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# Multifaceted perception of school climate: association between students' and teachers' perceptions and other teacher factors

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**Introduction:** This study aimed to investigate whether there is a significant association between teachers' and students' perceptions of school climate, and if not, whether teacher factors are associated with the respective perceptions.

**Methods:** The participants included 1,831 students and 59 homeroom teachers from 11 public elementary and junior high schools in Japan. Multilevel models were used to examine the association between students' and teachers' perceptions of school climate.

**Results:** Of the three teacher-rated school climate scales, only teacher-perceived disciplinary climate was associated with students' perceptions of school climate. Teachers' working conditions, such as self-efficacy and stress, were associated with teachers' perceptions but not students' perceptions of school climate. Disciplinary climate was associated with students' perceptions of school climate, even after accounting for the teachers' working conditions.

**Discussion:** Items questioning specific student behaviors, such as those included in the disciplinary climate scale, may be effective in avoiding incongruence with student evaluations. Moreover, maintaining disciplinary climate itself is important for students' positive perceptions of the school climate. A disciplinary climate in which teachers and students share responsibility for learning and classroom organization, and strategies that support positive student behavior are preferable to exclusionary discipline strategies. Incorporating feedback data gathered through classroom observations or student perceptions is also important in resolving the incongruence between teachers' and students' perceptions of the school climate.

KEYWORDS

school climate, disciplinary climate, student perceptions, teacher perceptions, teacher self-efficacy, teacher stress

# 1 Introduction

Children spend critical periods of their development in school. Students or children at school face various challenges, including bullying, school absenteeism, and dropping out (Menesini and Salmivalli, 2017; Gubbels et al., 2019; Organisation for Economic Co-operation and Development, 2022). Teachers also face various challenges such as

declining mental health, burnout, and turnover of themselves (García-Carmona et al., 2019; Madigan and Kim, 2021; Organisation for Economic Co-operation and Development, 2023). Improving school climate is effective in addressing the challenges that students and teachers face. Although there is no universally accepted definition for climate, many researchers conceptualize school climate as the shared beliefs, values, and attitudes that shape interactions between students and adults and set the parameters of acceptable behaviors and norms for the school (Wang and Degol, 2016). School climate is the essence that leads a child, a teacher, and an administrator to love the school and look forward to being there each (Freiberg and Stein, 1999). Positive student perception of school climate is associated with reduced bullying and absenteeism, higher academic achievement, and higher behavioral, cognitive, and emotional engagement of students (Wang et al., 2014; Van Eck et al., 2017; Mucherah et al., 2018; Yang et al., 2018). In addition, a positive teachers' perception of school climate reduces teacher stress and burnout and improves teacher self-efficacy (Collie et al., 2012; Malinen and Savolainen, 2016; Mansor et al., 2021; Almessabi, 2021; Yang et al., 2022). Research on school climate is important as it helps clarify the factors that create a positive school environment and develop strategies to address the challenges faced by students and teachers (Thapa et al., 2013). This research can inform interventions, professional development, and policies to improve school climate and ultimately benefit everyone in the school community.

The multidimensionality of school climate is represented in academic literature, but there is no global consensus. Wang and Degol (2016) defined school climate in four ways: academic, community, safety, and institutional environment. Some of these dimensions are included only in the teachers' perspective, but many are common concepts. For example, social and emotional safety in schools, parental involvement, interpersonal relationships between staff and students, sense of belonging, and opportunities for decision making would be common concepts for students and teachers, but leadership of principals, professional development, and institutional environment may be concepts to be evaluated by teachers. However, little is known about how domains or features of school climate interact to shape student outcomes, and how different raters (i.e., students or teachers) impact outcomes of interest (Wang and Degol, 2016).

Several measures of school climate have been developed, some for students and some for teachers and staff (Kohl et al., 2013). Most studies use students' or teachers' perspectives separately. However, each perspectives have benefits and weaknesses. For instance, students' perceptions are often considered better at capturing students' individual experiences and the psychological processes operating within the school environment, while teachers' or observers' reports are thought to be more objective and less biased by mood or prior experiences (Wang and Degol, 2016). Moro et al. (2019) argued that measuring from multiple perspectives allows one to recognize what is happening (both strengths and weaknesses), and establish priorities and areas to which improvement efforts and interventions should be directed. However, only a few published empirical school climate studies have included multiple informants (Wang and Degol, 2016; Konold and Shukla, 2017; Vukicevic et al., 2019). Most of studies examining teachers' and students' perceptions of school climate showed no association between their perceptions (Debnam et al., 2021; Molinari and Grazia, 2023). Mitchell et al.

(2010) examined the extent to which students' and teachers' perceptions of school climate vary (or coincide) by individual, classroom, and school characteristics. They found that teacher-perceived overall school climate was not associated with student-perceived overall school climate. Instead, they observed an inverse association between teacher-and student-perceived academic emphasis climates, suggesting that the higher the teachers rated the academic emphasis as an aspect of school climate, the lower the students rated it. The reason for these findings, even though the objective experience is the same, is not well understood. As one possible reason, Mitchell and colleagues found that teachers' perceptions of school climate were more closely related to classroom-level factors (e.g., poor classroom management and disruptive behaviors), unlike students-perceived of school climate, which are related to school-level factors (e.g., student mobility and change in school principal).

