STUDENT-TEACHER RELATIONSHIP QUALITY RESEARCH: PAST, PRESENT AND FUTURE

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STUDENT-TEACHER RELATIONSHIP QUALITY RESEARCH: PAST, PRESENT AND FUTURE

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Editorial: Student-teacher relationship quality research: Past, present and future

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Editorial on the Research Topic
Student-teacher relationship quality research: Past, present and future

More than 20 years have passed since the publication of Pianta (2001) on the quality of the teacher-student relationship. Since then, several attempts have been made to elaborate theoretically the concept of teacher-student relationship quality and to provide empirical evidence of the impact that good teacher-student relationship quality might have on academic achievement, student psychological adjustment, and classroom climate. The teacher has been recognized as a "psychological parent" and defined as a secure base and safe heaven, following attachment theory (Verschueren and Koomen, 2012, 2021; Prino et al., 2022; Spilt et al., 2022). Several studies have shown that a relationship with the teacher characterized by affection, closeness, and respect predicts more favorable developmental outcomes and better adjustment to the classroom context in any school setting (Roorda et al., 2011, 2017; Longobardi et al., 2019, 2021; Lin et al., 2022). However, after 20 years, we saw the need to synthesize the current literature on the topic of teacher-learner relationship quality and to promote a collection of studies that provide new insights, ideas, and reflections to advance the research field and overcome current limitations.

In this Research Topic, 16 publications were collected from different parts of the world. The Research Topic includes two literature reviews, several empirical works, some of which aim to develop and validate instruments to measure the quality of the teacher-student relationship, and others to promote new knowledge about the effects and mechanisms of action of the quality of the teacher-learner relationship on the psychological development and adjustment processes of children and adolescents. In addition, the Research Topic includes a contribution on possible intervention strategies on the quality of teacher-student relationship.

Literature review

Spilt and Koomen present a chronological review of the literature that shows how the research field of teacher-student relationship quality has evolved over the past three decades. The authors highlight five major themes that have emerged in the literature and identify current research limitations, offering important suggestions for the development of new research. In addition, Shayo et al. proposed a review of the conceptualization and measurement of trust in the home-school context.

Measurement instrument development and validation

Borremans and Spilt addressed a topic that seems important to us. The authors devoted themselves to the validation of a questionnaire for measuring attitudes, knowledge, and self-efficacy in building dyadic relationships with students: Competence Measure of Individual Teacher-Student relationships (COMMIT). In this work, the authors developed the questionnaire and examined each dimension in a sample of pre-service teachers. Whitehead et al. developed and validated a new self-report instrument to measure adolescents' perceived teacher quality: Caring Student Teacher Relinquishment Scale. The instrument was validated on a sample of Canadian youth and has two dimensions: Teacher Support and Attitude and Caring Teacher Qualities. Yadav et al. propose the development and validation of a measurement scale for the Indian context, while Bai et al. present the development and validation of a version of the Student Teacher Relationships Scale for the private college context. Indeed, the latter point out that the current measurement scales are not applicable to the private school context due to characteristics different from those of public schools. Thus, in their article, propose the validation of the Private-College Student-Teacher Relationship Scale (PCSTRS). The authors also found a positive correlation between the PCSTRS and measures of wellbeing, involvement in extracurricular activities, self-esteem, self-efficacy, and academic achievement. In addition, the authors compared students from public and private schools and found differences in PCSTRS dimensions and correlation between the constructs studied. This paper paves the way for further research.

New horizons

The paper by Vagos and Carvalhais sought to find answers to the unknowns that the COVID-19 pandemic has raised with regard to teacher relations and the quality of the teacher-student relationship. In their longitudinal study, 47 teachers and 56 students assessed the quality of the teacher-student relationship at two different time points: after 3 months of online instruction and after 3 months of face-to-face instruction. According to the authors, online instruction is perceived by students as an impersonal experience, and online instruction is associated with less conflict in the teacher-student relationship due to the absence of social cues. Despite the importance of distance learning in the dramatic moments of the pandemic, it is considered useful to encourage teachers to connect with their students and prioritize social presence. This can help in the psychological adjustment of the students.

Conflict management in the classroom is addressed in the paper by Alvarez et al. The authors point out the importance of considering teachers' emotional regulation when managing conflict in the classroom. In addition, the authors suggest that virtual reality may be a good tool for training teachers in developing appropriate strategies for managing classroom climate.

One of the issues that requires greater investigation, particularly in collectivist cultures, is the degree of agreement between students and teachers regarding their mutual relationship. In this direction is the contribution of Gregoriadis et al., who used a dyadic analysis approach to determine the degree of agreement between teachers' and students' perceptions of their relationship with each other. The study was conducted in Greece and found that students and teachers perceive their dyadic relationship from different perspectives.

A number of papers have been presented on the effects of the quality of the teacher-student relationship on students' and teachers' psychological adjustment and the possible mechanisms involved. Among them are two studies from Italy. Longobardi et al. provided new evidence on the possible mediating role of a positive teacher-student relationship in the relationship between daytime sleepiness and prosocial behavior in kindergarten children. Relatively less is known about how TSR influence teachers' functioning. In this direction, Pedditzi et al. found that satisfaction in the teacher-student relationship may be a protective factor for bournout in elementary and secondary school teachers.

Some studies have come from cultural contexts in which the quality of the teacher-student relationship has been little studied. Duby et al. proposed qualitative work conducted in South Africa. Based on teacher connectedness theory, the authors provided evidence of the potential impact of a good teacher-student relationship on promoting wellbeing, particularly sexual and reproductive wellbeing, among a group of female adolescents and young adults. In China, Luo et al. shed light on the possible moderating role of the teacher-student relationship in the relationship between parental punishment and adolescent loneliness. Among other findings, the authors report that Chinese adolescents' loneliness is less influenced by parental punishment when they have a more positive relationship with their teachers.

Finally, another contribution from the Chinese cultural context by Bo and Chinemerem Onwubuya. The authors offer a contribution from the Chinese cultural context. They illustrate the complexity of implementing the School Discipline Law as a universal national policy. Their contribution seems innovative, and the authors' reflections can serve as a guide for future research in other cultural contexts.

Interventions

The Research Topic also addressed intervention strategies designed to promote better quality teacher-student relationships in educational contexts. Koenen et al. tested Student Teacher Interaction Coaching (STIC) with six teachers working with children with special needs. Working with children with special needs can be very complex, especially for teachers who are early in their careers. The pilot study proposed by the authors seems to suggest that STIC could be a useful intervention to improve the quality of the teacher-student relationship and increase positive emotions in the relationship.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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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Development and Validation of a Measure to Assess Early Adolescents' Perceptions of Caring Student-Teacher Relationships

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There is accruing evidence documenting the importance of caring student-teacher relationships in fostering students' social and emotional competence (SEC), well-being, and school success, particularly during early adolescence. However, few studies have investigated dimensions of caring student-teacher relationships from the perspective of early adolescents. This study describes the development and validation of the Caring Student-Teacher Relationship (CSTR) scale. Participants included 222 sixth and seventh grade middle school students who completed the CSTR and self-report measures of classroom supportiveness, prosociality, well-being, and school functioning. Students also assessed their teachers' SEC. Classroom teachers (n = 14) completed self-report measures of mindfulness in teaching and burnout, reported on closeness and conflict in their relationships with students, and rated students' SECs and academic success. Results from an Exploratory Factory Analysis (EFA) indicated high internal consistency of the CSTR and a two-factor solution: *Teacher Support and Attunement* and *Caring Teacher Qualities*. Further analyses revealed that the two factors of the CSTR were related in expected directions to measures of teacher support (e.g., academic and personal) and SEC, and to students' reports of classroom supportiveness, prosociality, well-being, and school functioning. Positive associations of the two CSTR factors to teacher reports of students' SEC and academic success were also found. The two factors of the CSTR were positively associated with teachers' reports of mindfulness in teaching and negatively associated with teachers' burnout. These findings have implications for understanding the role that students' perceptions of student-teacher relationships may play in promoting their positive adaptation and success in school.

Keywords: psychometrics, measure development, student-teacher relationships, early adolescence, education, student perceptions

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INTRODUCTION

Mounting evidence posits that positive student-teacher relationships promote students' school engagement (Engels et al., 2016), prosocial behaviors (Longobardi et al., 2020; Wentzel et al., 2010), and well-being (Guess and McCane-Bowling, 2016). Moreover, these relationships become increasingly critical as students enter adolescence (Ruzek et al., 2016). This is because evidence

from a number of studies has consistently shown that early adolescence in particular is a time when individuals need supportive teacher relationships due to the nature and pace of changes that occur across so many levels – changes due to puberty, changes in the nature and function in relationships with peers and parents, and school transitions (Offer and Schonert-Reichl, 1992; Eccles et al., 1993). Unfortunately, there exists a relative dearth of studies that have investigated student-teacher relationships from the perspective of middle school students, particularly in relation to young adolescents' experiences of teacher caring (e.g., Wentzel, 1997; Longobardi et al., 2016; Brinkworth et al., 2017). The present study attempts to redress this by developing and evaluating the validity of a student self-report measure of caring student-teacher relationships derived from students' own descriptions of the qualities of important and caring teachers.

Researchers have prioritized different dimensions of student-teacher interactions as having the greatest impact on students (Sabol and Pianta, 2012). Much of the research in this field has focused on the impact of academic support and instructional practices on student outcomes (McCombs et al., 2008; Downer et al., 2015), whereas more recently researchers have begun to focus their attention on understanding the impact of non-academic aspects of teacher support in relation to student-teacher interactions and student outcomes (Koomen and Jellesma, 2015; Longobardi et al., 2016).

Nel Noddings (2015), recognized as a pioneer in the field because of her emphasis on an ethic of care in education, posits that, just like parenting, educating children should first and foremost involve attending to students' needs. The field of social and emotional learning (SEL) has supported this notion over the past few decades, by demonstrating that when teachers are attuned to the social and emotional needs of their students, there are concomitant positive changes in classroom relationships, student engagement, and academic achievement (Wentzel, 2002; Roorda et al., 2011; Ruzek et al., 2016).

As Nodding has stated, however, "as we explore caring in the context of caregiving—any long-term unequal relation in which one person is carer and the other cared-for—we will ask about the *virtues* that support caring" (2015, p. 70). As such, recent years have witnessed a burgeoning literature investigating the teacher characteristics and social and emotional competencies (SEC) that support student-teacher relationships, foster optimal classroom climates, and nurture positive student development (Jennings and Greenberg, 2009; Jones et al., 2013; Schonert-Reichl, 2017). Specifically, this research suggests that socially and emotionally competent teachers exhibit an increased capacity to attend to their students' needs (Roeser et al., 2012) and create positive environments in their classrooms (Collie and Perry, 2019). Jennings and Greenberg (2009) clearly illustrate this pathway in their "Prosocial Classroom" model that posits that teachers high in SEC and well-being have more positive student-teacher relationships, manage their classrooms more effectively, and implement SEL programs more competently. These, in turn, create a healthy classroom climate and positive social, emotional, and academic outcomes for students.

Researchers in the field of contemplative science have also discussed the "unnamed domain" of teacher expertise, which goes beyond the traditional aspects of content knowledge and pedagogy and includes teachers' dispositions and social and emotional skills, such as calmness, clarity of mind, and kindheartedness (Kabat-Zinn, 1994; Rodgers and Raider-Roth, 2006; Rickert et al., 2020). Moreover, contemplative educators and researchers have emphasized the importance of *mindfulness* in teaching (Rickert et al., 2020), which involves qualities such as focused attention (Kabat-Zinn, 1994), teacher *presence* (an awareness, receptivity, and connectedness to the mental, emotional, and physical needs of the students; Rodgers and Raider-Roth, 2006), and *attunement* (understanding, sympathy, and knowledge about the student; Skinner and Belmont, 1993). These qualities have emerged in the student-teacher literature as important aspects of these relationships (Wentzel, 2003; Rickert et al., 2020). Taken together, burgeoning research emphasizes the importance of teacher SEC and mindful awareness of and responsiveness to students' needs in creating positive student-teacher relationships.

Despite the growing interest in understanding student-teacher relationships, much of the extant empirical research examining the impact of teacher SECs on student-teacher relationships has focused on teachers of younger students in elementary schools (Yoon, 2002; Mashburn et al., 2006). Nonetheless, there is now an emerging corpus of research investigating associations between teacher characteristics and student-teacher relationships in early adolescence (Longobardi et al., 2016; Oberle et al., 2020). For example, Braun et al. (2019) found that middle school teachers' self-reports of mindfulness were significantly and positively related to observer ratings of the quality of emotional support in teachers' interactions with their students. In another study of early adolescents and their teachers, Harding et al. (2019) found that positive associations between teachers' well-being and students' well-being were partially moderated by improvements in students' evaluations of their student-teacher relationships. These studies point to the value of investigating teachers' qualities and competencies in relation to student-teacher relationship quality, particularly during early adolescence.

Notwithstanding these recent developments in the field, studies that consider early adolescents' perceptions of positive dimensions of their relationships with their teachers are relatively scant. Instead, the majority of studies that have examined student-teacher relationships have relied heavily on other perspectives (i.e., observational, teacher, and parent ratings) (Doumen et al., 2012; Hughes et al., 2014; Ruzek et al., 2016) and/or have focused on the early years of school (i.e., preschool, Kindergarten) (Ladd et al., 1999; Claessens et al., 2017). This may be due, in part, to the relative paucity of measures available that assess early adolescents' perspectives of supportive student-teacher relationships (Brinkworth et al., 2017).

When it comes to adolescents in particular, although there is evidence suggesting some congruence between students' and others' perceptions with regard to relationship quality (Koomen and Jellesma, 2015; Cipriano et al., 2019), adolescents' perspectives often differ from those of their

parents or teachers (Waters et al., 2003; Koepke and Harkins, 2008; Rickert et al., 2020). This remains particularly true for student and teacher perceptions of their dyadic relationships (Zee and Koomen, 2017; Prewett et al., 2019). Moreover, there may actually be a disconnect between what teachers feel they bring to the relationship and what students actually experience. For example, in a study of fifth and sixth grade students, Prewett et al. (2019) found that teachers' reports of the emotional support they provided to students did not predict students' perceptions of quality of the student-teacher relationship. In addition, the relation between teachers' reports and students' reports was nonsignificant and close to zero. Yet students' own perceptions of their teachers' emotional support positively and significantly predicted students' perceptions of student-teacher relationship quality.

Taken together, it appears that research that relies solely on teacher ratings of student-teacher relationship quality and does not consider the students' perspective may underestimate the role that student-teacher relationships can play in predicting students' positive development. To better understand the connection between student-teacher relationships and prosocial development, classroom climate, well-being, and school functioning, it is critical that both the perspective of the student and the teacher be considered (Brinkworth et al., 2017). Also needed is research that examines gender differences in students' perceptions of their student-teacher relationships. Indeed, to date there have been mixed findings on gender differences in student-teacher relationships (Wentzel, 1998; Kurdi and Archambault, 2018), with some research indicating no differences (Colaianne et al., 2020) and others showing gender differences (McFarland et al., 2016; Zee and Koomen, 2017). Because of the mixed findings, in the present study gender differences in students' perceptions of their teachers were also examined.

In summary, there is a need for well-designed and validated measures that assess the qualities of caring student-teacher relationships from the perspectives of early adolescent students. The majority of studies that have investigated student-teacher relationships with early adolescents have utilized either unvalidated sets of items developed for a particular study (Pössel et al., 2018; Scales et al., 2020) or have employed measures that do not focus specifically on caring dimensions of the student-teacher relationship (Reddy et al., 2003; Brinkworth et al., 2017). Moreover, many of the extant measures that have been used to assess the quality of relationships in adolescent samples have been either domain-general (i.e., were designed for use with any caregiver, rather than tailored to the specific context of student-teacher relationship) (Ricard and Pelletier, 2016; Prewett et al., 2019) or have asked students to report more generally on all of the teachers in their school rather than to report on a specific teacher (e.g., Gallagher et al., 2019).

The Present Study

Given the growing evidence of the importance of student-teacher relationships in early adolescence and the limitations of the currently available student-report measures of student-teacher relationships, the present study was designed to address gaps in the field by developing and evaluating the reliability and validity of the inferences from the scores of a student report measure of caring in student-teacher relationships – the Caring Student Teacher Relationship scale (CSTR). Although some scales exist that assess students' perceptions of the presence or absence of broad teacher support (Brinkworth et al., 2017; Prewett et al., 2019), few include more detailed items about teachers' caring behaviors and attunement within this relationship. In addition, very few measures to date have been developed using middle school students' own voices (i.e., Brinkworth et al., 2017). Therefore, the student self-report measure developed in this current study was derived from middle school students' descriptions of important teachers, in an effort to capture the aspects of care, support, and attunement within student-teacher interactions that has particular relevance for early adolescent students.

In the current study, we examined evidence for construct validity of the CSTR, through the investigation of 1) factor structure and internal consistency, 2) demographic differences in the CSTR, and 3) convergent and discriminant associations between CSTR and other constructs of students' prosociality, classroom context, well-being, and school functioning, and teachers' mindfulness and burnout.

We hypothesized—based on previous research indicating both age and gender differences in student-teacher relationship quality (Eccles and Roeser, 2011; Zee and Koomen, 2017) - to find demographic differences of small effect sizes on the CSTR. With regard to convergent and discriminant validity evidence, we hypothesized the CSTR to have significant relations with measures of teacher support, burnout, and mindfulness as well as measures of student social, emotional, and academic adjustment, to varying effects. First, in support of convergent validity, we hypothesized the CSTR to be highly related to but not redundant with other student-reports of teacher support and SEC. Moreover, research has demonstrated that teacher burnout can both impact (Longobardi et al., 2014) and be impacted by Harding et al. (2019) student-teacher relationship quality, thus we expected a moderate association between CSTR and teacher burnout. Next, due to research showing significant, positive relations between supportive student-teacher relationships and positive classroom climate and early adolescent students' prosocial tendencies (e.g., Wentzel, 2010), we hypothesized to find positive and significant correlations between the CSTR and student-rated classroom supportiveness and prosociality (prosocial goal, altruism), with medium to large effect sizes. In contrast, research has shown positive, but moderate, associations between student-teacher relationships and aspects of students' resilience (e.g., optimism, self-regulation, stress regulation) (Thomson et al., 2015; Zee and de Bree, 2017). Therefore, we hypothesized the CSTR to have significant, positive correlations between the CSTR and measures of students' optimism and self-efficacy and a significant, negative correlation between the CSTR and students' perceived stress, with small to medium effect sizes. To examine discriminant evidence, we hypothesized significant but small to medium correlations between the CSTR and student reports of academic efficacy and teacher measures of academic success (i.e., Scales et al., 2020). We also expected a significant but

small positive correlation between CSTR and teacher-rated measures of student-teacher relationship quality, given the disparity often found between early adolescent and teacher perspectives of their relationships (Zee and Koomen, 2017). Finally, because of the content of the CSTR, which included elements of mindfulness, we anticipated a moderate association between the CSTR and teacher measures of their own mindfulness (i.e., Rickert et al., 2020).

METHODS

Participants

Data for this study were collected during the baseline portion of a larger study investigating the efficacy of a social and emotional learning (SEL) program. This study took place in a public-school district in a suburban, predominantly middle-class community in British Columbia (BC), Canada. The mean household income for the neighborhoods in which each of the three schools was located was $77,790.00 CAD (Range: $60,907–$106,338 CAD). This mean household income falls slightly below the Canadian average (Statistics Canada, 2017). Given the focus of the current study on caring student-teacher relationships, it is important to note that BC's Ministry of Education has a long history of integrating the promotion of students' social and emotional development into its education system. For example, in 2016 the BC Ministry of Education legislated a revised curriculum for all elementary and secondary school students in the province which included an explicit focus on promoting students' personal and social competencies (https://curriculum.gov.bc.ca).

Three middle schools in the district, that were equivalent in school size, achievement level, socioeconomic status (SES), and ethnic and racial diversity, were selected as potential sites for the research. They were also chosen because the principal had an interest in implementing SEL programs to promote students' SEC and well-being. Participants recruited for the study included 350 students in 14 classrooms across the three middle schools. Of those, 260 received parental/guardian consent and gave their own assent to participate. Some students were absent on the day of the survey (n = 8) or opted out of the entire study after providing assent (n = 9). In addition, 21 students were excluded from the study due to missing significant portions of the measures, resulting in a final sample size of 222 students who had complete data for this study (participation rate = 63%). Analyses indicated that the students who did not participate did not differ from participating students in terms of gender (F [1, 242] = 0.15, p = 0.70), age (F [1, 242] = 1.26, p = 0.26), family composition (F [1, 239] = 0.66, p = 0.42), or first language learned (F [1, 240] = 0.11, p = 0.74).

The final sample of 222 sixth (n = 138) and seventh (n = 83) grade students was comprised of 112 boys (50.5%), 109 girls (49%), and one student (0.5%) who identified their gender as something other than boy or girl. The mean age of participants was 11.87 (SD = 0.56; Range: 11.00–13.02). The majority of students (84%) reported English as the first language they learned at home, the next highest reported first language was Mandarin (8%). The rest of the students reported several other languages (e.g., Cantonese, French, Spanish, Korean, Filipino, Hindi, Punjabi, Vietnamese). These reported languages were reflective of the breadth of first languages found in the neighborhood populations in which the schools were located (Statistics Canada, 2017). Furthermore, the ethnic origins of people of BC comprise Indigenous Peoples (6.6%), European (62.7%), Asian (28.8%), Black (1.7%), and Latinx (1.5%) (Statistics Canada, 2017). The majority (78%) of students indicated they lived with both parents and/or stepparents (either full time or part-time), while about 10% live with single parents, and 12% live with parents and grandparents. The participating teachers (n = 14; nine female, five male) ranged in age from 25.23 to 52.48, with a mean age of 40.40. Half (50%) of the teachers reported their ethnicity as Caucasian/White, 14.3% as East Asian, 7.1% as South Asian, and the remaining 28.5% as *multiracial* (e.g., Indigenous and Caucasian) or *something else* (e.g., Roma). All teachers had worked between one and 25 years as a teacher, with an average of 11.86 years of teaching. Five teachers indicated B.Ed. as their highest education, two indicated a post-baccalaureate diploma, and seven had a graduate degree (e.g., M.A., M.Ed.).

Procedure

Approval to conduct the research was received from the university research ethics board. Following approval from the school district's ethics committee, principals from three middle schools were contacted to request their participation in this study. A total of 14 teachers from these three schools were recruited to participate. Following, the Principal Investigator and/or her research assistants visited the schools and explained the study to the students in each of the classrooms in child-friendly language, provided parent/guardian consent forms, and answered any questions the students had. Teacher consent, parent/guardian consent, and student assent were obtained from all participants.

Trained graduate student research assistants (RAs) administered the student self-report surveys during two, 30-min sessions in the same school day. The RAs read the questions out loud to account for language differences and ensure students fully understood the items before providing their responses. Teachers were also asked to complete teacher rating surveys on each participating student within 2 weeks of the administration of the student surveys.

