a child helps another child in class) and different methodologies (e.g., observations, interviews). An issue that was not addressed in this study was how children's value-behavior relations develop over the first two primary school years. Here, it is important to recognize that data of the overall research project were collected not only cross-sectional, but at four time points. We aim and suggest employing longitudinal research on this topic, to clarify and uncover mechanisms and factors that impact these value-behavior relations (e.g., relationship to teacher or peers) and to get a better understanding of the dynamic and changing nature of the value-behavior relations over time (Jacobs et al., 2002). Nevertheless, the current study suggests from an educational point of view, that children's values and behaviors are related in the academic context of the school. In other words, values matter for how children behave in the classroom, providing a justification for value education at school. On a practical level, these relationships might be an approach to support teachers' perception and understanding of one of the many factors that influence a child's behavior in class. Furthermore, these results might be a possibility to give pedagogical advice, to handle and minimize disruptive behavior in class to influence a positive learning and classroom climate. We suggest that values as well as value-behavior relations of children require more consideration of educators and policy makers to reach high quality education. As this takes place, appropriate training may be developed for teachers and educators to clarify and emphasize potential factors such as value-behavior relations and its association to effective classroom and behavior management to work with the heterogeneous population of today's school children.

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 Ethics Committee of the University of Basel, Switzerland. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author contributions

EM, AB, and AD contributed to conception and design of the study. RS-K performed the statistical analysis and wrote the first draft of the manuscript. RS-K, EM, AB, and AD wrote the sections of the manuscript and contributed to the interpretation of the results. RS-K, EM, AB, and AD provided critical feedback and helped to shape the research and analysis. All authors contributed to the article and approved the submitted version.

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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

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2023.1162335/full#supplementary-material

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