Another possible reason for the lack of an association between teachers' and students' perceptions of school climate is that the former could be influenced by teachers' working conditions such as self-efficacy, stress, and job satisfaction (Collie et al., 2012; Malinen and Savolainen, 2016; Yang et al., 2018; Mansor et al., 2021; Almessabi, 2021). Katsantonis (2019) showed that teachers' self-efficacy mediates the relationship between school climate and job satisfaction across cultures. Teachers' stress is also related to their perceptions of the school climate (Saeki et al., 2018). Teachers with higher stress levels, especially concerning workload and professionalism needs, have been found to experience a negative school climate (Gray et al., 2017; Nemet and Velki, 2019). Moreover, instructional practices, the techniques and methods used by educators to facilitate student learning, were found to be correlated with teachers' perceptions of school climate (Oder and Eisenschmidt, 2018). Holzberger and Schiepe-Tiska (2021) reported that teachers' perceptions of school climate was significantly correlated with the quality of instruction. However, all these studies investigated the relationship between teachers' working conditions and teachers' perceptions of school climate, and to the best of the authors' knowledge, no previous studies have examined their relationship with students' perceptions of school climate. If individual teacher factors excessively influence teachers' perception of school climate rather than being objective and less biased, this could be a contributing factor to the lack of association between teachers' and students' school climate perceptions. However, to our knowledge, no studies have examined the relationship between individual teacher factors and school climate as perceived by students and teachers.

Despite global progress in school climate research, the concept of school climate was uncommon in Japan. Particularly in elementary schools, there has been a tendency, symbolized by the term "class kingdom," to keep classroom problems internal and prevent outside teachers from pointing out classroom problems (Ando et al., 2013). Therefore, several studies have been conducted on the classroom climate (Ito, 1999; Mishima and Uno, 2004; Hirata, 2019). Recently, however, Ministry of Education, Culture, Sports, Science and Technology (2023) referred to the visualization of school climate as a countermeasure to the increasing number of students refusing to attend school in recent years. This is because the improvement of school climate has been confirmed as an effective universal intervention to prevent school absenteeism (Kearney and Graczyk, 2014). However, few empirical studies on school climate have been

conducted and the relationship between teachers' and students' perception of school climate has not been examined in Japan.

In this context, the present study investigated whether there is a significant association between teachers' and students' perceptions of school climate, and if not, whether teacher factors such as self-efficacy, job satisfaction, and stress are associated with the respective perceptions. We therefore, we established three research questions (RQ):

- RQ1. Is a homeroom teacher's perception of school climate associated with students' perceptions of school climate in that classroom?
- RQ2. Are teachers' perceptions of school climate associated with individual teacher factors such as self-efficacy, teaching practices, and stress?
- RQ3. How does the relationship between students' and teachers' perceptions of school climate change after controlling for individual teacher factors?

## 2 Materials and methods

### 2.1 Participants

The study included 3,395 students (grades 4–9) and 103 teachers from 11 public schools (eight elementary and three junior high schools) in Japan. These schools were recruited via the Board of Education and the school principals agreed to participate in the study. Responses were collected from 3,217 (94.8%) students and 59 (57.3%) teachers. The data analyzed consisted of 1831 students (53.9%) and 59 teachers (57.3%) from the 59 classes to which the homeroom teachers responded.

### 2.2 Instrumentation

Students' perceptions of the school climate were measured using the Japan School Climate Inventory (JaSC) (Nishimura et al., 2020). The scale is unidimensional and measures a single construct: school climate. The reliability of the scale and measurement invariance across gender and grade level was confirmed for Japanese elementary and junior high school students. The scale consists of 32 items, including items such as "Students feel safe in this school," "Females and males in this school are equally treated with respect," and "I like this school." There were five response categories for each item, ranging from 0 (fully disagree) to 4 (fully agree). The average score of the 32 items was calculated for each student. Higher scores indicated a better perception of the school climate. In addition, information on grade, class, and gender was obtained as student demographics.

Teachers' perceptions of school climate were measured using items included in three separate scales included the Teaching and Learning International Survey (TALIS). TALIS was developed by the Organisation for Economic Co-operation and Development (OECD) to enquire teachers and school leaders about working conditions and learning environments at their schools and to help countries face diverse challenges. The 2018 edition was used in this study (Organisation for Economic Co-operation and Development, 2019). The Teachers'

Perceived Disciplinary Climate scale assesses classroom discipline and includes four items regarding student behavior (for example, "I lose quite a lot of time because of students interrupting the lesson," and "There is much disruptive noise in this classroom."). The Teacher-Student Relation scale assesses self-reports of the teacher-student relationship and consists of four items (for example, "Teachers and students usually get on well with each other," and "Most teachers are interested in what students have to say."). The Participation among Stakeholders, Teachers scale includes five items concerning school decision-making (for example, "This school provides staff with opportunities to actively participate in school decisions," and "There is a collaborative school culture which is characterized by mutual support."). The reliability (Omega coefficients) of three teacher-rated school climate scales in the countries/economies participating in TALIS ranged from 0.774 to 0.927, from 0.734 to 0.920, from 0.712 to 0.927, respectively.