Measures

For all of the student report measures in which students were asked to report on their teacher or their classroom, students were told to respond with respect to the specific classroom they were in at the time of survey administration with reference to their classmates and their teacher in that class. For each scale, items were averaged to form a composite score.

Demographics

Student demographics were obtained by asking students to respond to questions about their birthdate, grade, gender identity, family composition, and first language learned at home.

Measures of Teacher Support and the Student-Teacher Relationship

As one means of exploring validity evidence for the CSTR, we included extant measures of teacher support and student-teacher relationship quality, as measured by both students and teachers. Students responded to four items from the Teacher Personal Support subscale of the Classroom Life Measure (Johnson et al., 1985; Wentzel, 1997), a measure designed to assess students' perceived support from their teachers (e.g., "My teacher cares about me") and 10 items from the Child and Adolescent Support Scale (CASSS, Malecki et al., 2000), a scale assessing students' perceived academic support from teachers (e.g., "My teacher makes it okay to ask questions"). Responses were made on a 5-point Likert-type scale ranging from 1 (*not at all true*) to 5 (*very true*). The Teacher Support subscale of the CLM has been shown to have good internal consistency ($\alpha = 0.89$) in previous research with sixth to eighth grade students (Wentzel, 1997). In the current study, Cronbach's alpha was 0.86 and ordinal alpha was 0.88 for the CLM. The CASSS has also been shown to have good internal consistency ($\alpha = 0.93$) and validity with samples of early adolescents (CASSS; Malecki and Demaray, 2002). For the current study, Cronbach's alpha was 0.92 and ordinal alpha was 0.93 for CASSS.

To assess teachers' perceptions of their relationships with each of their students, teachers completed 12 items from the 15-item short form of the Student-Teacher Relationship Scale (STRS; Pianta, 2001; Koomen et al., 2012), which is comprised of two subscales: Closeness and Conflict. The five items included from the Conflict subscale assess the extent to which the teacher perceives conflict in the student-teacher relationship (e.g., "This child and I always seem to be struggling with each other") whereas the seven items from the Closeness subscale assess the amount of closeness felt by the teacher within the student-teacher relationship (e.g., "I share an affectionate, warm relationship with this child"). Three items were considered inappropriate for the middle school context and, therefore, were omitted for this study (e.g., "This child is uncomfortable with physical affection or touch from me"). Teachers rated each student on the extent to which they agreed with each statement using a five-point Likert-type scale from 1 (*definitely does not apply*) to 5 (*definitely applies*). Closeness and Conflict scores were created for each student by averaging item scores for each subscale, with higher scores representing higher levels of each dimension. Evidence for the concurrent and predictive validity of these subscales of the STRS has been demonstrated extensively in previous research (e.g., Pianta, 2001; Koomen et al., 2012). Reliability of the Conflict and Closeness subscales have been shown to be consistently high in previous research, with Cronbach's alpha of 0.93 and 0.86 respectively (Pianta, 2001). For the present study, Cronbach's alpha was 0.89 and ordinal alpha was 0.90 for Closeness, and Cronbach's alpha of 0.89 and ordinal alpha of 0.92 for Conflict.

Teacher SEC, Burnout, and Mindfulness

To assess three characteristics related to teacher support (Jennings and Greenberg, 2009), students and teachers responded to measures of teacher SEC, burnout, and mindfulness. Students responded to a 6-item measure which assessed their perceptions of their teacher's social and emotional competence via the Teacher Social and Emotional Competence scale (TSEC; Whitehead, 2013). This measure asks students to respond to items such as "My teacher seems to enjoy teaching our class" using a 5-point Likert-type scale ranging from 1 (*not at all true*) to 5 (*very true*). Previous studies have found evidence supporting the construct validity and internal consistency of the TSEC with fifth to seventh grade students ($\alpha = 0.79$; Whitehead, 2013) and with fourth to seventh grade students ($\alpha = 0.86$; Oberle et al., 2020). In the present study, Cronbach's alpha was 0.78 and ordinal alpha was 0.81.

To assess teacher burnout, teachers were asked to complete the Emotional Exhaustion and Depersonalization subscales of the Maslach Burnout Inventory (MBI; Maslach et al., 1996). The Emotional Exhaustion subscale contains items such as "How often do you feel emotionally drained from your work?" whereas the Depersonalization subscale includes items like "How often do you feel you have become more callous toward people since you took this job?" Teacher responded to these items on a 7-point Likert-type scale ranging from 1 (*never*) to 7 (*every day*). In this study, the two subscales were significantly correlated ($r = 0.76$, $p < 0.001$), therefore, to capture a wider range of burnout characteristics in teachers, we formed a burnout composite by averaging scores on the two sum subscales. This burnout composite has been used in previous research with teachers of early adolescents, where a similar correlation of 0.77 was found between the two subscales (Oberle and Schonert-Reichl, 2016). Previous research has found high internal consistency of both subscales and the burnout composite (Emotional Exhaustion: $\alpha = 0.92$, Depersonalization: $\alpha = 0.80$, burnout composite: $\alpha = 0.93$) when used with elementary school teachers (Oberle and Schonert-Reichl, 2016). In the current study, Cronbach's alpha was 0.92 and ordinal alpha was 0.91 for the Emotional Exhaustion subscale and Cronbach's alpha was 0.78 and ordinal alpha was 0.84 for Depersonalization subscale. Cronbach's alpha was 0.93 and ordinal alpha was 0.92 for the burnout composite.

Teachers reported on their mindfulness in teaching via the Intrapersonal Mindfulness and Interpersonal Mindfulness subscales from the Mindfulness in Teaching scale (Frank et al., 2016). The Interpersonal Mindfulness subscale assesses teachers' openness and receptivity in interactions with students and contains items such as "When I am upset with my class, I calmly tell them how I am feeling." The Intrapersonal Mindfulness subscale focuses on present-centered awareness (Kabat-Zinn, 1990) (i.e., attentiveness and focus on the present moment) and includes reverse-coded items such as "I rush through activities with my class without being really attentive to them." Responses were made on a 5-point Likert-type response scale ranging from 1 (*never*) to 5 (*always true*). After reverse coding for relevant items, items are averaged with higher scores representing higher levels of Intrapersonal Mindfulness and Interpersonal Mindfulness. Previous research has demonstrated the internal consistency of the Intrapersonal Mindfulness subscale ($\alpha = 0.87$) and the Interpersonal Mindfulness subscale ($\alpha = 0.71$), as well as preliminary evidence for the validity of this scale for use with teachers (Frank et al., 2016). Cronbach's alpha for the current study

was 0.78 and ordinal alpha was 0.79 for the Intrapersonal Mindfulness, and Cronbach's alpha was 0.76 and ordinal alpha 0.86 for Interpersonal Mindfulness.

Classroom Supportiveness

To assess students' perceptions of general supportiveness in the classroom, students were asked to respond to the 14-item Classroom Supportiveness subscale of the Sense of Classroom as a Community Scale (Battistich et al., 1997). This subscale assesses the degree to which students evaluate their classmates as supportive and helpful (e.g., "Students in this class help each other learn"). Students responded to the items using a 5-point Likert-type scale from 1 (*disagree a lot*) to 5 (*agree a lot*). Evidence for the validity and reliability of this subscale has been demonstrated in previous research (Battistich et al., 1997). For the present study, internal consistency as assessed via Cronbach's alpha was 0.90 and ordinal alpha was 0.91.

Prosociality

Students and teachers reported on dimensions of students' prosociality, namely prosocial goals, altruism, and social and emotional competence (SEC). Specifically, students responded to the 6-item Prosocial Goals subscale of the Social Goals Scale (Wentzel, 2003) and the 4-item Altruism Adolescent Scale (Lippman et al., 2014). The Prosocial Goals subscale assesses students' prosocial intentions with items such as "How often do you try to be nice to kids when something bad has happened to them." Responses were made on a five-point Likert-type scale from 1 (*never*) to 5 (*always*). Extensive research has provided evidence of reliability and validity with middle school students (e.g., Wentzel, 1998). The Altruism Adolescent Scale assesses students own evaluations of their altruism with items such as "I go out of my way to help others" and respond to the question "How true is each statement for you?" Responses were made on a 5-point Likert-type scale ranging from 1 (*not at all like me*) to 5 (*exactly like me*). Previous research has shown evidence of good internal consistency for this scale with students ages 12–17 (Lippman et al., 2014). In the present study, internal consistency was found to be good; Cronbach's alpha =0.84 and ordinal alpha =0.85, for the Prosocial Goals subscale; Cronbach's alpha = 0.83 and ordinal alpha = 0.84 for the Altruism Adolescent Scale.

To assess teachers' evaluations of each of their students' SEC related to prosociality, teachers responded to the 9-item Social and Emotional Competence subscale of the Teacher Social Competence Rating Scale (TSCRS; Kam and Greenberg, 1998). Teachers responded to items such as "Shows empathy and compassion for others' feelings" and "Provides help, shares materials, and acts cooperatively with others" with a 5-point Likert-type scale from 1 (*almost never*) to 5 (*almost always*). Evidence of the validity and reliability of this scale has been supported by previous research (Kam and Greenberg, 1998) and good internal consistency has been found with samples of fourth to seventh grade students (Schonert-Reichl and Lawlor, 2010). Cronbach's alpha for teacher-rated SEC was $\alpha = 0.92$ and ordinal alpha was 0.93 in the current study.

Well-Being

In order to measure three facets of students' well-being, students responded the 9-item Optimism subscale of the Resiliency Inventory (Noam and Goldstein, 1998) and the two subscales of the 10-item version of the Perceived Stress Scale (PSS-10; Cohen and Williamson, 1988): Perceived Helplessness (6-item) and Perceived Self-Efficacy (4-item). Optimism has been identified as an important component of children and adolescents' resiliency (Noam and Goldstein, 1998; Thomson et al., 2015) and therefore was included in the operationalization of student well-being for this study. The Optimism subscale asks students to respond to items like "More good things than bad things will happen to me" using a 5-point Likert-type scale ranging from 1 (*not at all like me*) to 5 (*always like me*). Previous research has demonstrated good internal consistency of the Optimism subscale with samples of fourth to seventh grade students (Thomson et al., 2015). The PSS-10 asks students to reflect on the past few weeks and report how often they experienced things like "felt nervous and stressed," for the Perceived Hopelessness subscale, and "Felt that you were on top of things," for the Perceived Self-Efficacy subscale. Students responded to these subscales using a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*very often*). Evidence for the reliability and validity of these subscales has been provided in previous research (Roberti et al., 2006; Liu et al., 2020) and internal consistency for Perceived Helplessness ($\alpha = 0.80$) and Perceived Self-Efficacy ($\alpha = 0.71$) subscales have been found to be good, with a sample of adolescents (Liu et al., 2020). In the present study, Cronbach's alpha was 0.77 and ordinal alpha was 0.79 for Optimism; for Perceived Helplessness Cronbach's alpha was = 0.84 and ordinal alpha was 0.85; and for Perceived Self-Efficacy, Cronbach's alpha was 0.73 and ordinal alpha was 0.74.

School Functioning

To assess two aspects of students' school functioning, students and teachers completed measures related to academics. Students responded to the 6-item Academic Goals Questionnaire (Roeser et al., 1996), which assesses academic efficacy (e.g., "I can do even the hardest schoolwork if I try") by responding to the question "How true is each statement for you?" on a 5-point Likert-type scale from 1 (*not at all like me*) to 5 (*always like me*)." Evidence for validity and reliability of the Academic Goals Questionnaire (Roeser et al., 1996; Midgley et al., 1998) has been demonstrated in previous research. For the current study, Cronbach's alpha was 0.90 and ordinal alpha was 0.91 for the Academic Goals Questionnaire.

Teachers responded to the 7-item Academic Success subscale of the Academic Performance Rating Scale (APRS; DuPaul et al., 1991). Each item is rated on a different rating scale, for example "Estimate the accuracy of completed written math work" is rated on a 5-point scale representing a range of scores from 1 (*0–49%)* to 5 (*90–100%)* whereas the item "What is the quality of this child's reading skills" is rated from 1 (*poor*) to 5 (*excellent*). The seven items are averaged to create a composite academic success score. Previous research has provided evidence of the internal consistency and validity of this measure when used with first to

sixth grade students (DuPaul et al., 1991). Cronbach's alpha for the Academic Success subscale in this current study was 0.94 and ordinal alpha was 0.94.

RESULTS

The following section first describes the development of the Caring Student-Teacher Relationship (CSTR) measure and then reports results from a series of analyses conducted to examine evidence for the validity of the inferences (Zumbo, 2007) from 222 sixth and seventh grade students' scores on this new scale. Specifically, we examined several facets of construct validity of the CSTR: 1) the dimensional structure and internal consistency of the CSTR, 2) evidence for convergent and discriminant validity of the CSTR, by examining associations between the CSTR and other constructs of teacher support, teacher burnout and mindfulness, classroom supportiveness, and student prosociality, well-being and school functioning, and 3) gender and grade differences in students' scores on the CSTR.

Caring Student-Teacher Relationship Measure Development

In an effort to establish content validity from the outset of the measure development process, several recommended scale development steps were followed (Gehlbach and Brinkworth, 2011). First, a literature review of middle school student-teacher relationships and existing student self-report measure was conducted to identify key characteristics and potential scale items (e.g., Downer et al., 2015; Gallagher et al., 2019). One intention of the present study was to create a measure directly from the voices of middle school students, therefore in a second step we examined qualitative data derived from a previous study examining teacher-student relationships in early adolescence (Buote and Schonert-Reichl, 2004; Schonert-Reichl and Buote, 2006). Specifically, in this previous study, early adolescent students were asked to list five important adults in their school and then "List all the ways in which this person is important in your life." In this study, the responses were coded in the following categories: 1) teaching instruction, 2) nurturing interactions, 3) positive characteristics about the person, and 4) other (not able to code). Given the burgeoning research on the importance of responsive and attuned student-teacher interactions (Wentzel, 1997; Braun et al., 2019) and teachers' own mindfulness and social and emotional competence (Jennings and Greenberg, 2009; Rickert et al., 2020), 17 statements were selected that aligned with the extant literature on caring student-teacher relationships (e.g., "She gives me time to cool down," "Listens to me and my problems," "She is a nice teacher").

In a third step, we rephrased the 17 statements into scale items (i.e., "My teacher..."), while trying to maintain the language of the students. Finally, these items were reviewed by eight Subject Matter Experts (SMEs) in the field of SEL and student-teacher relationships. The SME's provided feedback on redundancy of items and suggestions for important missing qualities. This resulted in the removal of one redundant item ("I can talk to my teacher about my problems") and a final pool of 16 items designed to assess nurturing, mindful student-teacher interactions and caring, compassionate teacher characteristics (see **Table 1** for items). Given that students may have positive relationships with some teachers and negative ones with others (Raufelder and Hoferichter, 2015), to ensure validity, this measure asked students to think of a specific teacher (i.e., the current teacher in the study) when responding to the items, rather than teachers in general (Raufelder et al., 2016). Students completed this scale using a 5-point Likert-type scale ranging from 1 (*not at all true*) to 5 (*very true*).

Distributions and Intercorrelations of Items on the CSTR

To examine whether this population of middle school students exhibited variability on the CSTR, we examined the means and standard deviations for each item on the scale (see **Table 2**). Results indicated there was satisfactory variability reported on the items of the CSTR as well as acceptable skewness (<2.0) and kurtosis (<4.0) for each item (Watkins, 2018).

We also examined inter-item correlations of the CSTR using the polychoric correlation matrix, which is recommended for ordinal data. Ordinal variables such as Likert-type items do not meet linearity and normality assumptions and can, consequently, negatively affect correlation coefficients and subsequent factor analysis results, therefore, the more robust polychoric correlation matrix is recommended (Fabrigar and Wegener, 2012; Gadermann et al., 2012). In order for factor analysis to be appropriate, a large number of correlations should exceed ±0.30 (Hair et al., 2010), which was the case for these data with correlations ranging from 0.50 to 0.80 (see **Table 3** for intercorrelations). These findings indicate that items of the CSTR are highly related to each other (Cohen, 1992).

Factor Analysis

In order to explore the CSTR's dimensionality and structural validity (Furr, 2011), an exploratory factor analysis (EFA) was conducted using participating students' responses to the scale (see **Table 1** for full scale). First, to ensure the data were appropriate for EFA, tests were conducted to ensure the correlation matrix was not random. Specifically, the Bartlett test of sphericity χ^2 (120) = 3,179.99, $p < 0.001$ indicated the correlation matrix diverged significantly enough from the identity matrix therefore may be factorable. Moreover, the overall Kaiser-Meyer-Olkin (KMO) value (Kaiser, 1974) was above the recommended minimum of 0.50 (KMO = 0.95) indicating sampling adequacy for EFA.

Following this, we conducted a factor analysis of the 16-item CSTR using principal axis factoring as the estimation method with oblique (Promax) rotation (Fabrigar et al., 1999; Watkins, 2018). We chose oblique rotation given the high likelihood that the factors would be correlated (Watkins, 2018). We used EFA (instead of confirmatory factor analysis [CFA]) because the factor

TABLE 1 | Caring student-teacher relationship scale (CSTR).

How true is each statement for you?	Not at all true	A little true	Somewhat true	Pretty much true	Very true
1. My teacher helps me when I'm sad.	1	2	3	4	5
2. My teacher is helpful.	1	2	3	4	5
3. I can trust my teacher.	1	2	3	4	5
4. My teacher takes care of me and the other students.	1	2	3	4	5
5. My teacher gives me respect.	1	2	3	4	5
6. My teacher listens to me and my problems.	1	2	3	4	5
7. I can talk to my teacher.	1	2	3	4	5
8. My teacher gives me time to cool down.	1	2	3	4	5
9. My teacher supports me.	1	2	3	4	5
10. My teacher treats me fairly.	1	2	3	4	5
11. My teacher is always nice to everyone.	1	2	3	4	5
12. My teacher respects people.	1	2	3	4	5
13. My teacher is kind.	1	2	3	4	5
14. My teacher is friendly.	1	2	3	4	5
15. My teacher is calm.	1	2	3	4	5
16. My teacher is caring.	1	2	3	4	5

TABLE 2 | Descriptive statistics of the CSTR.

	M	*SD*	Variance	Skewness		Kurtosis	
				Statistic	*SE*	Statistic	*SE*
1. My teacher helps me when I'm sad.	3.80	1.17	1.38	−0.73	0.17	−0.28	0.33
2. My teacher is helpful.	4.33	0.82	0.68	−1.09	0.16	0.69	0.33
3. I can trust my teacher.	4.26	0.98	0.96	−1.29	0.16	1.11	0.33
4. My teacher takes care of me and the other students.	4.34	0.85	0.72	−1.12	0.16	0.64	0.33
5. My teacher gives me respect.	4.32	0.83	0.70	−1.17	0.16	1.27	0.33
6. My teacher listens to me and my problems.	4.14	0.98	0.95	−1.01	0.16	0.54	0.33
7. I can talk to my teacher.	4.14	1.01	1.03	−1.08	0.16	0.48	0.33
8. My teacher gives me time to cool down.	3.95	0.98	0.96	−0.62	0.16	−0.23	0.33
9. My teacher supports me.	4.15	0.90	0.81	−0.83	0.16	0.02	0.33
10. My teacher treats me fairly.	4.31	0.85	0.73	−1.34	0.16	1.79	0.33
11. My teacher is always nice to everyone.	4.29	0.82	0.67	−1.09	0.16	0.96	0.33
12. My teacher respects people.	4.48	0.73	0.54	−1.44	0.16	2.22	0.33
13. My teacher is kind.	4.50	0.74	0.54	−1.74	0.16	3.97	0.33
14. My teacher is friendly.	4.56	0.67	0.45	−1.68	0.16	3.75	0.33
15. My teacher is calm.	4.36	0.82	0.67	−1.34	0.16	1.91	0.33
16. My teacher is caring.	4.49	0.75	0.57	−1.52	0.16	2.34	0.33

structure and latent variables of this newly created set of items has not been previously examined. The EFA was conducted using the *lavaan* package (Rosseel et al., 2017) and the *psych* package (Revelle, 2018) in RStudio version 1.2.5042 (R Core Team, 2017) on polychoric correlation matrices to accommodate the Likert-type data (Holgado–Tello et al., 2010; Özdemir et al., 2019).

To assist in the determination of the number of factors to retain, we conducted a principal component analysis on the polychoric correlation matrix, followed by an inspection of eigenvalues (Kaiser criterion) and scree plot. A parallel analysis (Hayton et al., 2004) was also conducted. Data were missing on one or more items for less than 2% of the sample (n = 4). Given that this represented less than 10% of the data, mean imputation was employed (Schumacker, 2015).

Dimensionality and Internal Consistency of CSTR

Theory, eigenvalues, scree plot, and parallel analysis all suggested that two factors should be retained. The percent of total variance (of the 16 items) explained by the two rotated factors was 71% (40% by Factor A and 31% by Factor B). Criteria for establishing factor adequacy was established a priori, where pattern coefficients ≥0.40 were considered salient (i.e., practically and statistically significant) (Pedhazur and Pedhazur Schmelkin, 1991; Norman and Streiner, 2014). To honor simple structure (Thurstone, 1947), items with loadings >0.40 on more than one factor were to be rejected, however, there were no items that met this criterion. Finally, theoretically meaningful factors with a minimum of three items with adequate factor loadings and internal consistency >0.70 were retained. All 16 items loaded >0.40 on one (and only one) of the

TABLE 3 | Intercorrelations between items of the CSTR using the polychoric correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item 1	—															
Item 2	0.63[a]	—														
Item 3	0.71[a]	0.70[a]	—													
Item 4	0.61[a]	0.70[a]	0.65[a]	—												
Item 5	0.66[a]	0.71[a]	0.66[a]	0.72[a]	—											
Item 6	0.75[a]	0.68[a]	0.63[a]	0.63[a]	0.71[a]	—										
Item 7	0.70[a]	0.65[a]	0.68[a]	0.65[a]	0.67[a]	0.67[a]	—									
Item 8	0.63[a]	0.58[a]	0.56[a]	0.58[a]	0.59[a]	0.63[a]	0.72[a]	—								
Item 9	0.72[a]	0.72[a]	0.65[a]	0.69[a]	0.69[a]	0.68[a]	0.78[a]	0.70[a]	—							
Item 10	0.70[a]	0.70[a]	0.63[a]	0.71[a]	0.77[a]	0.71[a]	0.76[a]	0.69[a]	0.77[a]	—						
Item 11	0.57[a]	0.63[a]	0.55[a]	0.62[a]	0.61[a]	0.58[a]	0.57[a]	0.53[a]	0.64[a]	0.67[a]	—					
Item 12	0.57[a]	0.60[a]	0.56[a]	0.61[a]	0.63[a]	0.59[a]	0.57[a]	0.53[a]	0.59[a]	0.66[a]	0.74[a]	—				
Item 13	0.60[a]	0.67[a]	0.61[a]	0.60[a]	0.66[a]	0.59[a]	0.64[a]	0.60[a]	0.67[a]	0.69[a]	0.76[a]	0.80[a]	—			
Item 14	0.57[a]	0.66[a]	0.58[a]	0.59[a]	0.65[a]	0.56[a]	0.61[a]	0.55[a]	0.63[a]	0.67[a]	0.72[a]	0.78[a]	0.82[a]	—		
Item 15	0.52[a]	0.60[a]	0.54[a]	0.59[a]	0.57[a]	0.55[a]	0.55[a]	0.50[a]	0.59[a]	0.59[a]	0.73[a]	0.73[a]	0.75[a]	0.72[a]	—	
Item 16	0.59[a]	0.64[a]	0.63[a]	0.62[a]	0.68[a]	0.63[a]	0.59[a]	0.59[a]	0.66[a]	0.67[a]	0.75[a]	0.79[a]	0.82[a]	0.79[a]	0.74[a]	—

[a]$p < 0.01$.

TABLE 4 | Items and factor loadings of the CSTR.

	Factor loading	
Item	**A**	**B**
Teacher support and attunement		
I can talk to my teacher.	**0.89**	−0.04
My teacher helps me when I'm sad.	**0.86**	−0.04
My teacher supports me.	**0.83**	0.06
My teacher listens to me and my problems.	**0.80**	0.03
My teacher treats me fairly.	**0.74**	0.16
My teacher gives me time to cool down.	**0.74**	0.03
I can trust my teacher.	**0.71**	0.09
My teacher gives me respect.	**0.68**	0.19
My teacher takes care of me and the other students.	**0.65**	0.18
My teacher is helpful.	**0.64**	0.22
Caring teacher qualities		
My teacher respects people.	0.00	**0.88**
My teacher is kind.	0.08	**0.85**
My teacher is friendly.	0.06	**0.83**
My teacher is calm.	0.00	**0.83**
My teacher is caring.	0.10	**0.82**
My teacher is always nice to everyone	0.09	**0.77**

Note: N = *222. The extraction method was principal axis factoring with an oblique (Promax with Kaiser normalization) rotation. Factor loadings above 0.40 are in bold.*

factors (see **Table 4** for all factor loadings). The two factors were also highly correlated at $r = 0.78$.

Appropriate cut-off values for fit indices of structural equation models (SEM) have been shown to depend on estimation methods and design (Xia and Yang, 2019). For the current study, a Root Mean Square Error of Approximation (RMSEA) smaller than 0.06 and a Tucker Lewis Index (TLI) of factoring reliability larger than 0.95 was taken to indicate relatively good model–data fit (Hu and Bentler, 1999; Steiger, 2007). The two-factor model for this data, therefore, showed good fit, χ^2 (89) = 169.69, $p < 0.001$; TLI = 0.97; RMSEA = 0.06, 90% CI [0.05, 0.08]. Furthermore, the root mean square of the residuals (RMSR) is 0.02 for this data, which is below 0.10, therefore indicates very good model fit (McDonald, 1985). The results from an alternative, one-factor model (TLI = 0.86; RMSEA = 0.13; RMSR = 0.06) suggest that the two-factor model is preferable.

A subscale was created for each factor by calculating the unweighted mean for the items loading above 0.40 on that factor. The first 10 items loaded onto the first latent variable, Factor A (factor loadings ranged from 0.64 to 0.89) and six items (observed variables) loaded strongly on a second latent variable, Factor B (loadings ranged from 0.77 to 0.88) (see **Table 4**). Given the complexity of each factor, a team of SMEs were again consulted and surveyed for their suggestions for factor labels. First, a qualitative feedback discussion was conducted, where all SMEs provided their insight into the themes that emerged from each factor. Second, a list of preliminary factor names was created from this discussion and distributed to each SME, with a request to rank each factor name in order of preference. Following this iterative process, two factor names emerged: *Teacher Support and Attunement* (Factor A) and *Caring Teacher Qualities* (Factor B).

Following from the principal components and factor analyses, which indicated two factors of the CSTR, internal consistency was calculated on scores of the subscales. Cronbach's alpha was 0.94 and ordinal alpha was 0.95 for Teacher Support and Attunement. For Caring Teacher Qualities, Cronbach's alpha was 0.94 and ordinal alpha was 0.95.

We also calculated the corrected item-total correlations based on the polyserial correlation matrix and the ordinal alphas-if-item-deleted (**Table 5**) for both subscales. The results indicated that in the present sample all items related highly to the corrected total subscales; Teacher Support and Attunement ranged from 0.70 to 0.85 and Caring Teacher Qualities ranged from 0.74 to 0.87. Furthermore, deleting any of the items would not improve the reliability of either subscale. These findings indicate satisfactory internal consistency of each subscale of the CSTR.

Convergent and Discriminant Validity Evidence for the CSTR

We conducted a series of correlations between the two CSTR subscales and a battery of measures, to examine convergent and

TABLE 5 | Corrected item total correlations, and ordinal alpha-if-item-deleted of items of CSTR.

	Corrected item-total correlation	Ordinal alpha-if-item-deleted
Teacher Support and Attunement		
1. My teacher helps me when I'm sad.	0.78	0.95
2. My teacher is helpful.	0.76	0.95
3. I can trust my teacher.	0.71	0.95
4. My teacher takes care of me and the other students.	0.76	0.95
5. My teacher gives me respect.	0.79	0.95
6. My teacher listens to me and my problems.	0.77	0.95
7. I can talk to my teacher.	0.80	0.95
8. My teacher gives me time to cool down.	0.70	0.95
9. My teacher supports me.	0.85	0.95
10. My teacher treats me fairly.	0.82	0.95
Caring Teacher Qualities		
11. My teacher is always nice to everyone.	0.81	0.94
12. My teacher respects people.	0.85	0.94
13. My teacher is kind.	0.87	0.94
14. My teacher is friendly.	0.83	0.94
15. My teacher is calm.	0.74	0.95
16. My teacher is caring.	0.81	0.94

TABLE 6 | Evidence of convergent and discriminant validity of the CSTR.

	Teacher support and attunement	Caring teacher qualities
Teacher support and attunement	—	0.78**
Caring teacher qualities	0.78**	—
Teacher support, SEC, and burnout		
Student report of teacher support (CASSS)	0.80**	0.67**
Student report of teacher personal support (CLM)	0.86**	0.63**
Student report of teacher SEC (TSEC)	0.73**	0.70**
Teacher report of burnout (MBI)[a]	–0.40**	–0.50**
Classroom context and prosociality		
Student report of classroom supportiveness	0.34**	0.26**
Student report of prosocial goals (social goals scale)	0.33**	0.23**
Student report of altruism	0.32**	0.19**
Teacher report of student SEC (TSCRS)	0.22**	0.16*
Well-being		
Student report of optimism (resiliency inventory)	0.36**	0.26**
Student report of perceived self-efficacy (PSS-10)	0.30**	0.24**
Student report of perceived helplessness (PSS-10)	–0.10	–0.11
School functioning		
Student report of academic efficacy (academic goals questionnaire)	0.47**	0.29**
Teacher report of academic success (APRS)	0.17*	0.06
Teacher ratings of student-teacher relationship and mindfulness		
Teacher report of student-teacher relationship closeness (STRS)	0.24**	0.13
Teacher report of student-teacher relationship conflict (STRS)	–0.17**	–0.15*
Teacher report of intrapersonal mindfulness in teaching[a]	0.22**	0.18**
Teacher report of interpersonal mindfulness in teaching[a]	0.19**	0.28*

[a]*For analyses between teacher self-report and student-rated data, student data was aggregated within each classroom to create a classroom level indicator.*

*p < *0.05.*

**p < *0.01.*

discriminant validity evidence. These associations are presented in **Table 6**. In terms of missing data for the validity constructs, participant data were retained if they responded to at least 80% of the items of a scale. Any missing data for the correlations was treated with listwise deletion.

As hypothesized, students' scores on both the Teacher Support and Attunement and Caring Teacher Qualities subscales were positively and significantly correlated with students' reports on other measures of teacher support and teacher SEC, and the effect sizes were large (>0.60). Cohen (1992) suggests that correlations

of 0.10, 0.30, and 0.50 can be interpreted as small, medium, and large effect sizes respectively. Students' scores on both subscales were aggregated at the teacher level in order to compare them to teachers' self-reports of their burnout. Students' scores on the Teacher Support and Attunement and Caring Teacher Qualities subscales were both significantly and negatively related to teachers' self-reports of their feelings of burnout, with medium to large effect sizes.

As hypothesized, students' scores on the two CSTR subscales were also positively and significantly related to student self-report measures of classroom supportiveness and student and teacher reported measures of prosociality (i.e., altruism, prosocial goals, SEC), with small to medium effect sizes. Similarly, the CSTR subscales showed significant positive correlations with students' reports of optimism and self-efficacy, with medium effect sizes, but were not significantly correlated with students' perceived helplessness. Finally, the two CSTR subscales were significantly and positively correlated with students' reports of academic efficacy, with medium effect sizes. The Teacher Support and Attunement subscale showed significant positive correlations with teachers' reports of students' academic success, with small effect sizes, but the Caring Teacher Qualities was not significantly related to academic success.

Students' scores on the Teacher Support and Attunement subscale were also positively and significantly related to teacher reports of student-teacher closeness and significantly and negatively related to conflict, with small to medium effect sizes. Students' scores on Caring Teacher Qualities were significantly and negatively related to teacher-rated conflict but not significantly correlated with teacher-rated closeness (see **Table 6**).

Students' scores on both subscales were aggregated at the teacher level in order to compare them to teachers' self-reports of their mindfulness in teaching. Results indicated significant and positive correlations between both subscales and teachers' reports of Intrapersonal Mindfulness (i.e., mindful habits within the self) and Interpersonal Mindfulness (i.e., mindful interactions between teacher and student), with small to medium effect sizes.

Gender and Grade Differences

To examine gender and grade differences in students' responses to CSTR, we performed a 2 (Grade) x 2 (Gender) analysis of variance (ANOVA) for each subscale of the CSTR. Confidence intervals (CIs) of effect sizes (η_p^2) are provided, as they are favored over retrospective power analyses and can provide additional information about significance of findings (Cohen, 1990; Hoenig and Heisey, 2001; Levine and Ensom, 2001; Nakagawa and Foster, 2004). 90% CI are recommended when using η_p^2 and are equivalent to a 95% CI around Cohen's *d*, thus were *calculated using the effectsize* package (Ben-Shacher et al., 2021) and *esc* package (Lüdecke et al., 2019) in RStudio version 1.2.5042 (R Core Team, 2017). Main effects for both gender and grade were not significant for either Teacher Support and Attunement (gender, F [1, 216] = 1.69, p =0.20, η_p^2 = 0.01, 90% CI [0.00, 0.04]; grade, F [1, 216] = 2.71, p =0.10, η_p^2 = 0.01, 90% CI [0.00, 0.05]) or Caring Teacher Qualities (gender, F [1, 216] = 0.12, p =0.73, η_p^2 = 0.001, 90% CI [0.00, 0.02]; grade, F [1, 216] = 2.15, p =0.14, η_p^2 = 0.01, 90% CI [0.00, 0.04]). Interaction effects were also nonsignificant for both subscales; Teacher Support and Attunement (F [1,216] = 1.45, p = 0.23, η_p^2 = 0.01, 90% CI [0.00, 0.04]), Caring Teacher Qualities (F [1,216] = 1.46, p = 0.23, η_p^2 = 0.01, 90% CI [0.00, 0.04]). CIs that include zero provide additional support for the non-significant conclusions.

An important next step in measure validation is examining measurement invariance (Meredith, 1993; Vandenberg and Lance, 2000) to determine if the same underlying construct is being measured across groups. However, for a multi-group CFA, as a general rule, it is recommended that there be 100 participants in each group (Kline, 2015). An *a priori* power analysis was also conducted using the *semPower* package (Moshagen and Erdfelder, 2016) in RStudio version 1.2.5042 (R Core Team, 2017), which indicated that at least 88 participants would be needed in each group (i.e., 88 boys, 88 girls) to achieve 80% power to detect small differences at $\alpha = 0.05$. Moreover, to follow an EFA with a CFA, the CFA should be conducted on a sample independent from the initial EFA to avoid model overfitting (Matsunaga, 2010; Fokkema and Greiff, 2017). Given this and the limited sample size were we to partition the data into two samples, measurement invariance analyses were not conducted for the present study.

DISCUSSION

The present study examined the factor structure, psychometric properties, and evidence for validity of a new measure of middle school students' perceptions of caring student-teacher relationships, the CSTR. There is a growing need for validated measures that assess middle school students' perspectives of student-teacher relationships. This is particularly true given the limited research that incorporates students' perceptions of caring dimensions in these relationships (Ahnert et al., 2012) and the frequent disparity found between early adolescents' perceptions and teachers' perceptions in the classroom (Koepke and Harkins, 2008; Rickert et al., 2020). Moreover, the majority of scales currently being used in research to assess middle school students' perceptions of student-teacher relationships frequently employ unvalidated sets of items, focus on broad teacher support rather than a thorough look at caring aspects of these relationships (Johnson et al., 1985; Ricard and Pelletier, 2016), and/or are not developed from the voices of students (Brinkworth et al., 2017).

The pattern of results in the present study offers preliminary evidence that the CSTR has strong psychometric properties and has utility for shedding light on student-teacher relationships in early adolescence. Specifically, our results revealed a two-dimensional factor structure for the CSTR, highlighting two important components of student-teacher relationships: Support and attunement within the student-teacher relationship (Teacher Support and Attunement) and caring qualities of the teacher themselves (Caring Teacher Qualities). This aligns with previous research that shows the importance of not only the nurturing interactions between teachers and their students, but also teachers' own characteristics they bring to the relationship (Jennings and Greenberg, 2009; Colaianne et al., 2020). Existing measures of teacher support typically ask students

to report on broader aspects of the relationship, such as how much a teacher likes them (e.g., "My teacher likes me as much as he/she likes other students"; Johnson et al., 1985) or conflict/closeness (e.g., "I easily have quarrels with my teacher") in the relationship (Koomen and Jellesma, 2015; Longobardi et al., 2016). The CSTR, however, asks students to reflect on the specific caring and responsive behaviors and qualities their teacher exhibits (e.g., "My teacher listens to me and my problems," "My teacher respects people," "My teacher gives me time to cool down").

Furthermore, analyses revealed high internal consistency and acceptable variability of the responses on the two subscales on the CSTR. In addition, the results supported our hypotheses, that the correlations between the CSTR and other measures of teacher support and teacher SEC and burnout would have the largest effect sizes, followed by moderate associations with students' prosociality, well-being, and school functioning, and small associations with teachers' ratings of relationship quality and self-reports of mindfulness. Given that the convergent connections had larger effect sizes than the discriminant relations, this provides some preliminary support for construct validity of the CSTR subscales.

First, the findings of large correlations between the CSTR subscales and other teacher support scales indicates that this new scale is comparable to other measures of teacher support but is not redundant. This provides evidence for convergent validity and supports the contention that the CSTR may indeed offer additional, unique information about middle school student-teacher relationships beyond what is currently being assessed in the field.

This study also included correlational analyses between the CSTR and teachers' self-reports of burnout, specifically a composite of emotional exhaustion and depersonalization. Results indicated moderate significant and negative correlations between teacher burnout and student reports of Teacher Support and Attunement and Caring Teacher Qualities. Due to the cross-sectional nature of this study, we cannot discern which direction this relationship occurs in – whether teacher burnout leads to less teacher attunement, support, and caring, or whether a lack of support and attunement in the student-teacher relationship has detrimental, reciprocal effects on the teacher, causing feelings of depersonalization and emotional exhaustion. Some previous longitudinal research, however, has provided some support for the former explanation. For instance, research has supported the "burnout cascade" described in Jennings and Greenberg's "Prosocial Classroom" (2009), in that higher teacher burnout earlier in the school year has been shown to lead to teachers feeling less connected to their students (Aloe et al., 2014; Dicke et al., 2014) and has been associated with poorer student well-being at the end of the year (Braun et al., 2020). These findings support the notion that valuing and fostering teachers' well-being not only has benefits for teachers but also has positive, downstream effects on student well-being and school success (Jennings and Greenberg, 2009; Jennings et al., 2017). Future research would benefit from a longitudinal investigation of the relation between the CSTR and teacher burnout.

The findings of significant associations between middle school students' perceptions of caring student-teacher relationships and students' own prosociality, well-being, and school functioning, and perceptions of classroom support provided additional evidence for convergent and discriminant validity. Moreover, this study aligns with previous research that has shown strong correlations between supportive student-teacher relationships and students' prosociality, particularly during middle school (Wentzel et al., 2010). In addition, this study corroborates previous findings of small to moderate relations between student-teacher relationships and students' resiliency (i.e., optimism, self-efficacy) (Pallini et al., 2019), academic functioning (Engels et al., 2016; Archambault et al., 2017), and classroom support (Brown et al., 2010; Cipriano et al., 2019).

Next, the finding of weak correlations between the CSTR and teacher reports of closeness and conflict in the student-teacher relationship is noteworthy. These findings align with previous research that have reported weak or non-significant correlations between early adolescents' and teacher or other perspectives of caregiver relationships (Zee and Koomen, 2017), demonstrating that early adolescent students often have a unique perception of their relationships that is less accessible to other raters. In contrast to previous research that has shown students and teachers are more likely to agree on the conflict in the relationship than the closeness (Pianta and Stuhlman, 2004; Zee and Koomen, 2017), the findings of the current study indicate the opposite: a higher correlation between student perceptions of Teacher Support & Attunement and teacher-rated closeness than with conflict. There were no differences in magnitude of correlations between closeness and conflict with Caring Teacher Qualities. This finding may be due to the CSTR measuring something more distinct from the STRS, than other measures that have been previously compared to the STRS. Moreover, the CSTR only includes positively worded items, which may be more closely related to closeness than conflict. It is also notable that the factor Caring Teacher Qualities was not significantly correlated to teacher-rated closeness but was significantly and negatively correlated to teacher-rated conflict. This finding supports previous research that has found that teachers' own characteristics (e.g., stress, self-efficacy, emotional support) account for significant variance in their perceptions of conflict in their relationships with students, over and above that which is accounted for by their reports of students' problem behaviors (Hamre et al., 2008).

Additionally, the findings of low but significant, positive correlations between CSTR subscales and teacher self-reports of interpersonal and intrapersonal mindfulness in teaching are notable. These results reflect previous research by Rickert et al. (2020) that found that teachers' self-reports of their mindful experiences were not as often reflective of their outward expressions of mindful behaviors, as reported by students and trained observers. Although the CSTR does not explicitly claim to measure teacher mindfulness, many characteristics of mindful teaching (i.e., calm, clear, kind; Rickert et al., 2020) were included in the items as they were considered important for caring and attuned student-teacher relationships (e.g., "my teacher is calm," "My teacher gives me time to cool down"). As Rickert et al. (2020)

mention in their discussion, the finding of a relation between teacher reported mindfulness and students' perceptions of a mindful and/or caring student-teacher relationship supports the burgeoning research that shows fostering teachers' mindfulness has the potential to improve relationships and climate in the classroom (Eccles and Roeser, 2011; Braun et al., 2019).

With regard to the third aim and final piece of validity evidence, no gender or grade differences were found for either subscale of the CSTR. This finding regarding gender is at odds with some of the research showing boys and girls differ in their relationships with their teachers, namely around closeness and conflict, as measured by the teachers (Pianta, 2001; Koepke and Harkins, 2008; Zee and Koomen, 2017) and some research on students' perceptions of teacher support (Wentzel et al., 2010). This finding does agree with some previous research that has found no gender difference in students' perceptions of teacher mindfulness – calm, clarity, and kindness – in the student-teacher relationship (Colaianne et al., 2019), which are also aspects assessed in the new CSTR measure. These findings highlight the importance of investigating students' own perceptions of their relationships with their teachers as they often differ from the perspectives of the teachers. For instance, some research has demonstrated that teachers, particularly middle school teachers, may have inherent and differing biases towards each gender of student (Saft and Pianta, 2001), which may contribute to their contrasting evaluations of the quality of their relationships with students. In particular, teachers tend to both report relationships with boys as more conflictual (Koepke and Harkins, 2008) and view boys as more aggressive (Miller et al., 2009; Spilt et al., 2010). It has been proposed, however, that this could be due to the finding that boys are more likely to express aggression overtly (e.g., physically; Noakes and Rinaldi, 2006), whereas aggression amongst girls is more often expressed in covert verbal or social ways (Spilt et al., 2010), which may be less salient to an observer. Future validation studies of the CSTR should include tests of measurement invariance (Vandenberg and Lance, 2000), particularly as it pertains to gender, to investigate if the scale functions and is interpreted the same way for every gender identity.

The finding of no significant main effects for grade for either subscale is in contrast with previous research that shows a decline in closeness and quality of student-teacher relationships as students progress from elementary to middle and secondary school (Reddy et al., 2003; Eccles and Roeser, 2011). This relationship, however, has typically been investigated through teachers' reports of the student-teacher relationship, whereas there is a scarcity of investigations and incongruence of findings regarding grade differences of student perceptions of student-teacher relationships (Malecki and Demaray, 2002; Downer et al., 2015). Moreover, the majority of this previous research has investigated changes in student-teacher relationships during transitions from elementary schools to middle or secondary schools (Eccles et al., 1993), which comes with many contextual and pedagogical changes (e.g., more teachers, larger classes), whereas this study only compared across two grades within middle school. Moreover, this study involved combined grade classrooms, which incorporates both sixth and seventh grade students within the same class. This may have contributed to the small effect size found for grade-level differences, given that both grades shared the same classroom teacher. However, future studies should conduct measurement invariance analyses for grade and continue to investigate the utility of the CSTR longitudinally and across a wider range of grades.

Strengths and Limitations

The results of this study provide some initial support for a new psychometrically sound instrument that can provide new insight into middle school students' perceptions of caring student-teacher relationships. The findings suggest that the CSTR is an appropriate measure to use with middle school students and there is some preliminary evidence that students' perceptions of attunement, support, and caring from their teachers are related to better classroom support and student prosociality, well-being, and school functioning. The results also support previous research by demonstrating that early adolescents have a unique perspective to offer when evaluating relationships in the classroom and these perceptions may have an important impact on their own social, emotional, and academic well-being.

One primary strength of this study is the content validity and developmental appropriateness of the items in the measure. First, the original pool of items was developed using language generated from middle school students themselves and then reviewed and modified by a team of SMEs. Second, the majority of items asked students to report on their own interpretations and experiences with teachers, rather than asking them to report on the perspectives of their teacher or classmates (e.g., "My teacher has close relationships with students in this class") which may be a challenging cognitive task for this age group. To ensure variability and the inclusion of students' perceptions of the wider classroom context, some items went beyond students' own experiences, but were deemed easily observable ("My teacher is always nice to everyone," "My teacher respects people").