The teachers were asked about their self-efficacy, stress, and teaching practices as their working conditions. Teacher self-efficacy was assessed using the 12 items included in TALIS (Cronbach's alpha ranged from 0.856 to 0.938). The items included controlling disruptive behavior in the classroom, varying instructional strategies in the classroom, and convincing students that they could do well in schoolwork. Teachers' stress was assessed using three scales: Workplace Well-being and Stress (four items; Omega coefficients ranged from 0.797 to 0.924), Workload Stress (five items; Omega coefficients ranged from 0.694 to 0.933), and Student Behavior Stress (three items; Omega coefficients ranged from 0.642 to 0.978), which are included in TALIS. These scales measure workplace well-being, stress, impact on others, workload-related stress, and classroom and student management-related stress (Zhang et al., 2021). Teachers' teaching practices were measured using 12 items in TALIS (Cronbach's alpha ranged from 0.818 to 0.931). These items are related to shaping learning experiences and increasing students' motivation and achievement. All scales were 4-point Likert scales, with higher total scores indicating better working conditions.

Teachers' demographic information, including the grade level they taught, class in charge, age, gender, and number of years of teaching in the current school, was also obtained.

### 2.3 Procedure

Students and teachers were asked to respond to a questionnaire administered between June and October 2021. The students completed the questionnaire during school hours in their respective classrooms. The teachers explained the survey to students using instructions prepared by the research team. The school principal explained the survey to the teachers. Students and teachers were told that they could omit uncomfortable questions and that their responses would be anonymous. The study was conducted in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki) and was approved by the Ethics Committees of Hamamatsu University School of Medicine (Ref. 20–036).

### 2.4 Data analysis

Research questions and analytical approaches are shown in Figure 1. To examine whether a homeroom teacher's perception of school climate

FIGURE 1
Research questions and analytical approaches.
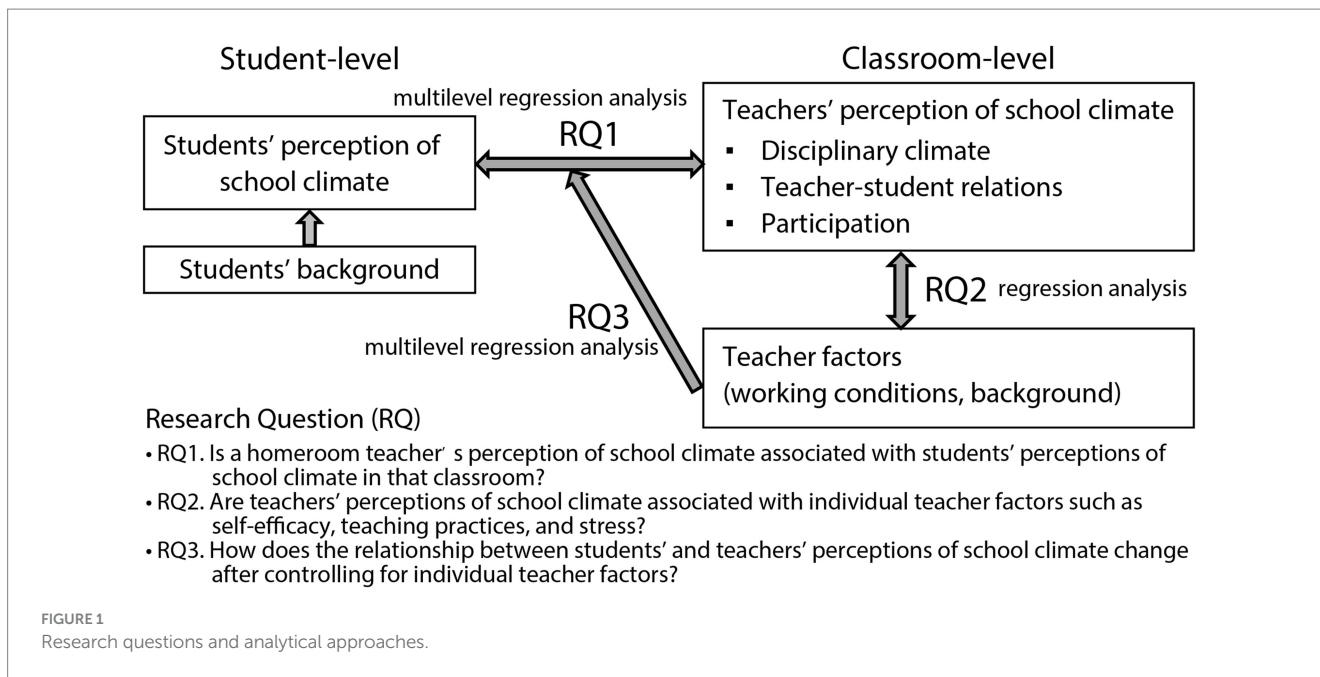
is associated with students' perceptions of school climate in that classroom (RQ 1), a multilevel model was used, as the data were hierarchically structured at the student and classroom levels, with students nested in classrooms. The similarity of student responses within a class was evaluated using intraclass correlation (ICC). The outcome variable was students' perceptions of the school climate (JaSC mean score). Students' demographic variables were included as student-level covariates and teachers' perceptions of school climate (three school climate scores) were included as classroom-level exposure. To examine whether teachers' perceptions of school climate are associated with individual teacher factors such as self-efficacy, teaching practices, and stress (RQ 2), a multiple regression model was used, with each of the three scores of teachers' perceptions of school climate as the outcome, and their working conditions (self-efficacy, stress, and teaching practices) as exposures. The teachers' demographic information was included in the model. Furthermore, we examined how the relationship between students' and teachers' perceptions of school climate changed after controlling for individual teacher factors (RQ 3). For the same reasons as in the analysis for RQ1, a multilevel model was used. All statistical analyses were performed using Stata version 15.0. R-squared was calculated using the "MLMR2" program (Gambino, 2023).