Another strength of this study includes the multiple methods used to investigate validity evidence for this measure, including student self-report measures, teacher-ratings of students, and teacher self-report measures. In this study, we included many constructs that other investigations of comparable scales also used for convergent and discriminant validity such as academic efficacy (Rickert et al., 2019) and prosociality (Koomen and Jellesma, 2015).

Furthermore, this study took place midway through the school year, which ensured students and teachers had sufficient time together prior to data collection to establish their relationships and reliably report on them. There is also moderate generalizability of the findings due to the relatively large and diverse sample of students, representative of Western Canada. A number of students did not have complete data for the CSTR and thus were excluded from analyses. A comparison between the excluded students and the participating sample revealed no significant demographic (i.e., gender, family composition, first language) differences, however, it is possible the excluded

students may have provided different responses to the CSTR. Thus, there is a small group of students for whom we do not know if the current findings apply.

It is important to highlight the unique context of the present study, both as a strength and limitation. First, most measures of students' perceptions of their student-teacher relationships have been developed within an American context. This study provides insight into the context of middle schools in Canada and developed a measure particularly relevant to this setting. Second, as mentioned, BC where this study took place, has a dedicated focus on fostering students' social responsibility, promoting SEL, and creating caring schools. Moreover, the teachers that participated in this study had voluntarily signed up for this research about a social and emotional learning program. Therefore, the context of the participating schools and the teachers and students may be particularly primed for caring student-teacher relationships. Thus, it is possible that the factor structure and scores on the CSTR, as well as the associations with gender, grade, and other SEL constructs, could be different in other jurisdictions with a lesser focus on these qualities.

An additional limitation of this study is the cross-sectional and correlational design, which limits some of the interpretations that can be made from these findings, such as predictive validity, stability of scores (e.g., test-retest reliability), or development of students' perceptions over time. For example, the findings indicate significant relations between students' perceptions of teacher support, attunement, and caring to measures of classroom supportiveness as well as student prosociality, well-being, and school functioning, however, longitudinal studies are needed to infer any causal relationships among these constructs. Despite these limitations, this study provides some preliminary support for the reliability and validity of the CSTR for use with middle school students. In doing so, this study reinforces the need to continue to include student voices and perceptions when studying relationships in the classroom.

Future Directions and Educational Implications

Validation is considered an ongoing, iterative process (Hubley and Zumbo, 2011), therefore additional validation research on the CSTR is needed, particularly with a broader age range, more diverse samples, and in the context of longitudinal research. For instance, the population of BC consists predominantly of people who report their ethnic origin as European or Asian, with smaller proportions of those who identify as Black, Indigenous Peoples, and Latinx. Given the systemic oppression and disparate experiences of underrepresented groups, it is essential to examine this measure with additionally diverse samples, particularly with a greater proportion of Black, Latinx, and Indigenous Peoples populations. Moreover, it would be important to cross-validate this EFA with a confirmatory factor analysis and additional diverse samples.

In addition, we did not have sufficient power to partition our dataset and conduct measurement invariance analyses (i.e., Multiple Group Confirmatory Factor Analysis [MGCFA]) on a subsample that was independent from that which was used for the EFA. Future studies utilizing the CSTR should further explore validity evidence of this tool using both confirmatory factor analyses and measurement invariance analyses. Given the novel aspect of this measure and the paucity of available measures that assess middle school students' perceptions of their relationships with their teachers, it would also be valuable to investigate the cognitive processes students utilize when responding to the CSTR (i.e., through think-aloud protocols) (e.g., Gadermann et al., 2011).

The current findings provide support for the importance of student-teacher relationships in middle school and provides a psychometrically sound tool for assessing students' perceptions of caring dimensions of these relationships. Having such a measure is not only valuable for theoretical investigations, but it may also prove useful for schools looking to internally evaluate their own school cultures. Furthermore, although a handful of measures exist that assess students' perspectives of broad teacher support (Ricard and Pelletier, 2016; Brinkworth et al., 2017), none to date focus on early adolescents' perceptions of specific aspects of teacher caring and attunement. This type of in-depth measure may be informative for interventions and teacher professional development that aim to improve student-teacher relationships and classroom contexts. Specifically, rather than only measuring teachers' perceptions of the impact of such interventions, this measure provides a means through which to investigate how SEL interventions may change students' perceptions of their relationships with their teachers. Given the common discrepancy between teacher and student perceptions of their relationships (Zee and Koomen, 2017; Prewett et al., 2019), this is an important perspective to evaluate in intervention research. Moreover, some research has shown the effectiveness of some of the existing, broad teacher support measures in predicting academic-related student outcomes (Wang and Eccles, 2012; Scales et al., 2020), however, fewer have shown strong relations with adolescent students' social and emotional outcomes (Brinkworth et al., 2017; Colaianne et al., 2020). Given the growing need to foster current and future early adolescents' social and emotional competencies in school (Greenberg et al., 2017), there may be particular relevance in being able to assess the qualities of the student-teacher relationship that are most related to these students' outcomes, particularly from the unique perspective of the students themselves.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because of the nature of this research and age of participants, participants of this study did not agree for their data to be shared publicly. Requests to access the datasets should be directed to JW, jenna.whitehead@ubc.ca.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Clinical Research Ethics Board at the University of British Columbia. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by JW and KS. The first draft of the manuscript was written by JW and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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BRIEF RESEARCH REPORT
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Teacher Satisfaction in Relationships With Students and Parents and Burnout

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In the educational field, the role of the support component of the teacher-student relationship is well known, while the role of the teacher-student relationship on teacher burnout is a more current field of investigation. Several studies on the sources of burnout have recently focused on job satisfaction and teacher-student satisfaction. However, the role of teacher-parent satisfaction is still little explored in this field. Moreover, in the Italian school context, students' seniority and educational level require further investigation, as the average age of teachers is particularly high compared to their European colleagues. The present study aims to examine in a sample of 882 Italian teachers the presence of burnout and differences in teacher-student and teacher-parent satisfaction between primary (students aged 6–10 years) and lower secondary (students aged 11–13 years) teachers. A further objective is to test whether teacher-student and teacher-parent satisfaction and seniority can be significant predictors of burnout. Teachers completed the Job Satisfaction Scale (MESI) and the MBI-Educators Survey and the data were then processed using MANOVA and multiple linear regression analysis. The results revealed that 8.2% of the teachers suffered from burnout and lower secondary teachers showed the highest levels of emotional exhaustion, depersonalisation and reduced personal accomplishment. Predictors of emotional exhaustion were job dissatisfaction and seniority, and predictors of depersonalisation were job dissatisfaction and teacher-student dissatisfaction. Finally, predictors of personal accomplishment were also teacher-parent satisfaction and teacher-student satisfaction. The implications of these findings for practice and research are discussed in this article.

Keywords: teacher-student relationship, educational psychology, school psychology, teacher satisfaction, teacher burnout

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INTRODUCTION

Since the 1990s, new theoretical perspectives in education (Bruner, 1990; Lave and Wenger, 1991; Ford and Lerner, 1992; Cole, 1998) have emphasised the relational and contextualistic component of educational systems, and with the studies of Pianta (1999), the teacher-student relationship has become an independent field of investigation in educational psychology. Through various research findings in this area, it has been shown that teacher relationships can affect the quality of learning (Howes and Hamilton, 1992; Pianta, 1999; Darling-Hammond, 2006)

and can alter pupils' success- or failure-oriented trajectories (Birch and Ladd, 1996; Fraire et al., 2008; Kuriloff et al., 2019).

Several studies have also shown that the teacher-student relationship is able to influence teachers' well-being and psychological health (Friedman, 2006; Spilt et al., 2011). The relationships that teachers establish with their students can be a source of teacher satisfaction and motivation (Hargreaves, 2000; Quan-McGimpsey et al., 2013) or a source of stress and burnout (Friedman, 2006; Corbin et al., 2019). One of the most prominent definitions describes burnout 'as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with people in some capacity' (Maslach et al., 1996, p. 4). Emotional exhaustion is a feeling of tiredness and fatigue at work that leads to a feelings of reduced personal accomplishment. Depersonalisation results from attitudes of refusal to relate to the clients/patients or students and is associated with ineffective and impersonal responses to their requests (Maslach et al., 1996). Recent studies on teacher burnout consider student misbehaviour one of the main sources of the syndrome (Aloe et al., 2014) and identify the teacher-student relationship as a possible mediator between unruly student behaviour and teacher burnout (Aldrup et al., 2018). Other studies particularly focus on the conflictual nature of the teacher-student relationship as being responsible for the syndrome (Evans et al., 2019). Aldrup et al. (2018) point out that the positive quality of the teacher-student relationship is able to positively affect the increase in teachers' well-being and work enthusiasm and protect against the potential for conflict in the teacher-student relationship (Evans et al., 2019; Klassen et al., 2012). In a recent study, Corbin et al. (2019) explored relational conflict and closeness using the teacher-student relationship scale (Pianta, 2001) in relation to burnout (Maslach et al., 1996). This study showed that relational conflict with students is able to predict teachers' emotional exhaustion and relational closeness is able to predict personal accomplishment. Taken together, these findings are among the first to empirically support the theoretical model outlining the importance of student-teacher relationships for teacher well-being (Spilt et al., 2011).

In order to further investigate this line of research aimed at exploring the relationship between the quality of the educational relationship and burnout, this study investigated the role of teacher-student satisfaction and teacher-parent satisfaction to see if they could be considered significant predictors of the syndrome. Indeed, there are still few studies investigating this specific dimension of job satisfaction as a source of teacher burnout (Skaalvik and Skaalvik, 2009).

Job satisfaction is a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences (Locke, 1969); it is an emotional state of well-being when there is correspondence between an individual's characteristics (e.g., needs, expectations, and preferences) and the benefits that derive from their performances at work (Skaalvik and Skaalvik, 2010). Evans (1997) describes job satisfaction as a state of mind determined by the extent to which the individual perceives her/his job-related needs to be met. In the field of job satisfaction studies, Spector (1997) describes job satisfaction as the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs. Skaalvik and Skaalvik (2009) showed that burnout is associated with low teacher job satisfaction. Corbin et al. (2019), in a sample of German primary school teachers, highlighted the role of teacher-student relationships in predicting teachers' personal emotional burnout. Velasco et al. (2013), in a sample of lower and upper secondary school teachers from northern Italy, also highlighted the relationship between job satisfaction and Burnout, showing a strong influence of social support on teachers' job satisfaction and only a weak influence of managing disciplinary problems with students on burnout levels. Skaalvik and Skaalvik (2009) pointed out instead that negative relationships with students and students' parents and lack of social support can influence teachers' low job satisfaction and burnout onset. In considering the teacher-student and teacher-parent relationship, a variable that requires particular attention is the school level. Some studies tend in this regard to highlight the presence of higher levels of burnout among secondary school teachers working with adolescents than among teachers working at primary school level (Quattrin et al., 2009; Vercambre et al., 2009; Betoret and Artiga, 2010; Ullrich et al., 2012; Hall-Kenyon et al., 2014), while the opposite was found in other studies (Tatar and Horenczyk, 2003; Kokkinos, 2006; Tsigilis et al., 2011). Several studies conducted in Italian secondary schools tend to underline the greater conflictual nature of the relationship between teachers and pre-adolescent students, especially in the presence of unruly, turbulent, hyperactive and demotivated student behaviour in overcrowded classes (Di Pietro and Rampazzo, 1997; Pinelli et al., 1999). Some research also highlights a general discomfort in Italian secondary school teachers, which is associated with a representation of their work as predominantly individual and solitary (Buonomo et al., 2017). This would seem to be in line with their university training, which is less focused on supervision and collaboration with colleagues than primary school teachers.[1] In addition to the school factor, another aspect that constitutes a peculiarity in Italy is the age of teachers, as the percentage of those over 50 is exceptionally higher than in other European countries. Data published by the Ministry of Education in Italy in 2016/2107 show that the average age of Italian teachers is around 51 years old and the regions where the oldest teachers work are in the south where 44.2% of teachers are 54 years old (OECD, 2019). Several studies have shown an age-related increase in burnout (Anastasiou and Belios, 2020; Park and Shin, 2020; Luisa et al., 2020; Polatcan et al., 2020) and in particular an increase in levels of emotional exhaustion (Pedditzi et al., 2020); other studies, in contrast, have shown that some veteran teachers can achieve fair levels of job fulfilment (Anderson, 2000; Luisa, 2015). These contradictory results made it necessary to explore seniority in order to understand the possible role of teaching experience. Here again, however, the literature shows that the data are not always consistent. Some research points to a greater vulnerability to burnout occurring when seniority of service

[1]Primary school teacher training is regulated by Ministerial Decree 249/2010 and secondary school teacher training by the more recent Legislative Decree 59 of 2017.

increases due to limited energy and resources (Zavidovique et al., 2018); other research, however, notes that greater teacher experience may be associated with greater satisfaction (Veldman et al., 2013) and commitment (Ryan et al., 2017; Lowe et al., 2019). Veldman et al. (2016) also showed that in veteran teachers, the job satisfaction was positively related to the extent to which their aspirations in teacher-student relationships had been realized.

Given the not always unambiguous results concerning the above variables and their relationship with burnout, the present study aims to:

1. verify the possible presence of burnout in a sample of Italian teachers from central and southern Italy;
2. verify whether there are significant differences in burnout between primary school teachers working with children between 6 and 10 years old and lower secondary school teachers working with preadolescents;
3. test whether there are significant differences in job satisfaction and teacher-student and teacher-parent satisfaction between primary and secondary teachers;
4. verify whether teacher satisfaction and in particular teacher-student and teacher-parent satisfaction and seniority of service can be significant predictors of burnout, in its components of emotional exhaustion, depersonalisation and reduced personal accomplishment.

MATERIALS AND METHODS

Participants

882 Italian teachers participated in the research: 52.4% from primary schools ($N = 462$) and 47.6% from secondary schools ($N = 420$). In regard to gender and age, 84.4% of the teachers were female ($N = 744$) and only 15.6% were male, all aged between 27 and 63 years (mean = 47.5, SD = 7.98). All the teachers worked in public schools and came from central and southern Italy (18.5% from Rome; 30% from Sassari, 20.2% from Bari; and 31.3% from Cagliari). The length of service ranged from 1 to 39 years (mean = 19.56, SD = 9.3). Participants received permission from their schools to take part in the research and completed the questionnaire individually in a paper-pencil survey during breaks at school. The sample obtained was therefore one of convenience and the response rate to the questionnaire was 75% (out of 1,200 distributed, 902 were completed, of which 882 were valid). The study was conducted according to the APA (American Psychological Association, 2002) guidelines for ethical research in psychology and the Ethics Committee of the University of Cagliari approved the research (UniCa no. 0040431, 13/02/2020 - II/9).

Measures

The questionnaires used were: Job Satisfaction Scale (Moè et al., 2010) and Maslach Burnout Inventory-Educators Survey, MBI-ES (Maslach and Jackson, 1986) in the Italian version by Sirigatti and Stefanile (1993).

The job satisfaction scale derived from MESI – Motivations, Emotions, Strategies, Incremental beliefs of teaching (Moè et al., 2010) assesses general job satisfaction in teaching and consists of 5 items (Alpha = 0.84) such as: "I am satisfied with my job" and "My working conditions are excellent." The items are rated on a 7-point Likert scale from strongly disagree (1) to strongly agree (7). The psychometric characteristics of the Italian version of the Job Satisfaction Scale are reported in Moè et al. (2010).

In order to deepen the analysis of teachers' satisfaction regarding specific relationships with students and parents, two more *ad hoc* items were constructed using a 7-point Likert scale (1 = strongly dissatisfied; 7 = fully satisfied). The items are: "I feel satisfied with my relationship with students" and "I feel satisfied with my relationship with parents" and were considered for a separate integrative evaluation with respect to the other sets of questions.

The MBI-ES (Maslach Burnout Inventory-Educators Survey by Maslach and Jackson, 1986) consists of 22 items assessable on a 6-point Likert scale and evaluates emotional exhaustion, depersonalisation, and personal accomplishment (Sirigatti and Stefanile, 1993). MBI-ES maintains its specificity for analysing teachers' burnout. The MBI consists of 22 items and the frequency of responses was tested using a 6-point response method, where the extremes are defined by never (0) and every day (6). The scales forming the MBI are as follows:

- Emotional Exhaustion (EE), which examines the feeling of being emotionally drained and exhausted by one's work (9 items such as: "I feel tired when I get up in the morning and have to face another day of work" and "I feel exhausted by my work"; Alpha = 0.87).
- Depersonalisation (DP), which measures a cold and impersonal response towards service users (5 items such as: "I seem to treat some students as if they were objects" and "I do not really care what happens to some students"; Alpha = 0.71).
- Personal Accomplishment (PA), which assesses the feeling of one's competence and the desire to succeed at work (eight items such as: "I feel full of energy" and "I have achieved many valuable things in my work"; Alpha = 0.76).

High scores on the Emotional Exhaustion (EE) and Depersonalisation (DP) scales and low scores on the Personal Achievement (PA) scale demonstrate a high degree of burnout. The psychometric characteristics of the Italian version of the MBI-ES are reported in Sirigatti and Stefanile (1993).

Data Analysis

In the first phase of the work, reliability checks were carried out on the scales using Cronbach's Alpha. Subsequently, to identify burnout condition, we calculated the frequency of subjects with a combination of high levels of Emotional Exhaustion, Depersonalisation, and low Personal Accomplishment scores, as suggested by the MBI-ES coding manual for Italy (Sirigatti and Stefanile, 1993). To highlight the differences in burnout related to school (primary and secondary), the MANOVA was applied on the dependent variables exhaustion,

depersonalisation and personal fulfilment. Then the One-Way ANOVA was applied to find out the specific effects on the individual variables. The MANOVA was also used to test the effect of school (primary and secondary) on the teacher satisfaction variables (job satisfaction, teacher-student satisfaction, and teacher-parent satisfaction) and then the One-way ANOVA was applied with the specific variables. Pearson's bivariate correlational analysis was then calculated to check the correlations between the variables considered (burnout scales, satisfaction scales and seniority) and in view of the regression analysis all collinearity checks were performed. Finally, multiple linear regression analysis (enter method) was carried out in order to identify whether job satisfaction, teacher-student satisfaction, teacher-parent satisfaction and seniority could be considered significant predictors of teacher emotional exhaustion. The same procedure was then applied with the same predictors[2] to the criterion variables of depersonalisation and then personal fulfilment. The statistical significance was always set at $p < 0.01$.

RESULTS

Scale Reliability

The reliability of the MBI scale was calculated using Cronbach's alpha coefficient. The data on the MBI were as follows: Emotional Exhaustion (nine items: $\alpha = 0.86$), Depersonalisation (five items: $\alpha = 0.75$), Personal Accomplishment (eight items: $\alpha = 0.80$). The reliability of the satisfaction scale (5 items) was $\alpha = 0.76$.

Burnout Levels

Of the interviewed teachers, 29.9% ($n = 264$) demonstrate a high level of emotional exhaustion; 33.8% ($n = 298$) have a high level of depersonalization and 28.3% ($n = 250$) show a low level of professional personal achievement. Meeting all the conditions to be diagnosed at the highest level of the syndrome (high scores simultaneously in EE and DP and low scores in PA), 8.2% ($n = 72$) were found to possess burnout. Most of these teachers were female (75%), with 65.3% from lower secondary schools and 34.7% from primary schools.

School Level and Burnout

MANOVA has shown that there was a statistically significant difference in burnout based on a teacher's school, F (3, 878) = 5.277, $p < 0.001$; Wilk's $\Lambda = 0.982$, partial $\eta^2 = 0.018$.

The one-way ANOVA conducted subsequently to assess the effect of school level (primary and lower secondary) on emotional exhaustion showed that [F (1, 882) = 7.472; $p < 0.01$] lower secondary teachers were at greater risk of emotional exhaustion (Mean = 20.11, SD = 12.16, $n = 420$) than primary teachers (Mean = 18.04, SD = 10.27, $n = 462$). We also found that [F (1, 882) = 9.44; $p < 0.01$] lower secondary teachers were more depersonalised (Mean = 4.07, SD = 5.07, $n = 420$) than their primary colleagues (Mean = 3.08, SD = 4.49, $n = 462$). Finally, it was found that primary school teachers (Mean = 38.40, SD = 7.53, $n = 462$) were more accomplished [F (1, 882) = 11.416; $p < 0.01$] than secondary school teachers (Mean = 36.60, SD = 8.22, $n = 420$).

School Level and Teacher Satisfaction

MANOVA has shown that there was a statistically significant difference in teacher satisfaction based on a teacher's school, F (3, 878) = 17.511, $p < 0.0005$; Wilk's $\Lambda = 0.944$, partial $\eta^2 = 0.056$.

The one-way ANOVA subsequently also showed that [F (1, 882) = 40.87; $p < 0.01$] lower secondary teachers (Mean = 4.85, SD = 1.02, $n = 420$) were less satisfied at work than their primary colleagues (Mean = 5.27, SD = 0.90, $n = 462$). Also with regard to teacher-student satisfaction, the ANOVA showed that [F (1, 882) = 24.14; $p < 0.01$] lower secondary teachers (Mean = 5.55, SD = 1.24, $n = 420$) were less satisfied with their students than primary teachers (Mean = 5.96, SD = 1.14, $n = 462$). There was no significant effect of school level (primary and secondary) on teacher-parent satisfaction [F (1, 882) = 5.32; $p > 0.01$, n.s.].

Correlations

The correlations between burnout scales, satisfaction and seniority of teachers are shown in **Table 1**.

The correlations between burnout scales (EE, DP, and RP) are significant and overall good. As expected, they are positive between emotional exhaustion and depersonalisation and negative between these scales and personal accomplishment. Correlations are moderate and negative between job satisfaction and burnout. With regard to teacher-student satisfaction, a good positive correlation is observed with job satisfaction and teacher-parent satisfaction. The correlation between teacher-student satisfaction and emotional exhaustion is negative and moderate, as is the correlation with depersonalisation. As far as teacher-parent satisfaction is concerned, there is a good positive correlation with job satisfaction and teacher-student satisfaction. Finally, with regard to seniority, a positive correlation emerges only with emotional exhaustion.

Multiple Linear Regression Analysis

Predictors of Emotional Exhaustion

The following are the results of the multiple linear regression analysis (**Table 2**) carried out using emotional exhaustion as the criterion variable and job satisfaction, teacher-student and teacher-parent satisfaction and length of service as predictors (enter method).

Job satisfaction ($\beta = -0.376$; $t = -8.108$; Sig < 0.01) and length of service ($\beta = 0.096$; $t = 3.035$; Sig < 0.01) are significant predictors of emotional exhaustion (R^2 adjusted = 0.134; $F = 35.158$; Sig = 0.0001).

Predictors of Depersonalisation

The results of the multiple linear regression carried out to highlight the significant predictors of depersonalisation are shown in **Table 3**.

The predictors of depersonalization (R^2 adjusted = 0.167; $F = 45.244$; Sig = 0.0001) are job satisfaction ($\beta = -0.230$;

[2]Gender was not included as a predictor because the sample is predominantly female and results on this variable vary significantly between countries in relation to gender egalitarianism (García-Arroyo et al., 2019).

TABLE 1 | Pearson correlations.

		EE	DP	PA	JS	TSS	TPS	S
Emotional exhaustion – EE	Pearson	1						
	Sig.	.						
Depersonalisation – DP	Pearson	0.467**	1					
	Sig.	0.000	.					
Personal accomplishment – PA	Pearson	−0.342**	−0.436**	1				
	Sig.	0.000	0.000	.				
Job satisfaction – JS	Pearson	−0.358**	−0.387**	0.387**	1			
	Sig.	0.000	0.000	0.000	.			
Teacher-student satisfaction TSS	Pearson	−0.240**	−0.363**	0.370**	0.681**	1		
	Sig.	0.000	0.000	0.000	0.000	.		
Teacher-parent satisfaction TPS	Pearson	−0.217**	−0.338**	0.383**	0.670**	0.683**	1	
	Sig.	0.000	0.000	0.000	0.000	0.000	.	
Seniority of service S	Pearson	0.108**	0.013	0.055	−0.029	−0.056	0.035	1
	Sig.	0.001	0.702	0.102	0.391	0.094	0.300	.

Sig (2-tailed) – $N = 882$

**$p < 0.01$.

TABLE 2 | Regression analysis.

Scales	Beta	*t*	Sig
Job satisfaction	−0.376	−8.108	**0.0001**
Teacher-student satisfaction	0.001	−0.003	0.997 n.s.
Teacher-parent satisfaction	0.031	0.663	0.508 n.s.
Seniority of service	0.096	3.035	**0.002**
Model's fit	$R = 0.372$	$R^2 = 0.138$	R^2 adjusted = 0.134
$p < 0.01$	$N = 881$	$F = 35.158$	**Sig = 0.0001**

Criteria: emotional exhaustion. Bold values: significant values for $p < 0.01$.

$t = -5.069$; Sig < 0.01) and teacher-student satisfaction (β = −0.151; $t = -3.258$; Sig < 0.01).

Predictors of Personal Accomplishment

The multiple linear regression analysis finally carried out to identify the predictors of teachers' personal accomplishment among the variables of job satisfaction, teacher-student and teacher-parent satisfaction and seniority, yielded the following results presented in **Table 4**.

Job satisfaction (β = 0.188; $t = 4.174$; Sig < 0.01), teacher-student satisfaction (β = 0.134; $t = 2.916$; Sig < 0.01), and teacher-parent satisfaction (β = 0.164; $t = 3.610$; Sig < 0.01) are significant predictors of teachers' personal accomplishment (R^2 adjusted = 0.184; $F = 50.810$; Sig = 0.0001).

DISCUSSION

The results of this study revealed that 8.2% of the Italian teachers in the sample were suffering from burnout. Specifically, 29.9% had a high level of emotional exhaustion (as many as 264 teachers) and 33.8% had high depersonalisation scores (as many as 298 teachers). These results confirm once again that the professional category of teachers is at risk of burnout.

The comparison between primary and secondary school teachers shows that secondary school teachers are more at risk of burnout than primary school teachers. They were also more dissatisfied with their work and the teacher-student relationship. As already found in other research (Quattrin et al., 2009; Ullrich et al., 2012; Hall-Kenyon et al., 2014), there is evidence that working with secondary school students tires teachers more than at primary school level. Teacher-student dissatisfaction could therefore be associated with teachers' difficulties in dealing with pre-adolescent students. However, given the complexity of the Italian school context, a multiplicity of other interacting relational and organisational factors (Buonomo et al., 2017; Pedditzi and Marcello, 2018) should also be taken into account.

In contrast, no difference was observed between primary and secondary teachers regarding satisfaction with the teacher-parent relationship. This finding, which could be further explored with qualitative research methods, highlights that the teacher-parent relationship may be an under-utilised psychosocial resource at school for promoting well-being.

Among the predictors of emotional exhaustion, multiple linear regression analysis revealed job dissatisfaction and seniority of service, confirming previous research pointing to an increase in burnout with teachers' length of service (Zavidovique et al., 2018). These findings are also in line with previous research findings on teachers' age (Pedditzi et al., 2020; Polatcan et al., 2020; Park and Shin, 2020; Anastasiou and Belios, 2020) and show an increase in teachers' emotional exhaustion over time.

The predictors of depersonalisation were found instead to be dissatisfaction in the teacher-student relationship and job dissatisfaction. This result is very important because it confirms that teacher-student dissatisfaction contributes to depersonalisation. The applicative implications of this result indicate the possibility of intervening in the teacher-student relationship to improve satisfaction levels and prevent depersonalisation.

Teacher-student satisfaction has also been identified as a predictor of personal accomplishment, along with job satisfaction and teacher-parent satisfaction. From the perspective of burnout prevention, it is therefore more important than ever to promote

TABLE 3 | Regression analysis.

Scales	Beta	*t*	Sig
Job satisfaction	– 0.230	– 5.069	**0.0001**
Teacher-student satisfaction	– 0.151	– 3.258	**0.001**
Teacher-parent satisfaction	–0.080	–1.751	0.080 n.s.
Seniority of service	0.001	0.017	0.987 n.s.
Model's fit	$R = 0.414$	$R^2 = 0.171$	R^2 adjusted = 0.167
$p < 0.01$	$N = 881$	$F = 45.244$	**Sig = 0.0001**

Criteria: depersonalisation. Bold values: significant values for $p < 0.01$.

TABLE 4 | Regression analysis.

Scales	Beta	*t*	Sig
Job satisfaction	0.188	4.174	**0.0001**
Teacher-student satisfaction	0.134	2.916	**0.004**
Teacher-parent satisfaction	0.164	3.610	**0.0001**
Seniority of service	0.062	2.063	0.042 n.s.
Model's fit	$R = 0.434$	$R^2 = 0.188$	R^2 adjusted = 0.184
$p < 0.01$	$N = 881$	$F = 50.81$	**Sig = 0.0001**

Criteria: personal accomplishment. Bold values: significant values for $p < 0.01$.

the development of good relationships with parents and the school components that represent them and to adopt an ecological and systemic view that values all educational relationships.

This study therefore, on the one hand, confirms previous research findings on the relationship between job dissatisfaction and burnout (Skaalvik and Skaalvik, 2009; Molero Jurado et al., 2019; Robinson et al., 2019) and on the other hand, highlights original research findings regarding the predictive value of teacher-student satisfaction on depersonalization and of teacher-parent relationships on personal fulfilment.

However, it is important to consider, among the limitations of this research, the fact that teacher-student and teacher-parent satisfaction are measured through single items and therefore, in a future perspective, it is necessary to deepen these dimensions with the parallel use of Pianta's Teacher Student Relationship Scale, through a longitudinal and experimental design, in order to also capture also possible burnout development phases. It is also necessary to remember that the results of this research are specific to the sample tested and cannot be generalised to all teachers. In fact, the use of convenience samples can lead to distortions in the selection of the group, increasing the probability that the participants are those most likely to answer the questionnaire. A further limitation of our study is that all data are self-reported and therefore not completely objective. However, this study has strengths such as the large sample size and depersonalisation data, which in our research showed acceptable values of internal consistency of the scale.

These data allowed us to analyse burnout in relation to teacher-student satisfaction, taking into account all dimensions of Maslach's model, and not only the dimensions of emotional exhaustion and personal fulfilment as in previous research (Corbin et al., 2019).

The practical implications of this study relate to the possibility of designing teacher training and burnout prevention activities aimed at improving teacher-student and teacher-parent relationships to promote the well-being of teachers and the entire school community.

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 Cagliari (UniCa no. 0040431, 13/02/2020 - II/9). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MP designed and wrote the study. MN supervised the data collection. EN supervised the statistical analysis. All authors contributed to the article and approved the submitted version.

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Parental Punishment and Adolescents' Loneliness: A Moderated Mediation Model of General Self-Concept and Teacher–Student Relationships

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Background: Loneliness adversely affects physical and mental health; therefore, it is necessary to explore its related influencing factors and mechanisms. This study investigated the mediating role of general self-concept in the association between parental punishment (PP) and adolescent loneliness and as well as the moderating role of teacher–student relationships (TSR) in Chinese students.

Methods: Data were obtained from 1,169 Chinese students (10–18 years old) using several self-report questionnaires: the Egna Minnen av Barndoms Uppfostran (EMBU), Self-Description Questionnaire (SDQ), Teacher–Student Relationships Scale (TSR), and UCLA Loneliness Scale. Data were analyzed with IBM SPSS 22.0, and the PROCESS macro program.

Results: (1) Parental punishment had a positive predictive effect on adolescent loneliness, (2) parental punishment predicted adolescent loneliness not only directly but also indirectly through the mediating effect of general self-concept, and (3) teacher–student relationships moderated the influence of PP on adolescent loneliness.

Conclusion: Adolescent loneliness is less affected by parental punishment when TSRs are better. Additionally, when adolescents are punished less by their parents and have good teacher–student relationships, they have higher general self-concepts.

Limitations: This study's cross-sectional research design was unable to show causal relationships among the factors influencing adolescent loneliness.

Keywords: teenagers, loneliness, parental punishment, general self-concept, teacher–student relationships

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INTRODUCTION

Adolescent loneliness is currently a topic of considerable interest among researchers. Loneliness refers to a distressing feeling experienced by individuals when their needs are unmet by their social networks (Cacioppo et al., 2015). Previous research has shown that loneliness occurs throughout life, but typically peaks during puberty (Qualter et al., 2015). When teenagers' peers become more important in their life, parents tend to be positioned. Especially in the

early adolescence, when young people are psychologically far away from their parents but have not found their place in the social world of the same age, some teenagers will feel lonely (Goossens, 2018). Loneliness is therefore a common negative emotional experience during adolescence (Shevlin et al., 2014; Goossens, 2018) that is detrimental to both physical and mental health (Holt-Lunstad et al., 2015; Kearns et al., 2015). Indeed, many studies have found that loneliness makes significantly impact to individuals and society, such as inducing depression (Kılınç et al., 2020; Wang et al., 2021), affecting social function (Tan et al., 2020), and leading to problematic behaviors (McKay et al., 2017). Overall, the above literature clearly shows that loneliness adversely affects physical and mental health. Therefore, it is necessary to explore the influencing factors and mechanisms of loneliness.

Parental punishment (PP) refers to circumstances in which parents purposefully and physically make children feel pain in order to correct or control their behaviour. Although such pain usually does not cause substantial physical harm, it may seriously affect mental health development during childhood (Straus and Kantor, 1994). Therefore, PP is an important factor affecting adolescent loneliness. Indeed, the parent-child relationship can cause a strong impact to teenagers, consequently, parental rearing patterns will affect their loneliness (Nayak and Kochar, 2016). Research has shown that strict parental discipline is positively correlated with behavioural problems among both children and adolescents and predicts the emergence of emotional problems (Danzig et al., 2015; Flouri and Midouhas, 2017; Pinquart, 2017). Early adolescents have some new characteristics in psychological and behavioural development, including increasing autonomy and new psychological needs for peer relationships (Shifflet-Chila et al., 2016). However, due to conflicts between the increased desire for autonomy and deep feelings of incompetence, adolescents still need parental guidance and support, the lack of which may lead to increased feelings of loneliness (Marcoen et al., 1987; Laursen and Hartl, 2013).

In adolescence, many factors may affect adolescents, including physiological factors related to puberty, cognitive ability related to more complexed thinking, identity development, changes in social roles, and changes in the environment for entering the working world. To be aware, in the late adolescence, teenagers began to stay away from family of origin (Shifflet-Chila et al., 2016). Self-development has become one of the important development tasks in this period (Crone and Fuligni, 2020). Self-concept refers to the perception and evaluation of oneself, which substantially influences psychological factors and behaviours (Bournelli et al., 2009; Guerin and Tatlow-Golden, 2019). According to the multilevel and multidimensional structural model for the self-concept (Shavelson et al., 1976), the two categories of self-concept are the general self-concept and domain-specific self-concepts. Clem et al. (2018) found that the concept of adolescents' domain-specific self-concepts of ability can predict their domain-specific causal attribution. The general self-concept is positively correlated with job satisfaction, whereas it is negatively correlated with emotional exhaustion, depersonalization and reduced personal satisfaction (Nwafor et al., 2015). Self-concept is related to loneliness (Richman et al., 2016), which may cause students to gain fewer social skills and lower self-esteem (Wang et al., 2013).

According to theory of the looking-glass self of Cooley, individuals gradually form a "mirror self" through the "mirror process"; that is, individuals understand and define themselves based on other peoples' attitudes, thereby forming corresponding self-concepts (Cooley, 1964). Mead further proposed that the "self" was generated through social experiences and activities and was the result of one's relationships and how one is perceived by others; that is, key people in the social group significantly impact the formation of one's self-concept (Mead, 1962). Indeed, many studies have found that good family relationships influence the adolescent self-concept (Lau and Leung, 1992; Mishna et al., 2016). Parents are vital in the lives of their children; their upbringing styles exert influence on the formation of the general self-concept during childhood (Chan and Koo, 2011). Previous studies have also shown that different parenting styles have an important impact on individual self-concept. For example, perceived parenting will affect children's general self-concept (Chen et al., 2020). The parenting style based on supporting children helps create an atmosphere of influence and trust, which is conducive to the development of prosocial behavior and self-concept (Bagán et al., 2019). Coercive control from parents can lead to negative self-concept among adolescents (Boudreault-Bouchard et al., 2013).

To summarise, parental rearing patterns tend to leaving a strong affect on adolescents' self-concept. Hence, this study speculated that parental punishment may directly or indirectly influent adolescents' general self-concept, which then lead to the increase of loneliness. In addition, Huang et al. (2021) have found similar mechanisms which self-concept plays a mediating role in the relationship between parents-related factors and adolescents' behavioral outcomes. Therefore, we hypothesize that the general self-concept mediates the influence of parental punishment on loneliness among middle-school students. An exploration of this mediating role may help answer the question of "how" parental punishment affects adolescent loneliness but cannot clarify when it becomes most significant. According to the theory of developmental situation, the essence of human development entails a dynamic and changing interaction between individuals and the diversified environment in which they live. The theory also emphasizes the systematic influences of various factors and their interactions on individual development (Lerner, 2001). As important actors in both the family and school environments, parents and teachers may interact to jointly influence student development (Greenwood and Hickman, 1991; Sawka et al., 2002) and behavioural adaptation (De Haan et al., 2014).

Students with good teacher–student relationships (TSR) have lower negative and higher positive senses of achievement (Lei et al., 2018). Conversely, poor TSR are associated with poorer student mental health, and students who feel they lack support from their teachers experience increased loneliness (Besevegis and Galanaki, 2010; Morin, 2020). It has also been shown that parental warmth and support for their adolescents can predict positive personality traits (Callina et al., 2014). Teacher-student relationships plays as a protective role in the process

of the individual adaptive development from parent-child relationships (Sabol and Pianta, 2012). Parent-child attachment can significantly reduce children's problematic behaviors, yet affected by a teacher-student relationships. To be noticed, when the teacher-student relationships is low, they are no longer related (Buyse et al., 2011). Therefore, good teacher–student relationships can help maintain healthy self-concept levels while reducing loneliness among teenagers, even when parents adopt negative upbringing methods (e.g., punishment and severity).

In sum, a moderated mediation model can be constructed based on the mirror-self theory and developmental situation theory. **Figure 1** is a hypothetical model of the mediating effect of general self-concept and the moderating effect of teacher–student relationships. In this model, parental punishment affects adolescent loneliness through the mediating role of general self-concept, while the teacher–student relationships regulates the first half of the path and the direct path, thus answering the question of "how" and "under what circumstances" parental punishment affects adolescent loneliness.

MATERIALS AND METHODS

Participants and Data Collection

Participants were 1,169 students who were recruited from schools in Shaanxi Province, China, with an age range from 10 to 18 years ($M = 13.24$, $SD = 1.28$). The sample included 600 boys and 569 girls (890 junior and 279 senior-high-school students). Each participant was asked to complete a total of four questionnaires, which are described in the following subsections.

Measures

Parental Punishment

This study assessed parental punishment using the Parental Punishment Severity Subscale of Revised Parenting Style Evaluation Scale (i.e., the Egna Minnen av Barndoms Uppfostran; EMBU; Yue et al., 1993). The original EMBU scale was developed to retrospectively measure the respondent's perception and experience of their parents' parenting behaviour. The scale includes four core dimensions: rejection, emotional warmth, overprotection, and favouring subjects, i.e., favouritism. Yue et al. (1993) analyzed all 81 items of the original scale and extracted six main factors from the father's parenting style and five main factors from the mother's parenting style. The revised scale includes the main variable of interest in this study: parental punishment. Specifically, the father's scale includes six dimensions: understanding of emotional warmth, severe punishment, excessive interference, preference for subjects, rejection and denial, and overprotection. The mother's scale includes five dimensions: emotional warmth and understanding, over-intervention and overprotection, rejection and denial, severe punishment, and preference. The severe punishment subscale comprises 11 items for fathers, which were developed out of 12 items from the original scale. Upon investigation, item 49 of the father severe punishment subscale, "if anything happens, I am often the only one who is blamed among brothers and sisters," was removed because this question cannot be answered if the respondents are only children. Nine items were used for mothers, and all items were scored on a four-point scale ranging from "Never" to "Always." The items included statements such as the following: "Even for minor mistakes, my parents punish me." The scale measures respondents' perception of what they recalled about both their father's and mother's punishment methods. Parents' punishment scores were obtained by calculating from the average of mother's and father's punishment scores. Final scores indicated overall parental punishment severity; higher scores indicated more severe perceptions of parental punishment. This study's internal consistency coefficients were 0.88 and 0.89 for the father's and mother's punishment severity factors, respectively. The internal consistency coefficient of the full subscale was 0.93.

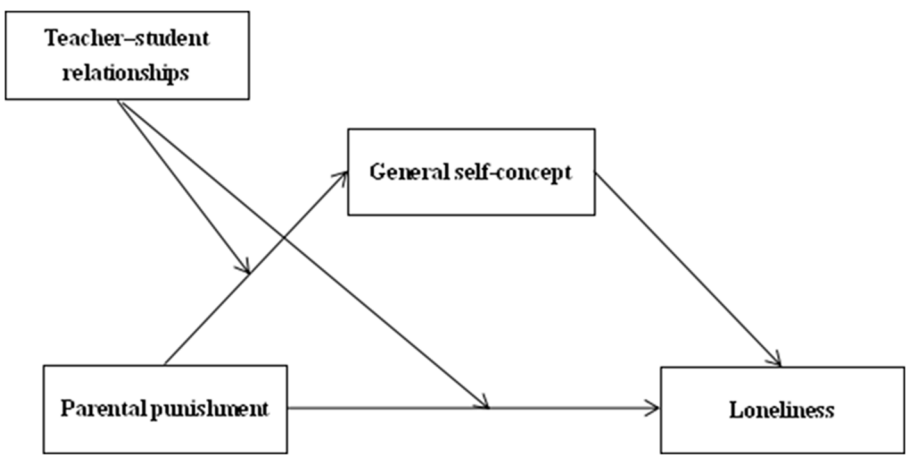

FIGURE 1 | Hypothetical model.

General Self-Concept

General self-concept was measured using a subscale in the Self-Description Questionnaire (SDQ; Marsh et al., 1983, 1984). The Chinese version of the Self-Description Questionnaire II (SDQII) was revised by Chen and Cui (1997) and has acceptable reliability and validity. Items were developed based on the theory of the general self-concept proposed by Shavelson et al. (1976). Specifically, 10 items (e.g., "I am often relatively relaxed") were answered using a six-point scale ranging from "completely consistent" to "completely inconsistent." Reverse scoring was conducted to facilitate the data analytic process. Average scores for the subscale were then calculated, with higher scores indicating better general self-concepts. In this study, the scale had an internal consistency coefficient rating of 0.84.

Teacher–Student Relationships

The teacher–student relationships was measured using the teacher–student relationships scale compiled by Chu (2006), which consists of 18 questions that are divided into three factors (i.e., the learning relationship between teachers and students, the emotional relationship between teachers and students, and the status relationship between teachers and students). Selected items were scored so that 1 point was given for each "Yes" answer, while −1 point was given for each "No" answer (e.g., "The teacher is a little indifferent to me"). Reverse scoring was conducted to facilitate the data analytic process. Average scores were then calculated, with higher scores indicating better teacher–student relationships. In this study, the scale had an internal consistency coefficient rating of 0.87.

UCLA Loneliness Scale

The UCLA Loneliness Scale was developed by Russell (1996). We used the Chinese version revised by Wang et al. (1999). The scale was developed to measure loneliness caused by "the gap between the desire for social interaction and the actual level" while focusing on individual subjective experiences. It consists of 20 items that are scored on a four-point scale ranging from "never felt this way" to "always felt this way." Of these items, nine were scored in reverse order. The overriding topic was "Do you often feel that you are not close to anyone?" Higher scores indicated higher levels of loneliness. The scale had an internal consistency coefficient of 0.83 in this study.

Research Procedures and Statistical Analysis

Respondents completed all questionnaires in the same sitting. The IBM SPSS 22.0 software was used to analyze the resulting data, and the PROCESS macro program was used for testing the moderated mediating effect. The moderated mediation model is a model that contains both mediation and moderation variables. In this model, independent variables influence dependent variables through mediation variables, while the mediation process is moderated by moderation variables (Baron and Kenny, 1986; Wen and Ye, 2014). In our study, the independent variable was parental punishment, the dependent variable was loneliness, the mediation variable was general self-concept, and the moderation variable was teacher–student relationships. The moderated mediating effect included both the partial mediating effect of general self-concept on the relationship between parental punishment and adolescent loneliness and the moderating effect of the teacher–student relationships between parental punishment and adolescent loneliness. The Bootstrap method was used to test the significance of the regression coefficients. The sample distribution was reconstructed *via* random sampling with return. A total of 5,000 samples were constructed in this study; each sample size was 1,169, and we calculated the SE and CI of parameter estimation. Results were considered statistically significant when the CI did not include zero.

RESULTS

Check for Common Method Bias

The study data was from students' self-reports, so there may have been a common method bias. Based on the investigation of confidentiality and the reverse scoring of some items, a Harman single factor test was used to test data for common method bias (Podsakoff and Organ, 1986). The results showed that 13 factors with a characteristic root greater than 1 were obtained without rotation, and the variance revealed by the first factor was 19.03% (<40%). Therefore, the results indicated there was no serious common method bias in this study.