## 3 Results

Table 1 presents the descriptive statistics of the students and teachers included in the analysis. The mean score for students' perceptions of school climate was 3.04 (SD = 0.74). Correlation coefficients for students' perceptions of school climate and teacher factors are presented in Supplementary Table S1. There were no missing values in any of the items assessed by either teachers or students.

The ICC in the null model, in which only outcomes are included, was 0.07; the similarity of student responses within a class was not significantly high (Sommet and Morselli, 2021). However, due to the relatively large number of classes, a multilevel model was adopted. The

results of the multilevel model for the association between students' and teachers' perceptions of school climate are presented in Table 2. Of the three scales of teacher-rated school climate (disciplinary climate, teacher-student relations, and participation), only the disciplinary climate score was significantly associated with students' perceptions of school climate at the classroom-level ($\beta = 0.132$, 95% confidence interval [CI]: 0.063, 0.201, $p < 0.001$). At the student level, grade level was associated with student-rated school climate scores, with elementary students rating the school climate higher than junior high school students. There was no difference in school climate scores between girls and boys, but students who chose the "other" gender rated school climate lower than boys.

Table 3 shows the association between teachers' perceptions of school climate and teachers' working conditions. The disciplinary climate was significantly associated with teacher self-efficacy and workplace well-being and stress ($\beta = 0.751$, 95% CI: 0.369, 1.132, $p = 0.001$; $\beta = -0.220$, 95% CI: −0.421, −0.018, $p = 0.036$, respectively). The teacher-student relations score was significantly associated with teacher self-efficacy, workplace well-being and stress and workload stress ($\beta = 0.225$, 95% CI: 0.007, 0.443, $p = 0.045$; $\beta = -0.359$, 95% CI: −0.566, −0.152, $p = 0.003$; $\beta = -0.332$, 95% CI: −0.484, −0.180, $p = 0.001$, respectively). The participation was associated only with workplace well-being and stress ($\beta = -0.606$, 95% CI: −0.950, −0.262, $p = 0.003$).

Table 4 shows the association between students' and teachers' perceptions of school climates, after controlling for teacher factors. Of the teachers' working conditions, student behavior stress and teaching practice were not included in this model because they were not related to any of the teacher-rated school climates. At the classroom-level, only the disciplinary climate was significantly associated with students' perceptions of school climate even after controlling for the teacher's working conditions ($\beta = 0.097$, 95% CI: 0.006, 0.187, $p = 0.036$). Teacher-student relations and participation were not associated with students' perceptions of school climate even with teacher's working conditions added to the models, but there was a significant association between teacher self-efficacy and students' perceptions of school climate in these models.

TABLE 1  Demographic characteristics of study sample.