Descriptive Results

Table 1 shows the average values, SDs, and correlation matrices for each variable. Loneliness was positively correlated with parental punishment ($p < 0.001$) and negatively correlated with general self-concept and the teacher–student relationships ($p < 0.001$). Further, parental punishment was negatively correlated with general self-concept and the teacher–student relationships ($p < 0.001$). Finally, general self-concept was positively correlated with the teacher–student relationships ($p < 0.001$).

Moderated Mediation Model Test With Adjustment

The mediation effect analysis program (Zhao et al., 2010) as implemented in Model 8 of the SPSS macro program PROCESS v3.0 (Hayes, 2013) was used to test the direct path and

TABLE 1 | Descriptive statistics and correlation coefficients of the key study variables ($n = 1, 169$).

Variable	1	2	3	4
1. Loneliness	_			
2. Parental punishment	0.25***	_		
3. General self-concept	−0.54***	−0.28***	_	
4. Teacher-student relationships	−0.36***	−0.32***	0.34***	_
M	2.08	1.57	4.50	0.30
SD	0.47	0.52	0.81	0.51

***$p < 0.001$.

TABLE 2 | The moderated mediation effect test of parental punishment (PP) on loneliness ($n = 1, 169$).

Predictors	Loneliness			General self-concept			Loneliness		
	β	*t*	95%CI	*β*	*t*	95%CI	*β*	*t*	95%CI
Parental punishment	0.25	8.96***	[0.18, 0.28]	−0.32	−6.97***	[−0.40, −0.23]	0 0.08	3.05**	[0.03, 0.13]
Teacher-student relationships (TSR)				0.45	10.13***	[0.36, 0.54]	−0.18	−6.76***	[−0.23, −0.13]
PP × TSR				−0.16	−2.26*	[−0.30, −0.02]	0 0.13	2.99**	[0.04, 0.21]
General self-concept							−0.26	−16.09***	[−0.30, −0.23]
R^2		0.06			0.15			0.34	
F		80.24***			74.16***			161.91***	

β = standardized coefficients.
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

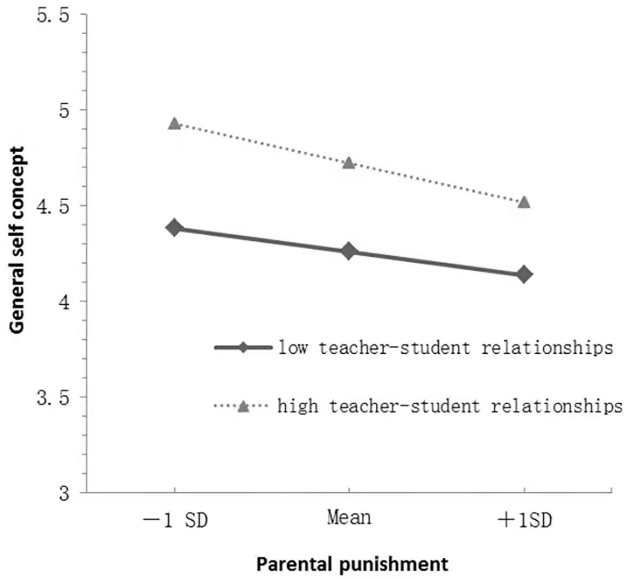

FIGURE 2 | Plot of the interaction between parental punishment and teacher-student relationships on general self-concept.

first-half path of the moderated mediation model. First, all variables were standardized. As shown in **Table 2**, results indicated that parental punishment significantly and positively predicted loneliness. Here, the total effect was also significant. Furthermore, the direct predictive effect of parental punishment on loneliness remained significant after adding the mediator and moderator variables. At the same time, the negative predictive effect of parental punishment on general self-concept was significant, while the negative predictive effect of general self-concept on loneliness was also significant, thus indicating that general self-concept partially mediated the influence of parental punishment on loneliness (relative effect value of 55.40%). In addition, the interaction between parental punishment and teacher–student relationships had a significant predictive effect on general self-concept ($\beta = -0.16$, $t = -2.26$, $p < 0.05$), thus indicating that the teacher–student relationships moderated the influence of parental punishment on general self-concept. Specifically, the teacher–student relationships regulated the first half of the mediating model, while the interaction between parental punishment and the teacher–student relationships played a significant role in predicting loneliness ($\beta = 0.13$, $t = 2.99$, $p < 0.01$). This finding indicates that the teacher–student relationships plays a moderating role in the direct path of parental punishment to loneliness; as such, the teacher–student relationships regulates the direct path of parental punishment to loneliness and the first-half path of the intermediary model.

The moderating effect of the student relationships was analyzed *via* a simple slope analysis graph to reveal the essence of the interaction (Dearing and Hamilton, 2006). In this context, the moderating variables were grouped by both positive and negative one SDs of the average; the average plus one SD was the high teacher–student relationships group, while the average minus one SD was the low teacher–student relationships group. In **Figure 2**, the results for the high teacher–student relationships group show that parental punishment negatively predicted general self-concept (*simple slope* $= -0.40$, $t = -6.37$, $p < 0.001$) and parental punishment predicted general self-concept for participants in the low teacher–student relationships group (*simple slope* $= -0.23$, $t = -4.43$, $p < 0.001$). In **Figure 3**, the results for the high teacher–student relationships group show that parental punishment positively predicted loneliness (*simple slope* $= 0.25$, $t = 6.02$, $p < 0.001$) and parental punishment predicted loneliness for participants in the low teacher–student relationships group (*simple slope* $= 0.08$, $t = 2.65$, $p < 0.01$).

DISCUSSION

This study investigated the mediating role of general self-concept in the association between parental punishment and adolescent loneliness and the moderating role of teacher–student relationships among Chinese students. The factor of general self-concept partially mediated the relationships between parental punishment and adolescent loneliness, which was consistent

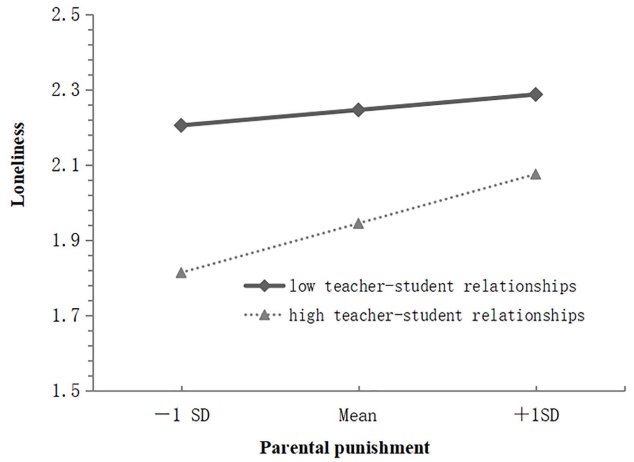

FIGURE 3 | Plot of the interaction between parental punishment and teacher-student relationships on loneliness.

with our theoretical hypothesis. That is, we posited that parental punishment would predict adolescent loneliness through a direct pathway but could also be mediated by general self-concept. This result is congruent with previous findings regarding the influence of parental upbringing styles on both the general self-concept. For example, research shows that if parents adopt positive parenting methods, such as parental support, it will help teenagers to form positive development results, such as prosocial behavior and self-concept development (Bagán et al., 2019). However, negative parenting styles in which adolescents experience parental punishment, parental rejection, and low parental emotional warmth lead to negative developmental outcomes for adolescents, including increased aggressive behaviour and a negative general self-concept (Wu et al., 2015; Zubizarreta et al., 2019; Luo et al., 2020). Poor self-concept will lead to negative emotional experience, and it is easy to experience loneliness (Richman et al., 2016). Attachment theory suggests that an individual's parent–child attachment experiences become internalized and generalized into internal working models about the self and/or others (Bretherton and Munholland, 1999; Pallini et al., 2014). The internal working model of the self includes two components – self-representation and others' representation – that interact to form the individual's attachment type. Specifically, higher-level parent–child attachments are likely to occur when parents use positive upbringing styles (e.g., caring, understanding, and support). Under these conditions, children are more likely to form positive psychological representations of their parents, thereby achieving higher self-esteem and self-worth (Bowlby, 1982). As a result, children develop positive self-beliefs through which they feel happier and more valuable. Conversely, lower-level parent–child attachments form when parents adopt negative upbringing styles (e.g., indifference, rejection, and rudeness), which may damage children's sense of self-identity and value (Drake and Ginsburg, 2012). Development is influenced by the attachment type, as self-beliefs are first reflected through individual interpersonal relationships that then become generalized, thus affecting self-beliefs in other domains (Bowlby, 1980). Ultimately, they impact self-esteem, self-efficacy, and the self-concept, thereby influencing one's level of loneliness (Al-Yagon and Mikulincer, 2004).

In Chinese traditional culture, it is generally believed that parents or other caregivers have the right to discipline children as they see fit. It is often said that "A child cannot do anything without fighting," "A filial son comes out under a stick," "If a son does not teach, it's the father's fault," and "If jade is not polished, it is not made into a weapon," and it is believed that corporal punishment is the socialization of children by parents in a socially acceptable way (Yu and Chen, 2011). Parents strictly discipline their children and believe they must educate their children by beating and scolding them. Therefore, some parents inevitably use more severe punishment than others to educate their children. Studies have shown that Chinese parents have more control over their children and are more authoritarian, while Western parents are more affectionate and receptive to their children (Chen et al., 1998); that is, Chinese parents' parenting style is more severe or punitive than that of Western parents. However, research findings on Chinese students indicate that when parents are warm and emotionally supportive of their children, their children have positive self-evaluations. Conversely, parents' rejection or denial of their children, severe punishment, and excessive protection cause children to constantly experience their incompetence and failure (Wang and Liu, 2005). If children often experience criticism, humiliation, and punishment, they cannot feel their parents' love and care and are relatively alienated from an emotional connection with their parents. They also cannot establish a close relationship with their parents and tend to feel lonely.

This study examined the mediating role of general self-concept between parental punishment and loneliness and further explored the moderating role of teacher–student relationships in this mediating process. Results showed that teacher–student relationships regulate both the direct path and first-half path of the intermediary process, which suggests that the teacher–student relationships enhances the predictive effect of parental punishment on the general self-concept and loneliness among adolescents. Results also support previous findings that the teacher–student relationships plays a critical role in protecting healthy growth and development (Lei et al., 2018; Guirong et al., 2019; Engels et al., 2021). The teacher–student relationships regulated the direct path of parental punishment to predict loneliness; that is, parental punishment positively predicted adolescent loneliness when the teacher–student relationships was high. This is likely because teachers tend to provide more support and help to their students in the context of such a relationship, which encourages adolescents to receive help from others, including their parents (Ryan et al., 1994), which in turn increases positive emotional experiences while reducing feelings of loneliness. The teacher–student relationships also regulated the predictive effect of parental punishment on adolescent general self-concept. Unlike adolescents who have poor teacher–student relationships, those with good relationships experience more significant mediating

effects from the general self-concept. Indeed, according to the developmental situation theory, parents and teachers (as important adults in the lives of children) may interact in ways that jointly influence areas of adolescent development (Greenwood and Hickman, 1991; Sawka et al., 2002) and behavioural adaptation (De Haan et al., 2014).

Based on the internal working model of attachment theory, individuals with higher-level parent–child attachments are more likely to form positive psychological representations of their parents while having higher self-esteem and self-worth (Bowlby, 1982). When accompanied by good teacher–student relationships, adolescents can develop more positive self-concepts and more properly engage in emotional management (Bergin and Bergin, 2009). In short, the teacher–student relationships is an important mediator of the predictive association between parental punishment and the adolescent general self-concept. Teacher–student relationships may significantly impact adolescents, particularly in the Chinese culture. Traditionally, the Chinese regard the relationship between teachers and students as a "blood relationship" or a family relationship of "1 day as a teacher and lifelong as a father," which is an idea that is conducive to improving the intimacy of teacher–student relationships (Yao, 2010). Therefore, with good teacher–student relationships, adolescents can experience a sense of intimacy that naturally alleviates their parents' influence.

Further, the moderating effect of the teacher–student relationships suggests that educators should pay more attention to its cultivation, especially because it is a vertical and unequal interpersonal relationship in which teachers are mainly expected to provide social support only in academics (Vandell and Dempsey, 1991). Due to this limited influence, teachers should also work to strengthen communication and cooperation with parents, thus helping students solve interpersonal and other psychological problems while reducing their experiences with loneliness.

Limitations and Suggestions

This study had some limitations; below, we have provided suggestions for addressing them in future research. First, this study adopted a cross-sectional research design to investigate the factors influencing adolescent loneliness but was therefore unable to draw causal inferences. This limitation may have distorted the proportions of the mediating effects (Maxwell and Cole, 2007). Future studies should employ novel experimental research approaches or adopt longitudinal designs to clarify the causal relationships between variables. Second, this study used convenience sampling to recruit participants from a specific area. As such, caution should be taken when generalizing the results. Future studies may consider using a larger sample size to increase sample representativeness, thus improving the external validity of any conclusions. Third, this study only examined perceived teacher–student relationships among participants, and therefore did not investigate specific relationship types (e.g., intimacy, conflict, and attachment). Therefore, it is difficult to obtain a full picture of the interactions between parental upbringing systems and the teacher–student relationships. Fourth, the difference in parenting styles between the mother and father could be not addressed. For example, in the general Asian culture, mothers tend to have more responsibilities at home. However, mothers and fathers vary in other dimensions; some fathers might be full of emotional warmth, while some mothers may be punitive. Therefore, the question of how parenting styles vary by gender is a question for further research.

This study brings a new perspective to research targeted at reducing loneliness among adolescents and highlights key areas of practical significance. First, we should pay careful attention to the parental upbringing styles when attempting to prevent episodes of loneliness. As suggested by previous research, parenting styles have substantial effects on the general self-concept as well as behavioural outcomes (Bagán et al., 2019; Chen et al., 2020). Parents should thus reduce the use of negative educational methods in order to meet the emotional needs of their children within the family context while also paying more attention to their formative processes and levels of loneliness. Second, parents should actively facilitate the development of the general self-concept in their adolescents, which can effectively curb the adverse effects of parental punishment on adolescent loneliness. Parents and teachers should work to help adolescents gain awareness of themselves and their environment through understanding and respect while guiding them in the formation of positive general self-concepts. Third, more attention should be paid to developing the teacher–student relationships, which affects essential aspects of adolescent mental health (e.g., the sense of accomplishment, school engagement, and self-esteem; Lei et al., 2018; Guirong et al., 2019; Engels et al., 2021). A good teacher–student relationships can effectively promote the general self-concept in addition to preventing loneliness among teenagers. Teachers can strengthen communication and cooperation with parents in order to support their adolescents' development. Finally, apart from influence of parents and teachers in adolescents' loneliness, peers are also very important to their mental health. Therefore, in the future research, relationship with friends or classmates might be involved as well.

CONCLUSION

In conclusion, parental punishment may not only directly predict adolescent loneliness but can also indirectly affect adolescent loneliness through the general self-concept. The teacher–student relationships also moderates the influence of parental punishment on the adolescent general self-concept; adolescent loneliness is less affected by parental punishment when the teacher–student relationships is better. However, when adolescents are punished less by their parents and have a good teacher–student relationships, they have a higher general self-concept. In addition, a good teacher–student relationships can help adolescents have a higher general self-concept and reduce their levels of loneliness.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Institutional Review Board at Nanjing Normal University. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

YL: conceptualization, methodology, investigation, formal analysis, writing-original draft, and writing-reviewing and editing. AW: formal analysis and writing-original draft. HZ: data curation and writing-reviewing and editing. All authors contributed to the article and approved the submitted version.

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Strengthening Individual Teacher-Child Relationships: An Intervention Study Among Student Teachers in Special Education

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Relationships with children with special educational needs can be emotionally challenging for teachers and conflicts may negatively impact both children and teachers. Beginning teachers in particular may struggle with negative teacher-child relationships and the emotions these invoke. A first step in coping with relationship difficulties with specific children is increasing the teacher's awareness and understanding of relational themes and emotions in the relationship with that specific child. Therefore, this multiple case intervention study examined the effects of LLInC (Leerkracht Leerling Interactie Coaching in Dutch, or: Teacher Student Interaction Coaching) in a sample of six student teachers in their final internship. LLInC is a relationship-focused coaching program using narrative interview techniques to facilitate in-depth reflection on teacher-child relationships. The intervention aims to foster teachers' awareness of (negative) internalized emotions and beliefs in order to improve closeness and positive affect, and to reduce conflict and negative affect in teacher-child relationships. Participants repeatedly reported on their perceptions of the teacher-child relationship and on emotions in relation to a specific child before and after the LLInC intervention, which consisted of two one-on-one sessions with a coach. Visual between- and within-phases analyses revealed differential intervention effects across teachers on the development of teacher-child relationship quality and relationship emotions. For all teachers, except for one, positive effects were found on feelings of joy and perceptions of closeness. Preventive effects (i.e., stopping downward trends) were more often observed for competence-based and relationship-based emotions and perceptions (competence, commitment, closeness) than for basic emotions (joy, anger, worry). Although further research is needed, the results highlight the potential of LLInC in influencing pre-service teachers' child-specific emotions and relationship perceptions. Directions for future research and implications for teacher education are discussed.

Keywords: relationship-focused reflection, LLInC (teacher student interaction coaching), teacher emotions, special education, teacher-child relationship

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INTRODUCTION

Relationships with children with special educational needs can be emotionally challenging for teachers (Hargreaves, 2000; Breeman et al., 2014). Conflictual relationships can negatively impact both children and teachers (McGrath and Van Bergen, 2015; Evans et al., 2019). Beginning teachers in particular may struggle with negative teacher-child relationships and the emotions these invoke (Pillen et al., 2013; Kelchtermans and Deketelaere, 2016). A first step in successfully coping with relationship difficulties with specific children is increasing teachers' awareness and understanding of relational themes and experienced emotions in the relationship with that specific child. For this purpose, LLInC was developed (Leerkracht Leerling Interactie Coaching in Dutch, or: Teacher Student Interaction Coaching). LLInC is a coaching program for teachers that is aimed at improving teacher-child relationships. As it is necessary that teachers develop this awareness of relational themes and emotions already during their education, so that they are prepared for the relational challenges that are inherent to teaching children with special educational needs, the present study examined the effects of LLInC on teacher-child relationships in a volunteer sample of student teachers during their internship in special education schools.

THE TEACHER-CHILD RELATIONSHIP AND TEACHER EMOTIONS

The importance of positive teacher-child relationships, both for the development of children (e.g., McGrath and Van Bergen, 2015; Roorda et al., 2017) and the well-being of teachers (e.g., Zee et al., 2017; Aldrup et al., 2018; Corbin et al., 2019), is well-established. Research on teacher-child relationships has been largely guided by two frameworks, self-determination theory and the extended attachment perspective [for reviews, see Kincade et al. (2020); McGrath and Van Bergen (2015); Roorda et al. (2017)]. Self-determination theory states that three needs, the need for autonomy, competence, and relatedness, have to be fulfilled in order for children to be able to truly engage in a task (Deci et al., 1991; Ryan and Deci, 2000). In this light, the teacher-child relationship has been identified as an important lever to fulfill children's need for relatedness and thus support their school engagement (Deci et al., 1991; Ryan and Deci, 2000). Within the extended attachment perspective, the teacher-child relationship is conceptualized using three dimensions: closeness, conflict and dependency (Pianta, 2001). In a positive, effective relationship the teacher functions as a "secure base" and "safe haven" for children, allowing them to explore the world and supporting their further social, emotional and academic development (Pianta, 1999; Verschueren and Koomen, 2012). However, it is not always evident for teachers to build a positive, close relationship with each child. Teachers experience both positive (e.g., joy, connectedness) and negative (e.g., anger, helplessness) emotions in relationships with children (Hargreaves, 2000; Cross and Hong, 2012; Hagenauer et al., 2015; de Ruiter et al., 2019; Frenzel et al., 2020). These emotions strongly impact teachers' interactions with their children: joyful expressions tend to serve as an invitation for positive interactions, whereas anger may invoke a willingness to control the child's behavior (Frenzel et al., 2009). Teachers' emotions thus guide teachers' responses to individual children and eventually have an important impact on children's learning, classroom climate, and the overall quality of education (Frenzel et al., 2009; Malm, 2009; Kelchtermans and Deketelaere, 2016; Chen, 2019). Being aware of these emotions and having the necessary skills to cope with negative emotions is crucial for building close teacher-child relationships.

Research indicates that beginning teachers and teachers working with children with special educational needs are particularly prone to negative emotions and are more likely to experience conflict in their teacher-child relationships (Kelchtermans and Deketelaere, 2016; Zee et al., 2020; Zendarski et al., 2020; Roorda et al., 2021). Scholars have suggested that teachers are often not sufficiently prepared for the emotional and relational aspects of working with (special needs) children (Stempien and Loeb, 2002; Brunsting et al., 2014; Jo, 2014; Aspelin and Jonsson, 2019; Aspelin et al., 2021). To date, teacher education programs primarily focus on formal (subject) knowledge and teaching skills, and pay far less attention to relational and emotional competencies that are necessary for building positive relationships with children (Jensen et al., 2015; Aspelin and Jonsson, 2019). Additionally, teacher education has been criticized for focusing too much on theory and might not offer sufficient opportunities for pre-service teachers to "bridge the gap" with their practice (Korthagen, 2010a; 2010b). There is a great need for "programs emphasizing adequate care of teacher emotions, especially in relation to children (Jo, 2014, p.128)."

IMPROVING RELATIONSHIPS: TARGETING TEACHERS' MENTAL REPRESENTATIONS

The literature suggests that it are teachers' mental representations of relationships with children that guide their emotions in everyday interactions with children. Mental relationship representations comprise a set of internalized feelings and cognitions about the child and the relationships with that child that are based on a history of interactions with that child (Pianta, 1999; Spilt et al., 2011). More specifically, this mental representation consists of internalized mental representations of 1) the characteristics and needs of the child, 2) the self as a teacher of this student in various teaching roles (e.g., caregiver, instructor, disciplinarian, organizer, peer mediator), and 3) the quality of the dyadic relationship with that child (Bowlby, 1969/1982; Pianta, 1999; Spilt and Koomen, 2009). A teacher's mental representation is automatically activated in everyday interactions with a child and guides (largely unconsciously) the teacher's perceptions and interpretations of a particular child's behavior. This, in turn, influences the behavior of the teacher toward the child. In layman's terms, the internalized mental representation of the relationship is like a map for the teacher, providing internal "directions" that guide their interpersonal behavior in everyday interactions with a child (Pianta, 1999). This line of reasoning

converges with the attachment theory of caregiver-child relationships and has become the dominant framework for the understanding of teacher-child relationships in current research (Sabol and Pianta, 2012; Verschueren and Koomen, 2012).

Teachers' mental representations of relationships with children can be narrow, negative, and fixed, especially in relationships with children with problem behavior (e.g., "This student is *always* trying to make me angry"). Such maladaptive mental representations may activate negative emotions and biased or hostile causal attributions of child behavior (i.e., attributing control and negative intent to the student) in everyday interactions. Maladaptive mental representations may decrease teachers' sensitivity to children's needs, resulting in ineffective discipline strategies and increasingly coercive interactions (e.g., Stuhlman and Pianta, 2002). As a result, child problem behavior may increase. A vicious circle is likely to develop in which child problem behavior, in turn, reinforces the negative content of teachers' mental representations and ineffective teacher behavior, and vice versa (c.f., Pianta, 1999; Doumen et al., 2008; de Ruiter et al., 2020). To break this circle, it is necessary to intervene at the level of the teacher's representations of the relationship with the child. Teacher awareness of maladaptive mental representations and how these representations influence everyday interactions is a first critical step for successful coping with relationship difficulties and may be achieved through explicit, guided reflection (Pianta, 1999).

LLINC: A RELATIONSHIP-FOCUSED REFLECTION METHOD FOR TEACHERS

To help teachers cope with relationship difficulties, it is important that teachers become aware of underlying implicit feelings and beliefs that are part of their mental representations of teacher-child relationships. Broad and deep reflection, including the recognition and re-examination of both negative and positive beliefs and feelings regarding a child, can create a rich opportunity to increase teachers' relational understanding and professional learning (Kelchtermans, 2019). In educational research, narratives are often used as a mean for reflection and professional development of in-service and preservice teachers (Kelchtermans, 2014).

To stimulate reflection on internalized beliefs and feelings, Pianta (1999) indicated that consultation needs to start with the teacher narrating the mental representation. The teacher needs to put words to internalized feelings and beliefs of which they may only subconsciously be aware. Through the construction of a narrative, teachers are challenged to go from implicit beliefs to explicit thoughts, from unawareness and taken-for-granted ideas to self-knowledge and reflection (Clemente and Ramírez, 2008; Kelchtermans, 2014). Pianta (1999) suggested that the Teacher Relationship Interview (TRI), a semi-structured narrative interview, can help a teacher to construct such a relationship narrative. A second step in consultation is to provide the teacher with a new perspective or framework to invoke a deeper understanding of their relationship with a child (Pianta, 1999). To this end, Pianta (1999) suggests that the consultant or coach presents a theory-based perspective that labels the teacher's narrative of the relationship in a new way. By adding new information or a new perspective, the teacher is challenged to reconsider the narrative and to re-engage in the process of reflection. In addition, by linking everyday experiences to theoretical constructs the pedagogical understanding is strengthened. LLInC is based on this idea of guided construction of a relationship narrative as a basis for reflection and change. The goals of this type of intervention are to create a representation of the relationship with a child that a) is flexible and differentiated, b) is positive in tone or at least balanced between positive and negative emotions, and c) reflects a sense of agency by increasing feelings of competence as well as perceived impact on the child (Pianta, 1999). These changes in teachers' mental relationship representations are believed to result in more positive, open, and flexible teacher behavior (Pianta, 1999; Spilt et al., 2012).

Recent research provided first evidence for the potential of LLInC among (regular) kindergarten and elementary school teachers. Spilt et al. (2012) found that LLInC improved the sensitive behavior of teachers towards individual children with externalizing behavior problems. LLInC was also shown to increase teachers' perceptions of closeness and self-efficacy and decrease perceptions of conflict in relationships with individual children with whom the teachers at first experienced relationship difficulties (Bosman et al., 2021). In addition, LLInC has been tested as part of the multi-component intervention Key2Teach based on the idea that changing implicit mental representations is a necessary condition for improving teacher-child relationships. Key2Teach was shown to increase closeness and decrease conflict in relationships with children with externalizing problem behavior (Hoogendijk et al., 2019). The intervention also had positive effects on teachers' self-efficacy beliefs and reduced emotional exhaustion (Hoogendijk et al., 2018). However, no research to date has investigated how LLInC may be implemented in teacher education to prepare student teachers for working with (special needs) children.

THE CURRENT STUDY

Answering the call of several scholars to address emotional and relational competencies in teacher training (Jo, 2014; Jensen et al., 2015; Korpershoek et al., 2016; Blömeke and Kaiser, 2017; Aspelin and Jonsson, 2019), this study is the first to examine how an existing intervention targeting teacher-child relationships can be implemented in teacher education. As teachers working with children with special educational needs are more prone to experience conflict in their relationships (Breeman et al., 2014; Roorda et al., 2021), the study focused on student teachers in a specialized program for teaching in special education. The aim of this study was to explore the impact of LLInC on student teachers' relationships with children during their internship. To this end, the current study adopted a multiple single case design including six cases. A multiple single-case time-series study, with multiple

TABLE 1 | Overview of detailed information of each teacher and target child.

	Casus A	Casus B	Casus C	Casus D	Casus E	Casus F
	Teacher characteristics					
Code name	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E	Teacher F
Sex	♀	♀	♀	♀	♀	♀
Age	22	21	22	24	22	22
Nationality	Belgian	Belgian	Belgian	Belgian	Belgian	Belgian
Diploma (Bachelor)	Teacher Education (elementary school)	Teacher Education (kindergarten)	Speech Therapy	Teacher Education (elementary school)	Social work	Teacher Education (kindergarten)
School of internship	Primary school for students with ASS, emotional and/or conduct problems	Hospital education	Secondary school for students with mental disorders	Primary school for students with mental disorders	Primary school for students with physical (and mental) disabilities	Primary school for students with physical (and mental) disabilities
Internship remarks	/	Started at W5 because hospitalization was for a fixed period W12/W14 missing (student was not present)	Started at W4 because of delay of informed consent W5/W13 missing (student was not present)	W5/W6 missing due to broken arm W12/W15 missing (student was not present)	/	Internship was divided over two classes, so measurements per week are only from one time point W12 missing due to illness
	Child characteristics					
Code name	Child A	Child B	Child C	Child D	Child E	Child F
Sex	♂	♂	♂	♂	♂	♂
Age	12	5	13	11	12	9
Nationality (Nationality of parents)	Belgian (Belgian)	Belgian (Belgian)	Belgian (Belgian)	Belgian (Moroccan)	Belgian (Belgian/Spaniard)	Albanian (Albanian)
Diagnose(s)	(suspicion of) ADHD, ASS	None, hospitalization in order to investigate him	ADHD, ASS	Mental disorder	Asymmetric disparity, arthrogryposis, speech disorder	Equilibrium disorder, physical and cerebral problems
Situation at home	Lives with his biological mother	Lives with his biological parents	Lives with his biological mother	Lives with his biological mother	Lives with his biological parents	Institution/shelter
STRS at W8 ***Closeness*** ***Conflict***	3, very low 8, average to very low = distant relationship	4, low 17, very high = conflictual relationship	10, average 8, average to very low = average relationship	10, average 14, above average = (moderate) conflictual relationship	9, average 11, average to very low = average relationship	13, above average 13, above average = dubious relationship

measurements both before (pre-intervention phase) and after the intervention (post-intervention phase), is an appropriate study method to obtain empirical data about intervention efficacy in educational settings (Borckardt et al., 2008; Kratochwill, 2015). The current study included six student teachers with a professional bachelor's degree enrolled in a 1-year specialized education program for teaching in special education. During their final internship, data were collected (on internship days) about teachers' feelings and perceptions of their relationship with a (self-chosen) target child. The intervention was scheduled halfway the internship.

We expected that teachers' positive emotions and positive relationship perceptions would increase and that their negative emotions and negative relationship perceptions would decrease after the intervention.

MATERIALS AND METHODS

Design

The study adopted a multiple single case design. A two-phase AB design, including multiple measures before and after the intervention, was implemented (Kratochwill, 2015).

Sample

Six student teachers participated voluntarily in the project during their internship in special education schools. The internship involved two teaching days a week over a period of 4 months. All six participating teachers had already obtained a professional bachelor's degree (four teachers had a Bachelor in Teaching, one teacher had a Bachelor in Speech Therapy and one in Social Work; these last two also held a postgraduate teaching degree). All of them were now enrolled as students in a 1-year specialized program for teaching children with special educational needs. Researchers nor coaches were associated with the program. All teachers were female and born in Belgium. They were between 21 and 24 years old. All target children were boys and were born in Belgium, except for one child who was born in Albania. The children were between 5 and 13 years old. More detailed information on each student teacher and target child is provided in **Table 1**.

Procedure

The study consisted of four phases (**Figure 1**): introduction and selection phase, pre-intervention phase, intervention phase, and post-intervention phase. Before the start of the project, the researchers contacted the teachers to obtain background information and inform them about the procedures. Two weeks into the internship, teachers chose a child with whom they experienced a more difficult relationship or felt no genuine contact. Both the teachers and parents of the target children completed an informed consent form. A daily questionnaire was administrated on internship days (two adjacent days a week) in the pre- and post-intervention phase during approximately 5 weeks in each phase. The intervention phase consisted of two sessions.

Instruments

Background Variable

Teacher-Child Relationship

To describe the cases (**Table 1**), the teachers completed a questionnaire in the pre-intervention phase about their

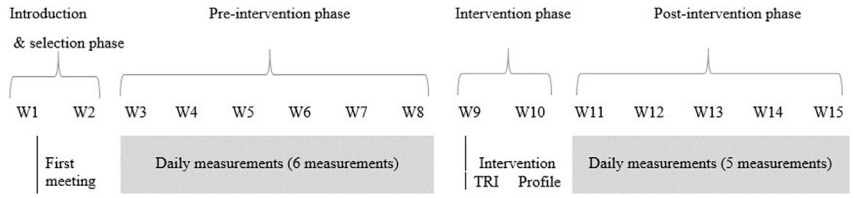

FIGURE 1 | Overview study (week 1–week 15).

perceptions of their relationship with the target child. Teacher-child relationship quality was measured by the well-validated Student Teacher Relationship Scale (STRS, Koomen et al., 2007; Pianta, 2001). Two scales were administered: Closeness (11 items, e.g., "I share an affectionate, warm relationship with this child"; $\alpha = 0.93$) and Conflict (11 items, e.g., "Dealing with this child drains my energy"; $\alpha = 0.94$). The items were completed on a 5-point Likert scale ranging from "not at all applicable" 1) to "highly applicable" (5). Norm scores ($M = 10$, $SD = 3$) are reported along with their qualitative interpretation (Dutch norm group, see Koomen et al., 2007) in **Table 1**.

Outcome Variables

On each internship day of the pre- and post-intervention phase, a link to the online questionnaire (Limesurvey) was sent *via* e-mail to collect the teachers' reports of emotions and relationship perceptions (Bolger et al., 2003). Mean scores across the two internship days per week were calculated to obtain scores per week. Outcome variables were chosen to represent the goals of LLInC, and thus to include both positive and negative emotions and relationship perceptions, as well as to reflect the teachers' sense of agency.

Emotions

Teachers had to answer the following question: "In the list below, you see several emotions which you may have experienced during the day. Please mark for each emotion to what extent you have felt that emotion in interaction with the target child." Items were rated on a scale from "(almost) not" 1) to "very strongly" (5). Eight emotions were selected. First, the most basic emotions in everyday life, *joy*, *anger*, and *worry* (more appropriate and less strong equivalent for anxiety) were included (Frenzel et al., 2015). To cover emotions often experienced by (beginning) teachers, *helplessness*, *competency*, and *doubt/insecurity* were included (Spilt and Koomen, 2009; Pillen et al., 2013; Ria et al., 2003). These emotions also reflect teachers' sense of agency and competence (cf. goals of LLInC). In addition, two relationship-focused emotions were included: *connectedness* and *commitment* (Pianta, 1999; Chang and Davis, 2009; Spilt et al., 2011).

Relationship Perceptions

Four items were included to measure teachers' perceptions of their relationship with the individual child. Two items selected from the STRS (Pianta, 2001; Koomen et al., 2007) measured *closeness* ("Today, I shared an affectionate, warm relationship with this child" and "My interactions with this child on this day made me feel effective and confident," $\alpha = 0.74$). Two items measured *conflict* ("Dealing with this child drained my energy today" and "This day, this child did things that I did not know how to handle," $\alpha = 0.86$). The first conflict item was also taken from the STRS. The second item was taken from the Teacher-perceived Control of Child Behavior (TCCB, Hammarberg and Hagekull, 2002). For both closeness and conflict, the first item primarily targeted the valence of teachers' relationship perceptions, whereas the latter item rather focused on teachers' sense of agency and competence in their interactions with the child. The items were completed on a five-point Likert scale ranging from "not at all applicable" 1) to "highly applicable" (5).

LLInC Intervention

LLInC (Leerkracht Leerling Interactie Coaching in Dutch, or: Teacher Student Interaction Coaching) is a Dutch coaching program for teachers aimed at improving individual teacher-child relationships. This intervention uses relationship-focused reflection as a means to elicit change in a teacher's relationship representation and was previously referred to as the "Relationship-Focused Reflection Program" (Spilt et al., 2012). LLInC was individually administered by two university master's students who were extensively trained to this purpose by the researchers. The coaching consisted of two one-on-one sessions with the teacher of about 1 hour.

Session 1: A first critical step in the reflection process is "to give words" to internalized cognitions and emotions, and to have the teacher construct a narrative of the relationship with the child in order to create awareness. To this end, the Teacher Relationship Interview was conducted (TRI, Pianta, 1999; Dutch version, Koomen and Lont, 2004). The TRI is a semi-structured, narrative interview that contains 12 questions referring to teachers' interpersonal experiences with the target child (e.g., "Describe a time in the last week when you and the child really clicked") and takes approximately 30–40 min. The teachers were asked to give real-life examples and to be as specific as possible. Follow-up questions prompt teachers to describe recent (everyday) situations and to describe the emotions of both themselves and the child in these situations. Because teachers are asked to provide detailed descriptions of events that actually happened, it is relatively easy and non-threatening for them to talk about the (sometimes intense) emotions they felt during that event.

After this session, coaches summarize and label the narrated experiences, beliefs, and feelings of the teacher in more general, theory-based terms. The labels that are used are derived from the TRI manual (Pianta, 1999; Spilt and Koomen, 2009): four labels

refer to the teacher's beliefs on interacting with the child, including teacher's self-efficacy toward an individual child, (i.e., sensitivity of discipline, secure base, perspective taking, and intentionality) and four labels reflect the teacher's feelings about the child and the relationship with the child (i.e., feelings of helplessness, negative affect, positive affect, and neutralizing of negative affect). The use of these labels to describe the quality of teacher-child relationships has been validated in regular as well as special education (cf. Stuhlman and Pianta, 2002; Spilt and Koomen, 2009; Koenen et al., 2019). The labels are presented in a bar graph as a unique "relational profile." A large bar indicates that the construct is very present in the teacher's narrative and can be considered a strength of the relationship. A small bar, in contrast, indicates a weakness in the relationship.

Session 2: In the second session, coaches present teachers this individual "relationship profile" and explain for each label why the teacher received either a high, a middle or a low bar. The coaches invite teachers to reflect on the profile, to agree or disagree, and, if wanted, to change the profile in accordance with their own beliefs. Teachers are further encouraged to draw an "ideal" (but still realistic) profile and to reflect on discrepancies between the presented profile and the "ideal" profile. Change talk is stimulated by coaches asking teachers what is needed to narrow the gap between the actual and ideal profile. Coaches ask teachers what their specific focus will be, what the effects of the envisaged change would be on the child and on themselves (to stimulate motivation for change), what concrete actions they can take to realize the change, and what they need to achieve the change. Teachers are encouraged to take notes during this session.

Analysis

Data were analyzed at the single-subject level to model the intra-individual development of teachers' emotions in and perceptions of the relationship with the target child. Visual between- and within-phases analyses were conducted (Lane and Gast, 2014; Tarlow et al., 2021). Per teacher, median-level differences between the pre-and post-intervention phases were calculated and trend lines within the phases were compared for each outcome variable to see if the intervention initiated positive developments or counteracted (stabilized or reversed) negative trends. Missing data due to absences of the child or the teacher (as reported in **Table 1**) were not replaced, as this could distort visual analyses.

RESULTS

Table 2 presents a summary of the calculations of teachers' emotions and relationship perceptions across the pre-and post-intervention phase, per teacher. The extensive tables as well as graphical displays of these results can be found in the **Supplementary Material**.

Teacher A

For teacher A, we found one median level difference between the phases in the expected direction: the teacher felt more committed to the child after the intervention. Six out of ten unexpected effects (i.e., negative intervention effects) were found: the teacher felt less joyful, less connected, less competent, perceived less closeness, was more worried, and perceived more conflict after the intervention.

However, when looking at the trend lines (i.e., median level change within phases, see **Supplementary Figure S2**) before and after the intervention, we found six positive trends: an increase in joy, connectedness, competency, and closeness after the intervention was observed. In addition, the decrease in commitment and the increase in conflict before the intervention were stabilized after the intervention. Worry, anger, insecurity, and helplessness remained (quite) stable during the study. Although the median effects between phases were opposite as to what we expected, the results suggested that the intervention positively impacted the teacher through reversing or stabilizing the negative development in emotions and perceptions that was seen before the intervention. Thus, the intervention yielded a preventive effect for this teacher-child dyad.

Teacher B

For teacher B, we found median level differences between the phases in the expected direction for all 10 outcomes. This suggested that the intervention was very effective for this teacher. Unfortunately, no trend lines after the intervention could be calculated due to too few measurements.

Teacher C

For teacher C, we found median level differences between the phases in the expected direction for seven of the 10 outcomes: the teacher felt more joyful and competent, felt less angry, helpless, and insecure, and perceived more closeness and less conflict. No unexpected or negative effects were found.

When looking at the trend lines before and after the intervention (**Supplementary Figure S6**), we found five positive trends and five (small) negative trends. The intervention could not counteract the negative trends in the basic emotions but did positively change the trends in connectedness, commitment, helplessness as well as in the perception of closeness. The results suggest a more mixed profile and raise the question whether the initial positive effects in the first half of the post-intervention phase are unstable or fading away. It is interesting that despite negative trends for the basic emotions (small decrease in joy and small increase of anger and worry), the intervention initiated a substantial increase in commitment and halted the downward development in closeness and connectedness. This indicated a positive impact of the intervention on the teacher's relationship-specific emotions and perceptions.

Teacher D

For teacher D, we found median level differences between the phases in the expected direction for five of the 10 outcomes: the teacher felt more joyful, perceived more closeness, and felt less worried, angry, and helpless after the intervention. Two unexpected effects were found: a decrease in feeling connected and a (small) increase in perceived conflict were observed.

TABLE 2 | Summary of the results of median level differences and trend lines of the 10 outcome variables for each teacher separately.

		Teacher A					Teacher B					Teacher C				
VARIABLES		Median	**Median level difference**	Median 1st half	Median 2nd half	**Trend line**	Median	**Median level difference**	Median 1st half	Median 2nd half	**Trend line**	Median	**Median level difference**	Median 1st half	Median 2nd half	**Trend line**
Emotions																
Basic emotions																
Joy	A:	2.50	**-1.00**	3.00	2.00	**-1.00**	2.75	**+1.25**	3.00	2.25	**-0.75**	3.00	**+0.75**	3.75	3.00	**-0.75**
	B:	1.50		1.00	2.25	**+1.25**	4.00					3.75		3.75	3.50	**-0.25**
Worry	A:	1.00	**+1.00**	1.00	1.00	**0.00**	4.00	**-2.00**	3.75	4.00	**+0.25**	1.00	**0.00**	1.00	1.25	**+0.25**
	B:	2.00		1.50	1.50	**0.00**	2.00					1.00		1.00	1.75	**+0.75**
Anger	A:	1.50	**0.00**	1.50	1.50	**0.00**	3.00	**-1.00**	2.50	3.25	**+0.75**	1.50	**-0.50**	1.00	2.00	**+1.00**
	B:	1.50		1.75	1.75	**0.00**	2.00					1.00		1.00	1.25	**+0.25**
Relationship-based emotions																
Connectedness	A:	2.25	**-1.25**	3.00	2.00	**-1.00**	3.25	**+0.25**	3.75	3.00	**-0.75**	3.25	**0.00**	3.50	2.75	**-0.75**
	B:	1.00		1.00	2.25	**+1.25**	3.50					3.25		3.25	3.25	**0.00**
Commitment	A:	1.50	**+0.50**	4.50	1.00	**-3.50**	3.00	**+1.00**	3.50	2.50	**-1.00**	3.50	**0.00**	4.00	2.75	**-1.25**
	B:	2.00		1.50	1.50	**0.00**	4.00					3.50		3.00	4.00	**+1.00**
Competence-based emotions																
Competency	A:	4.50	**-1.00**	4.50	4.50	**0.00**	3.00	**+1.00**	3.00	3.00	**0.00**	3.25	**+0.75**	3.25	3.00	**-0.25**
	B:	3.50		2.25	3.25	**+1.00**	4.00					4.00		4.00	3.50	**-0.50**
Helplessness	A:	1.00	**0.00**	1.00	1.00	**0.00**	2.75	**-1.75**	2.50	2.75	**+0.25**	1.50	**-0.50**	1.00	2.00	**+1.00**
	B:	1.00		1.00	1.00	**0.00**	1.00					1.00		1.00	1.00	**0.00**
Insecurity	A:	1.00	**0.00**	1.50	1.00	**-0.50**	2.75	**-0.75**	2.50	2.75	**+0.25**	1.75	**-0.25**	1.50	1.75	**+0.25**
	B:	1.00		1.00	1.00	**0.00**	2.00					1.50		1.75	1.25	**-0.50**
Relationship perceptions																
Closeness	A:	3.00	**-0.75**	3.50	3.00	**-0.50**	3.25	**+1.00**	3.38	3.25	**-0.13**	3.38	**+1.00**	3.88	3.25	**-0.63**
	B:	2.25		1.88	2.75	**+0.87**	4.25					4.38		4.38	4.38	**0.00**
Conflict	A:	1.88	**+1.12**	1.00	2.50	**+1.50**	4.50	**-1.25**	4.00	4.63	**+0.63**	2.75	**-0.75**	2.13	3.13	**+1.00**
	B:	3.00		3.00	3.00	**0.00**	3.25					2.00		1.63	2.00	**+0.37**

		Teacher D					Teacher E					Teacher F				
Emotions																
Basic emotions																
Joy	A:	3.00	**+0.50**	2.50	3.50	**+1.00**	4.00	**+1.00**	4.50	4.00	**-0.50**	3.50	**+0.50**	3.00	4.00	**+1.00**
	B:	3.50					5.00		4.75	4.50	**-0.25**	4.00		4.00	4.00	**0.00**
Worry	A:	2.75	**-0.25**	2.50	2.75	**+0.25**	2.00	**-1.00**	2.00	1.50	**-0.50**	1.00	**+1.00**	1.00	1.00	**0.00**
	B:	2.50					1.00		1.00	1.75	**+0.75**	2.00		2.00	2.50	**+0.50**
Anger	A:	1.75	**-0.75**	1.50	1.75	**+0.25**	1.00	**0.00**	1.00	1.00	**0.00**	1.75	**-0.75**	1.50	2.00	**+0.50**
	B:	1.00					1.00		1.00	1.00	**0.00**	1.00		1.50	1.00	**-0.50**
Relationship-based emotions																
Connectedness	A:	2.50	**-1.00**	2.00	3.50	**+1.50**	3.75	**+0.75**	4.00	3.50	**-0.50**	3.00	**+1.00**	3.00	3.50	**+0.50**
	B:	3.50					4.50		4.50	4.25	**-0.25**	4.00		4.00	4.00	**0.00**
Commitment	A:	2.50	**0.00**	2.00	3.00	**+1.00**	3.25	**+0.75**	3.50	3.00	**-0.50**	3.00	**+1.00**	2.50	3.50	**+1.00**
	B:	2.50					4.00		4.00	4.00	**0.00**	4.00		3.50	4.00	**+0.50**
Competence-based emotions																
Competency	A:	3.50	**0.00**	3.50	3.50	**0.00**	3.00	**+1.00**	3.00	3.00	**0.00**	3.00	**+1.00**	3.00	3.00	**0.00**
	B:	3.50					4.00		3.75	4.25	**+0.50**	4.00		4.00	3.50	**-0.50**
Helplessness	A:	1.25	**-0.25**	1.50	1.25	**-0.25**	1.00	**0.00**	1.00	1.00	**0.00**	1.00	**0.00**	1.00	1.00	**0.00**
	B:	1.00					1.00		1.00	1.00	**0.00**	1.00		1.00	1.00	**0.00**
Insecurity	A:	1.00	**0.00**	1.50	1.00	**-0.50**	1.50	**-0.50**	2.00	1.00	**-1.00**	1.00	**0.00**	1.00	1.00	**0.00**
	B:	1.00					1.00		1.00	1.00	**0.00**	1.00		1.00	1.00	**0.00**
Relationship perceptions																
Closeness	A:	3.75	**+0.75**	3.50	4.38	**+0.88**	3.75	**+1.25**	4.00	3.25	**-0.75**	3.50	**+0.50**	2.50	3.50	**+1.00**
	B:	4.50					5.00		4.63	4.75	**+0.12**	4.00		4.25	3.75	**-0.50**
Conflict	A:	3.50	**+0.25**	3.50	3.50	**0.00**	1.00	**0.00**	1.75	1.00	**-0.75**	2.88	**-0.88**	3.50	2.50	**-1.00**
	B:	3.75					1.00		1.00	1.38	**+0.38**	2.00		2.25	2.00	**-0.25**

Overall, the positive effects of the intervention appeared more prominent.