| Student (n = 1,831) | | | | | | |
|---|---|---|---|---|---|---|
| Background characteristics | n (%) | | | | | |
| Grade level: | elementary school | 1,244 (67.9%) | | | | |
| | junior high school | 587 (32.1%) | | | | |
| Gender: | boy | 875 (47.8%) | | | | |
| | girl | 823 (44.9%) | | | | |
| | other | 133 (7.3%) | | | | |
| School climate | Mean (SD) | | Median | Minimum | Maximum | Skewness, kurtosis |
| School climate score | 3.041 (0.740) | | 3.156 | 0 | 4 | −1.049, 4.221 |
| Teacher (n = 59) | | | | | | |
| Background characteristics | n (%) | | | | | |
| Grade level: | Elementary school | 42 (71.2%) | | | | |
| | Junior high school | 17 (28.8%) | | | | |
| Gender: | Man | 34 (57.6%) | | | | |
| | Woman | 25 (42.4%) | | | | |
| | Mean (SD) | | Median | Minimum | Maximum | Skewness, kurtosis |
| Age | 34.254 (7.904) | | 33 | 24 | 56 | 0.893, 3.082 |
| Years of service at current school | 3.254 (2.241) | | 3 | 0 | 9 | 0.968, 3.216 |
| Working conditions | Mean (SD) | | Median | Minimum | Maximum | Skewness, kurtosis |
| Teacher self-efficacy | 16.898 (5.886) | | 16 | 1 | 34 | 0.596, 3.735 |
| Workplace well-being and stress | 4.661 (2.783) | | 5 | 0 | 12 | 0.601, 2.980 |
| Workload stress | 7.288 (3.343) | | 7 | 0 | 15 | 0.266, 2.678 |
| Student behavior stress | 3.339 (1.698) | | 3 | 0 | 7 | 0.034, 2.297 |
| Teaching practice | 21.576 (4.970) | | 21 | 12 | 34 | 0.149, 2.460 |
| School climate | Mean (SD) | | Median | Minimum | Maximum | Skewness, kurtosis |
| Teacher's perceived disciplinary climate | 9.169 (1.840) | | 9 | 2 | 12 | −1.190, 5.985 |
| Teacher-student relations | 8.492 (1.524) | | 8 | 4 | 12 | 0.399, 4.505 |
| Participation among stakeholders, teachers | 8.576 (2.343) | | 9 | 1 | 15 | −1.070, 5.523 |

A sensitivity analysis was conducted to examine the difference in students' perceptions of school climate between the 1,831 students whose teachers responded and the 1,376 students whose teachers did not respond, revealing no difference between them [$t(3205) = -1.77$, $p = 0.77$]. For students' perceptions of school climate, missing values accounted for only 0.1% (76/58336) of the total data included in the analysis. Therefore, missing values in each item were not imputed, and a mean value was calculated for each student's score. For teachers' responses, there was one missing value for two teachers in the items of teacher-student relations, participation, and workplace well-being and stress, and there was one missing value for one teacher in the item student behavior stress. For teacher responses, the total score was calculated irrespective of missing or non-missing values. However, a sensitivity analysis was conducted to determine whether the results would change if all cases with even one missing item were excluded from the analysis. For RQ2 and RQ3, there were some differences in significant results, but estimates remained largely unchanged (Supplementary Tables S2–S4).

# 4 Discussion

This study aimed to investigate whether students' perceptions of school climate were associated with teachers' perceptions of school climate, and if not, to explore the factors contributing to the rating of each part. The results showed that out of the three teacher-rated school climate scales, only disciplinary climate was associated with students' perceptions of school climate. The association between students' perceptions of school climate and teachers' perceptions of disciplinary climate remained significant after controlling for teachers' working conditions such as teachers' self-efficacy and stress. However, the scores of teacher-student relationship and participation were not significantly associated with students' perceptions of school climate.

TABLE 2 Association between students' ratings and teacher's ratings of school climate.

| Outcome: student ratings of school climate | Classroom-level exposures: teacher ratings of school climate | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Disciplinary climate | | | Teacher-student relations | | | Participation | | |
| | β | SE | 95% CI | β | SE | 95% CI | β | SE | 95% CI |
| Classroom-level | | | | | | | | | |
| Disciplinary climate | 0.132**** | 0.035 | 0.063, 0.201 | | | | | | |
| Teacher-student relations | | | | 0.015 | 0.038 | −0.058, 0.088 | | | |
| Participation among stakeholders, teachers | | | | | | | 0.040 | 0.036 | −0.032, 0.111 |
| Student-level | | | | | | | | | |
| Grade level | 0.175**** | 0.035 | 0.106, 0.245 | 0.138*** | 0.038 | 0.064, 0.212 | 0.135**** | 0.037 | 0.062, 0.207 |
| Gender: girl | −0.003 | 0.023 | −0.049, 0.042 | −0.003 | 0.023 | −0.048, 0.043 | −0.003 | 0.023 | −0.049, 0.042 |
| Gender: other | −0.125**** | 0.023 | −0.171, −0.079 | −0.126*** | 0.023 | −0.172, −0.080 | −0.126**** | 0.023 | −0.171, −0.080 |
| R-squared (student-level fixed effect) | 0.015 | | | 0.015 | | | 0.015 | | |
| R-squared (classroom-level fixed effect) | 0.036 | | | 0.019 | | | 0.021 | | |
| R-squared (the whole model) | 0.086 | | | 0.085 | | | 0.084 | | |

β, standardized coefficient; SE, standard error; 95% CI, 95% confidence interval. *$p < 0.05$, **$p < 0.01$, ***$p < 0.005$, ****$p < 0.001$. Coding: Students' grade levels (0 = junior high school, 1 = elementary school); students' gender (0 = boy, 1 = girl, 2 = other).

Contrary to previous studies that reported no association between students' and teachers' perceptions of school climate, scores on the disciplinary climate scale used in this study were associated with students' perceptions of school climate beyond the influence of individual teacher factors. Items of the teacher-rated school climate used in the previous studies included, for example, "Students respect others who get good grades" and "Students try hard to improve on previous work." In contrast, items in the disciplinary climate scale used in the present study asked about specific student behaviors in the classroom, such as "I lose quite a lot of time because of students interrupting the lesson" and "There is much disruptive noise in this classroom lesson." The present results, which showed a significant association between teachers' and students' perceptions, may have been due to the use of questionnaire items that asked about students' specific behaviors and excluded teacher subjectivity as much as possible.

Another possibility for the consistent rating between teachers' and students' concerns the dimension of school climate: disciplinary climates. A good disciplinary climate, as rated by teachers, is also a good climate for students. Disciplinary climate refers to the shared perceptions of students and teachers regarding the stability of classroom rules as perceived by students and the way teachers address behavioral issues in the class (Cheema and Kitsantas, 2014; Siwen et al., 2018). A developmentally appropriate approach to school-wide discipline is based on the recognition that student behaviors are demonstrations of a developmental need and that they need to be taught and developed, not demanded (Darling-Hammond and Cook-Harvey, 2018). According to Darling-Hammond and Cook-Harvey (2018), one example of such a developmentally grounded approach is Consistency

Management and Cooperative Discipline (CMCD), which builds shared responsibility for learning and classroom organization between teachers and students. The teacher creates a consistent learning environment by working with students to establish a cooperative plan for classroom rules, procedures, use of time, and academic learning that governs the classroom. Students shift from being "tourists" to being "citizens" as they create a classroom constitution and take responsibility for dozens of activities in the classroom that teachers might otherwise take on themselves. As they are taught citizenship skills and given multiple chances for leadership in small and large ways, students gain the experiences necessary to become self-disciplined. Students in CMCD schools outperformed control students in mathematics and reading scores (Freiberg et al., 2009). Nevertheless, a negative correlation between strict teacher discipline (e.g., corporal punishment, verbal abuse, coercion, and intimidation) and students' perceived climate has been reported (Banzon-Librojo et al., 2017). The use of exclusionary disciplinary strategies is associated with confrontational student–teacher interactions, which could promote negative perception of the school climate for students. Therefore, strict instructions for enforcing discipline should be avoided. Mitchell and Bradshaw (2013) reported that increased use of positive behavioral support improved the school climate compared to exclusionary discipline strategies. A school-wide approach that systematically and explicitly teaches students what is expected of them and develops positive behaviors (school-wide positive behavior interventions and support) (Colvin et al., 1993; Sugai and Horner, 2002; Horner and Sugai, 2015; Lee and Gage, 2020) is desirable.

In Japan, discipline in learning is emphasized (e.g., greetings before class begins and presentations during class) and the established order in learning allows teachers to conduct effective lessons without

TABLE 3 Association between three teacher-rated school climate scores and teacher's working conditions.

| | Disciplinary climate | | | Teacher-student relations | | | Participation | | |
|---|---|---|---|---|---|---|---|---|---|
| | β | SE | 95% CI | β | SE | 95% CI | β | SE | 95% CI |
| Teacher self-efficacy | 0.751*** | 0.114 | 0.369, 1.132 | 0.225* | 0.129 | 0.007, 0.443 | −0.021 | 0.135 | −0.413, 0.372 |
| Workplace well-being and stress | −0.220* | 0.110 | −0.421, −0.018 | −0.359*** | 0.125 | −0.566, −0.152 | −0.606*** | 0.130 | −0.950, −0.262 |
| Workload stress | −0.065 | 0.035 | −0.230, 0.100 | −0.332*** | 0.039 | −0.484, −0.180 | 0.357 | 0.041 | −0.020, 0.734 |
| Student behavior stress | −0.018 | 0.108 | −0.215, 0.179 | 0.244 | 0.122 | −0.069, 0.557 | −0.030 | 0.127 | −0.321, 0.262 |
| Teaching practice | −0.205 | 0.106 | −0.518, 0.107 | 0.181 | 0.120 | −0.233, 0.594 | 0.221 | 0.125 | −0.175, 0.616 |
| Adjusted R-squared | 0.470 | | | 0.324 | | | 0.260 | | |

β, standardized coefficient; SE, standard error; 95% CI, 95% confidence interval. *$p < 0.05$, **$p < 0.01$, ***$p < 0.005$, ****$p < 0.001$.

having to spend a lot of time maintaining order in the classroom (Stevenson and Stigler, 1992). This is suggested by the 2018 TALIS results, which showed that Japan's disciplinary climate score was higher than that of other countries (National Institute for Educational Policy Research, 2018). However, classroom rules are mostly set by the teachers, and students rarely participate in decision-making. It is hoped that the importance of shared perceptions of disciplinary climate, as described above, will be widely recognized in Japan, and that students will be more proactively involved in decision-making.

We found no association between students' perceptions of school climate and teachers' perceptions of teacher-student relations. Previous studies have also reported that student and teacher ratings of the teacher-student relations are not associated. Teachers consistently tend to rate teacher-student relations higher than students, which may reflect teachers' wishful thinking (Wubbels and Brekelmans, 2005). Teachers' wishful thinking may mitigate cognitive dissonance about teacher-student relations and prevent damage to teachers' self-esteem (Wubbels et al., 1992). Wubbels and Brekelmans (2005), from their two decades of research on teacher–student relationships, discussed that the more sharply the teachers and their students disagree in their perceptions of the teacher–student relationship, the more likely students perceive the teacher as uncertain, dissatisfied, and admonishing. These types of behaviors have been shown to be counterproductive with respect to the promotion of cognitive and affective student outcomes. To resolve these issues, teachers should incorporate feedback data gathered through classroom observations and students' perceptions (Wubbels et al., 1992). In addition, Wubbels and Brekelmans (2005) suggested that teachers monitor the development of relationships during their careers by administrating questionnaires over several years. Furthermore, Tomaru and Shoji (2005) proposed that it is important to have close and frequent communication regularly to understand how the teachers perceive their students. Teachers should be aware of biases in their own cognitive frameworks (Tomaru and Shoji, 2005). In addition, this study found that the teacher-rated teacher-student relations was associated with the teacher's own self-efficacy and stress. While a positive teacher-student relationship is desirable as it contributes to teachers' higher self-efficacy and lower stress, it is important to note

that, conversely, teacher stress may deteriorate the teacher-student relations.

Teacher-rated participation was also not associated with students' perceptions of school climate. The items included in this scale were related to school administration and decision-making (e.g., "This school provides staff with opportunities to actively participate in school decisions"). Participation in school administration and decision-making are predictors of teacher's job satisfaction, workplace well-being, and stress (Nalipay and Jenina, 2023). This study also found that the score of this scale is relatively strongly associated with the teacher's workplace well-being and stress. Of note, teacher well-being and stress have been reported to affect students' school life (Glazzard and Rose, 2019), indicating that a good working environment for teachers serves as a good school environment for students. Further research is needed on the relationship between teacher participation, their working conditions, and students' perceptions of school climate.

Teachers' perceptions of school climate were associated with teachers' working conditions. Teachers with high self-efficacy rated school climate high, whereas teachers with high stress rated school climate low. These working conditions were not associated with students' perceptions of school climate in the model assessed simultaneously with disciplinary climate. However, high teacher self-efficacy was associated with good student school climate ratings in the model assessed simultaneously with teacher-student relations or participation. These results suggest that higher teacher self-efficacy is related to higher disciplinary climate ratings (indeed, the correlation between them is as high as 0.593; see Supplementary Table S1) and that teacher self-efficacy may influence students' school climate ratings.

The results of this study indicate that maintaining a disciplinary climate is associated with a better school climate for students. Stevenson et al. (2020) described the importance of developing classroom management and behavior management skills of teachers. Simultaneously, they pointed out that many teacher preparation programs do not mandate specific coursework to develop these skills for teacher licensure or degree completion. Therefore, learning about classroom management in teacher training is required. In addition, just learning is not sufficient. Teachers must evaluate the effectiveness

TABLE 4 Association between students' perception and teacher's perception of school climate after controlling for teacher's factors.

| Outcome: student ratings of school climate | Classroom-level exposures: teacher ratings of school climate | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Disciplinary climate | | | Teacher-student relations | | | Participation | | |
| | β | SE | 95% CI | β | SE | 95% CI | β | SE | 95% CI |
| **Classroom-level** | | | | | | | | | |
| Disciplinary climate | 0.097* | 0.046 | 0.006, 0.187 | | 0.040 | | | | |
| Teacher-student relations | | | | −0.021 | | −0.100, 0.058 | | | |
| Participation among stakeholders, teachers | | | | | | | 0.048 | 0.040 | −0.030, 0.179 |
| Teacher self-efficacy | 0.046 | 0.047 | −0.047, 0.138 | 0.116*** | 0.040 | 0.038, 0.194 | 0.106** | 0.037 | 0.033, 0.179 |
| Workplace well-being and stress | −0.009 | 0.038 | −0.084, 0.065 | −0.039 | 0.040 | −0.117, 0.039 | −0.003 | 0.044 | −0.090, 0.083 |
| Workload stress | −0.008 | 0.038 | −0.082. 0.066 | −0.018 | 0.041 | −0.098, 0.061 | −0.029 | 0.041 | −0.109, 0.051 |
| Teacher's gender | 0.062 | 0.034 | −0.005, 0.129 | 0.074* | 0.035 | 0.005, 0.143 | 0.074* | 0.035 | 0.006, 0.142 |
| Teacher's age | −0.033 | 0.034 | −0.101, 0.034 | −0.049 | 0.037 | −0.122, 0.024 | −0.037 | 0.035 | −0.106, 0.032 |
| Years of service at current school | 0.044 | 0.036 | −0.026, 0.115 | 0.066 | 0.035 | −0.004, 0.136 | 0.076* | 0.035 | 0.006, 0.145 |
| **Student-level** | | | | | | | | | |
| Grade level | 0.173**** | 0.035 | 0.104, 0.242 | 0.157**** | 0.036 | 0.087, 0.228 | 0.160**** | 0.035 | 0.091, 0.229 |
| Gender: girl | −0.004 | 0.023 | −0.049, 0.042 | −0.004 | 0.023 | −0.049, 0.042 | −0.004 | 0.023 | −0.050, 0.041 |
| Gender: other | −0.124**** | 0.023 | −0.170−0.078 | −0.124**** | 0.023 | −0.169, −0.078 | −0.124**** | 0.023 | −0.170, −0.079 |
| *R-squared* (student-level fixed effect) | 0.015 | | | 0.014 | | | 0.015 | | |
| *R-squared* (classroom-level fixed effect) | 0.042 | | | 0.038 | | | 0.021 | | |
| *R-squared* (the whole model) | 0.086 | | | 0.086 | | | 0.084 | | |

β, standardized coefficient; SE, standard error; 95% CI, 95% confidence interval. *$p < 0.05$, **$p < 0.01$, ***$p < 0.005$, ****$p < 0.001$. Coding: Students' grade level (0 = junior high school, 1 = elementary school); students' gender (0 = boy, 1 = girl, 2 = other); teachers' gender (0 = man, 1 = woman).

of the classroom management practices that they have learned and implemented. For example, in the Positive Behavioral Interventions and Supports (PBIS) program, conducting evaluations regularly is recommended to monitor progress in preventing disruptive behavior and enhancing the school's organizational climate by creating and sustaining a comprehensive system of behavioral support (Bradshaw et al., 2008; Sugai et al., 2014; Elrod et al., 2022). In addition, teachers themselves can learn classroom management and maintain classroom management practices by self-monitoring their practices (Oliver et al., 2015).

If teachers and students perceive school climate differently, the efforts of teachers to improve the school climate may not lead to the improvement of the school climate for students. Based on the results of this study, using items that ask about specific student behaviors may be a strategy for obtaining relevant school climate perceptions for teachers and students. If no association is obtained, the unrelated perception itself may be an indicator of the school climate, as indicated by O'Neill and Vogel (2020). In addition,

Wubbels and Brekelmans (2005) suggested that teachers administer questionnaires over several years to monitor the development of relationships in their careers, with respect to differences in the way teachers and students feel about their relationships. Ongoing evaluations of school climate would provide clues.

## 4.1 Limitation

This study has several limitations. First, the target schools were not randomly selected but only schools whose principals expressed their intentions to cooperate with the survey were included. Therefore, the results may not be sufficiently representative of all public schools and should be interpreted with caution. Second, as the number of schools was small, the analysis did not consider school-level effects. Koth et al. (2008) emphasized the need to evaluate student-, classroom-, and school-level factors. Their study found that the clustering of students

within schools accounted for 5–27% of the variance in students' perceptions of the school climate. Therefore, school-level factors may explain some student-rated school climates. Third, student responses were only analyzed when their teacher had responded to and was included in the analysis. While the sensitivity analysis confirmed that there was no difference in school climate ratings between the students included and those excluded from the analysis, it was not possible to assess the difference between the teachers who responded and those who did not. Fourth, as the data were collected during the COVID-19 pandemic, changes in the school system and psychological distress among students and teachers due to COVID-19 may have affected the results. Finally, although the school climate is formed from the interaction of students and teachers, the items on the scales used to measure students' and teachers' perceptions of school climate were quite different. There is much overlap in item content (or the constructs behind it), and a few items have similar sentences. Therefore, the differences between students' and teachers' perceptions may be due to the differences in the items. Furthermore, the unidimensionality of the JaSC may be problematic for measuring different aspects of students' perceptions of school climate, suggesting the need to consider multidimensionality (Supplementary Tables S5, S6). For scales measuring teachers' perceptions of school climate, response styles may differ depending on the teacher's gender (Supplementary Table S7). Future research should examine the psychometrics of the scales and consider including items that can measure differences in the students' and teachers' perceptions.

## 5 Conclusion

Student-rated school climate was associated with teacher-perceived disciplinary school climates. In terms of research methodology, the use of items that ask for specific student behaviors may make it easier to obtain an association between students and teachers' perceptions of the school climate. In terms of school climate dimensions, the disciplinary climate may be a dimension in which student and teacher perceptions are more likely to coincide. In other words, a good disciplinary climate, as perceived by teachers, is also a good climate for students. Maintaining discipline through the use of positive behavioral support, rather than strict disciplinary instruction, is important for students' positive school climate perceptions.

## Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: the data are not publicly available because they contain information that could compromise the privacy of research participants. Requests to access these datasets should be directed to TN, tomoko.n@hama-med.ac.jp.

## Ethics statement

The studies involving humans were approved by the Ethics Committees of Hamamatsu University School of Medicine. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin because this study was conducted using secondary data obtained from the school's educational activities.

## Author contributions

IH: Conceptualization, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. TN: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Writing – original draft, Writing – review & editing. YO: Conceptualization, Investigation, Writing – review & editing. MW: Conceptualization, Investigation, Writing – review & editing. NT: Conceptualization, Investigation, Writing – review & editing. KT: Supervision, Writing – review & editing. AS: Funding acquisition, Supervision, Writing – review & editing.

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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.

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## Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2024.1411503/full#supplementary-material

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