Unfortunately, no trend lines after the intervention could be calculated due to too few measurements.

Teacher E

For teacher E, we found positive median level pre-post differences for seven of the 10 outcomes: the teacher felt more joyful, competent, connected, committed, and close, and less worried and insecure after the intervention. No unexpected median level differences were found. Looking at the trend lines before and after the intervention (**Supplementary Figure S10**), we found four positive trends for commitment, competency, insecurity, and closeness. In addition, four (small) negative trends were found for joy, worry, connectedness, and conflict. This suggests a more mixed profile and raises the question whether the initial positive effects in the first half of the post-intervention phase are unstable or fading away. Again, it is interesting that despite negative trends in the development of basic emotions, the intervention yielded an increase in competency and closeness and could stop the decrease in commitment and insecurity.

Teacher F

For teacher F, we found positive median level pre-post differences for seven of the 10 outcomes: the teacher felt more joyful, connected, committed, competent, and close, and reported less

anger and conflict after the intervention. One negative effect was found: the teacher felt more worried after the intervention.

When looking at the trend lines pre- and postintervention (**Supplementary Figure S12**), we found one distinct positive effect on the development of anger and three negative effects on the development of worry, competency, and closeness. Together, this suggests both positive and negative intervention effects.

DISCUSSION

Relationships with children are an important source of various positive and negative teacher emotions. Beginning teachers are more prone to experience negative emotions in teacher-child interactions and can have difficulties establishing close relationships, particularly in special education settings. Negative emotions and conflictual relationships can in turn undermine teachers' sensitivity to the specific needs of children and endanger the well-being of both the child and the teacher. Teacher training programs need to prepare teachers for the emotional and relational challenges of teaching. To this end, we investigated the effects of LLInC, a relationship-focused coaching method, on teacher-child relationships in a sample of volunteer student teachers enrolled in a training program for special education.

LLInC: Guided Exploration of Emotions in the Relationship With a Child

The results indicated that the intervention affected all teacher-child relationships, either by improving relationship quality (Teacher B), preventing or stopping declines in relationship quality (Teacher A and Teacher C), or by inducing both positive and negative effects (Teacher D, Teacher E, and Teacher F). For all teachers, except for Teacher A, positive effects were found on feelings of joy and perceptions of closeness. Preventive effects (i.e., stopping downward trends) were more often observed for competence-based and relationship-based emotions and perceptions (e.g., competence, commitment, closeness) than for basic emotions (e.g., joy, anger, worry).

For some teachers we found a mix of both positive and negative effects. Importantly, increases in negative emotions and perceptions such as worry and conflict may not necessarily be negative for the teacher-child relationship as long as they are accompanied with (increases in) positive emotions, which was the case in our sample. Reflection may result in the recognition and/or release of negative emotions that were previously hidden or denied by the teacher. Increases in for instance worry can perhaps be explained by more awareness of the troubles in the relationship due to the insights of the intervention. Spilt et al. (2012) also found mixed intervention effects for a small subset of teachers who improved in observed sensitive behavior in interactions with the target child but at the same time reported more conflict. Bosman et al. (2019) reported mixed results for teachers' perceptions of conflict but found quite consistent effects of LLInC on closeness. Moreover, LLInC does not aim to avoid negative feelings and perceptions but strives to accept both the "good and the bad" in the relationship. LLInC aims to create a balance between positive and negative emotions and promotes a differentiated and flexible understanding of the relationship with the child (Pianta, 1999), in such way that the teacher can receive the child, is able to recognize and respond to the child's signals, and is committed to the relationship with the child in spite of difficulties.

The results revealed differential intervention effects across teachers. Teacher B, for example, showed positive results on all outcomes. Interestingly, this teacher reported a very high level of conflict with the target child at the start of the study. In contrast, Teacher A showed a less straightforward patterns of results. At the start of the intervention, Teacher A reported low levels of both closeness and conflict, which suggests a "distant" relationship with the target child. A distant relationship between teacher and child is typically characterized by an absence of prominent feelings and proximate interactions (Spilt and Koomen, 2009). In addition, Teacher A reported declining relationship patterns, which however, could be partly stopped or reversed through the intervention. LLInC may thus have had a preventive effect but the intervention may not have been extensive enough to truly improve the teacher-child relationship. More research is needed to investigate for which relationship types and problems LLInC may yield the best outcomes.

Implications for Teacher Education

As scholars advocate the need to better "care" for teacher emotions by preparing student teachers for the emotional-relational dimension of teaching children (Jo, 2014; Jensen et al., 2015), this study examined how LLInC can help student teachers understand their relational experiences with children during their final internship. Student teachers were engaged in a reflective process on their relationship with a self-chosen "challenging" child. Through narrative construction by reflection on concrete events and associated (negative) emotions, and by making the connection between their everyday experiences and theoretical concepts, guided by a coach, LLInC may facilitate the transfer from theory to practice. In this way, we expect that student teachers will be better prepared for the emotional-relational challenges inherent to teaching when they enter the profession. Results of the study highlight the potential of implementing existing interventions in teacher education. One other intervention targeting teacher-child relationships is Playing-2-gether (Vancraeyveldt et al., 2015), which was adapted and successfully integrated in to a pre-primary teacher education program (Huyse et al., 2016). In the same way, LLInC could be adapted and integrated into the program and support all pre-service teachers in reflecting on their teacher-child relationships.

Limitations and Future Research

This multiple case study provides new evidence for the effectiveness of LLInC among student teachers. However, some methodological limitations must be considered in weighing the results. Due to the constraints of the educational program (short length of the internship and low intensity, i.e., 2 days a week) it was not possible to collect daily measurements, examine transfer effects to teacher behavior, or to conduct follow-up research to examine long-term (or sleeper)

effects. In addition, because LLInC was presented as an extra to the educational program, a randomized controlled trial was not possible and student teachers participated voluntary, which may have impacted the results. Furthermore, the intensity of the intervention should be considered. The participants' feedback after the study suggested extending LLInC with a follow-up session to discuss and evaluate the improvements they experienced in their work with the child. Although there is ample evidence that brief reflective exercises targeting beliefs and feelings of children can induce lasting change (cf., Yeager and Walton, 2011), for some teachers, more sessions may have yielded stronger results. In previous research, two target children instead of one child were selected, resulting in a total of four intervention sessions (Spilt et al., 2012; Bosman et al., 2019; Bosman et al., 2021). In this way, teachers could recognize similarities and differences in the relationships with different children. This might deepen the reflective process and may help teachers to distinguish between unique elements in each relationship versus the teacher's personal style of relating to children (e.g., Spilt et al., 2012). Notably, (Bosman et al., 2019) only found improvements in daily measurements for the second selected child. However, due to the length of the internship it was not possible to implement four intervention sessions in this study. Future research needs to examine the implementation and effectiveness of LLInC in internship programs in multiple teacher programs including all internship students.

CONCLUSION

Relationships with children are a primary source of (sometimes intense) positive and negative teacher emotions. This is particularly true for beginning teachers, who can have difficulties building close relationships or coping with conflictual relationships with children, especially in special education settings. Scholars have repeatedly suggested that teacher education programs do not focus sufficiently on teachers' relational and emotional competencies. We investigated the potential of LLInC to be implemented during pre-service teachers' final internship in special education. Results revealed differential intervention effects on pre-service teachers' emotions and their perceptions of teacher-child relationships. Notably, the intervention affected all teacher-child relationships, either by improving relationship quality, preventing or stopping declines in relationship quality, or by inducing a combination of positive and negative effects. Further research is needed to investigate these differential effects across teachers and relationship types. Through guided reflection and connecting everyday internships experiences and theoretical concepts, LLInC might offer pre-service teachers a unique chance to bridge the gap between theory and practice. The integration of LLInC might strengthen teacher education programs in preparing future teachers for the emotional and relational challenges that are inherent to teaching.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Social and Societal Ethics Committee, KU Leuven. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JS was responsible for conceptualization and supervision of the study. JS and A-KK contributed to design and methodology. JS and AD provided the necessary resources. A-KK was responsible for project administration and data collection, performed the analyses, and wrote the original draft of the manuscript. All authors contributed to review and editing of the manuscript.

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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.2021.769573/full#supplementary-material

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REVIEW
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Conceptualization and Measurement of Trust in Home–School Contexts: A Scoping Review

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Objective and Method: This review unravels the complexity of trust in home–school contexts across the globe by drawing on 79 peer-reviewed quantitative empirical studies spanning over two decades (2000–2020). The goal is to refocus attention on how trust has been defined and operationalized in recent scholarship.

Findings: The findings reveal four essential pillars in the conceptualization of trust: the trustor's propensity to trust, shared goals, the trustor–trustee relationship, and the trustee's trustworthiness. However, the operationalization of trust in existing measures does not fully capture these essential pillars, as it is mainly based on trustee characteristics of benevolence, reliability, openness, competence, and honesty rather than on the trustor's actual trust behavior.

Conclusion: Most "trust studies" are essentially measuring trustworthiness and not the purported trust. Therefore, a shift in the conceptualization and measurement of trust is proposed. The review contributes to the understanding and assessment of home–school and workplace relationships.

Keywords: trust, faculty trust, trustworthiness, parent trust, home–school partnership

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INTRODUCTION

Trust is a crucial component of any active relationship, be it interpersonal (Rempel et al., 1985; Moye et al., 2005; Forsyth et al., 2011), relational (Bryk and Schneider, 2002; Zahra et al., 2006; Kwan, 2016), or organizational (Erden and Erden, 2009; Zafer-Gunes, 2016). It has been studied across numerous disciplines (anthropology, economics, psychology, political science, and sociology) with diverse associated aspects and concepts. In home–school contexts, trust has been examined alongside other variables such as schooling outcomes (Adams and Christenson, 2000; Bower et al., 2011; Adams and Forsyth, 2013; Adams, 2014; Romero, 2015; Kwan, 2016; Musah et al., 2018), communication and partnership (Tschannen-Moran, 2001; Kikas et al., 2011; Eng et al., 2014; Li et al., 2016; Santiago et al., 2016; Houri et al., 2019), job satisfaction (Van Houtte, 2006; Khany and Tazik, 2015), professional effectiveness (Moye et al., 2005; Lee et al., 2011; Choong et al., 2019; Schwabsky et al., 2019), classroom management (Gregory and Ripski, 2010; Amemiya et al., 2020), organizational culture and behavior (Smith et al., 2001; Hoy and Tarter, 2004; Hoy et al., 2006a; Yeager et al., 2017; Farnsworth et al., 2019), leadership (Zayim and Kondakci, 2014; Freire and Fernandes, 2015; Louis and Murphy, 2017; Yin and Zheng, 2018; Farnsworth et al., 2019; Karacabey et al., 2020), and psychological constructs (Rotenberg et al., 2004; Nam and Chang, 2018) among other variables. Demographic characteristics such as socioeconomic status

(Goddard et al., 2009; Janssen et al., 2012), ethnicity (Adams and Christenson, 2000; Dewulf et al., 2017), social segregation (Dewulf et al., 2017), experience (Van Maele and Van Houtte, 2012), and gender (Van Houtte, 2007; Kursunoglu, 2009) have also been associated with trust.

The complexity of trust has aroused the interest of many researchers who have sought to understand how the phenomenon affects the day-to-day life of individuals, groups, and organizations. The past 50 years of immense focus on trust as a vital element in relationship building, home–school partnerships, job satisfaction, and academic performance have yielded diverse concepts of trust, including its facets, referents, and measurement (Tschannen-Moran and Hoy, 2000). A cursory look at the literature still reveals discrepancies in the way it is conceptualized and measured. Within home–school contexts, trust has been studied from several dimensions, for example, (1) as an independent variable (Karakuş and Savas, 2012; Adams, 2014; Romero, 2015), (2) as a mediator variable (Goddard et al., 2009; Li et al., 2016), and (3) as a dependent variable (Goddard et al., 2001; Kikas et al., 2016). This diversity signals the need to revisit trust conceptualization and measurement. Drawing inspiration from Tschannen-Moran and Hoy's (2000) groundbreaking multidisciplinary review of studies linked to trust in schools, this scoping review provides insight into the current state of trust research by examining how trust has been conceptualized and measured in recent scholarship spanning two decades (2000–2020). It also assesses how the measurement of trust reflects its conceptualization.

Nature of Trust

Trust is multifaceted and its meaning varies from individuals and groups (Forsyth et al., 2011). It is founded on function, ownership, shared expectations, and relationships. Home–school trust in particular is projected as an ultimate concern for school organizations positioned to help students learn (Goddard et al., 2001). Faculty trust in parents and students is a collective school property in the same manner as collective efficacy and academic prominence (Hoy et al., 2006a). Adams and Forsyth (2013) affirm that trust is a normative property of school groups established from shared perceptions of openness, honesty, benevolence, reliability, and competence. Eng et al. (2014) add that trust is the confidence in investing in education that motivates involvement in children's education. It is built on the confidence between trustor and trustee through communication (Li et al., 2016) and shared knowledge centered on the understanding of present activities and previously established responsibilities between the two parties (Borawski et al., 2002).

Focusing on the mutuality of trust, Hoy et al. (2006b) posit that faculty trust is a reciprocal relationship in which teachers and parents trust each other to consistently act in students' best interests. It also includes reciprocal relationships among colleagues, principals, students, and parents. Bower et al. (2011) contend that faculty trust is the lubricant that ensures continued parental commitment and relational engagement in the school. Trust makes a parent feel confident that their child's teacher is acting in a way that will benefit the parent–teacher relationship or a similar goal such as students' academic success. On the other hand, trust causes teachers to believe that their colleagues, parents, and the principal are doing their best to achieve the shared educational goals of the students (Adams and Christenson, 2000), and this trust can be measured through the context of the parent–teacher relationships (Houri et al., 2019). It is, therefore, safe to argue that trust is built on the confidence placed upon another person to act in a manner that will benefit either the relationship or a similar goal, and could be facilitated by relationship factors such as commitment (Simpson, 2007).

In a trusting relationship, there is a degree of dependability among parties. Liu et al. (2016a) argue that trust is a mental condition involving the acceptance of vulnerability built on the expectations of favorable outcomes from others. It has been asserted that trust involves confidence that expectations will be met (Van Houtte, 2006). This means that there is a tone of dependability between trust referents. It also indicates that parents, teachers, principals, and students believe that the other party will be responsible enough to play their roles (Titrek, 2016). Thus, faculty trust is a collective form of trust in which the faculty has an expectancy that the word, promise, and actions of another group or individual can be relied upon and that the trusted party will act in the best interests of the faculty (Forsyth et al., 2011). It is the confidence that another person will act in a way to benefit or sustain the relationship or the implicit or explicit goals of the relationship to achieve positive outcomes for students (Kikas et al., 2011).

METHOD

In searching for answers to our overarching questions, we used a scoping review method to provide an overview of evidence (Sucharew and Macaluso, 2019) on home–school trust research. Peters et al. (2020) assert that scoping reviews are primary steps for assessing potential dimensions and scope of existing research literature with a view to identifying the nature and degree of research evidence. The method serves as a source of literature gaps in the identified field (Arksey and O'Malley, 2005), and can also assist with gathering evidence to clarify concepts or definitions of particular aspects or constructs (Munn et al., 2018).

This method was suitable for our research purpose since the aim was to understand how trust in home–school contexts has been conceptualized and measured in recent scholarship. In line with the rules of the method, from the outset, we established the exclusion criteria, which consequently guided and enabled us to define the scope of the paper. The literature was then searched following the established exclusion criteria. We further screened the obtained articles for quality, as we will elaborate further in this section. The final step involved data analysis, synthesis, and reporting.

Selection Criteria

Since the focus of our paper was home–school trust, only studies that examined trust between home and school at any of the K-12 levels were included. Articles that investigated trust within post-secondary school contexts were excluded.

Additionally, only quantitative and mixed methods studies were included. Pure qualitative studies were excluded because we intended to examine how trust has been measured (statistically) as well as determine how potential gaps in its measurement may signal gaps in its conceptualization. To effectively do this, a careful reflection on the commonly used trust scales was necessary. It would have been impossible to understand the degree of trust measurement through qualitative themes, considering the diversity and lack of homogeneity among interview guides and findings. In the case of mixed-methods studies, we only examined the quantitative component which statistically computed trust. Although the levels of trust may vary from one grade level to another (Adams and Christenson, 2000), this paper did not focus on specific levels. The idea was to understand how researchers compute and present levels of trust (whether high or low) regardless of school or grade levels.

Only peer-reviewed journal articles were included. We limited our review to only journal articles as a way to narrow the scope while ensuring the quality of the literature. Peer-reviewed journals are generally believed to provide high-quality articles. The reviewed literature covers empirical studies from 2000 to date. Gray research, theses, conference papers, and unpublished materials were excluded, as it was difficult to ascertain their quality and authenticity.

Literature Search and Study Selection

We conducted a comprehensive literature search to locate studies related to home–school trust was carried out on three databases such as (1) SCOPUS, (2) EBSCO (ASC/BSC/ERC), and (3) Web of Science since they encompass educational and psychology journals where the studied construct is originated. The search was guided by the following terms; "trust and teachers," "trust in schools," "trust in parents," "trust in a family school partnership," "parents' trust in schools," "parent–teacher trust," "family–school trust," "students' trust in teachers," "faculty trust," "trust and school achievement," and "trust and school culture." Articles in languages other than English were excluded. Furthermore, the references and bibliographies of the searched studies were screened for other related papers. Those related papers were additionally tracked in the databases.

The literature search to locate relevant studies was based on refinement of the search results in terms of (1) time (January 2000–May 2020); (2) language (English); (3) publication type (Journal articles); and (4) field (social sciences and psychology). A total of 3,552 non-duplicated titles were obtained. Both authors, separately, scanned through and reviewed the titles using the pre-established exclusion criteria (above). This process resulted in the elimination of 2,229 titles. The reasons behind the elimination are displayed in **Figure 1**.

The same process and criteria were adhered to by both researchers during the abstract review stage, where 522 articles were retained for full-text review. Finally, articles that reached the full-text review stage were screened according to the following criteria (a) full text in English (some abstracts were in English but full text in other languages); (b) trust as one of the variables and is measured statistically; (c) context (trust has to be examined within or between school and/or home); and (d) K-12 study sample. This process finally yielded 79 articles that were then reviewed in line with the study's purposes. All inconsistencies were resolved during this process through constant review and discussion until consensus was reached.

Analysis

Following the final selection of relevant literature, the authors evaluated the articles based on the following: (a) author information and year of publication, (b) provision of definition, and (c) components of definition (see **Supplementary Table 1**). We then summarized and tabulated home–school trust common elements across definitions by grouping them based on the theoretical models (i.e., process, state, and relationship roles) as indicated in **Figure 2**. Through these groups, we were able to capture a multidimensional conceptualization and nature of trust. In examining the major trust referents and their relationships, we categorized them according to the trust-flow structure and relationship. Home–school trust referents were distinguished based on three attributes: *trust from home*, *trust from school*, and *trust within home and school*. Trust from home reflected trust extended by the family members (parents and students). Trust from school, on the other hand, entailed trust extended by school members (teachers and principals). Trust within home and school is the trust within-family participants and/or within-school participants (for example, faculty trust in principals/colleagues and parent trust in students).

For the review's measurement component, all scales were assessed and coded using categories empirically derived from the examination of scale items and their psychometric properties (see **Supplementary Table 2**). The conceptualization themes underpinning the analysis process provide clarity regarding the relationship between trust measurement and conceptualization. Armed with this framework, we then used inductive thematic analysis (Creswell, 2009) to generate categories that depict the conceptualization and measurement of trust in trust research. The data are narratively presented and organized based on the research questions.

RESULTS

This paper presents the review of 79 articles in two parts: (1) conceptualization of trust, to analyze how the concept of trust has been defined in extant literature; and (2) measurement of trust, to analyze how the concept has been measured, as well as how its measurement relates to its conceptualization. The discussion of the findings and conclusions will be provided in the last section of the paper.

Descriptive

Fifty-one studies (64.6%) examined trust as a unidimensional construct comprising (1) *Trust-within-school* [faculty's trust in principals (12), faculty's trust in colleagues (9); and principals' trust in teachers (2)]; (2) *Trust-from-school* [faculty's trust in clients – students and teachers as a combined unit – (5), faculty's trust in students (3), faculty's trust in schools (1), and faculty's trust in parents (1)]; (3) *Trust-from-home* [students' trust in

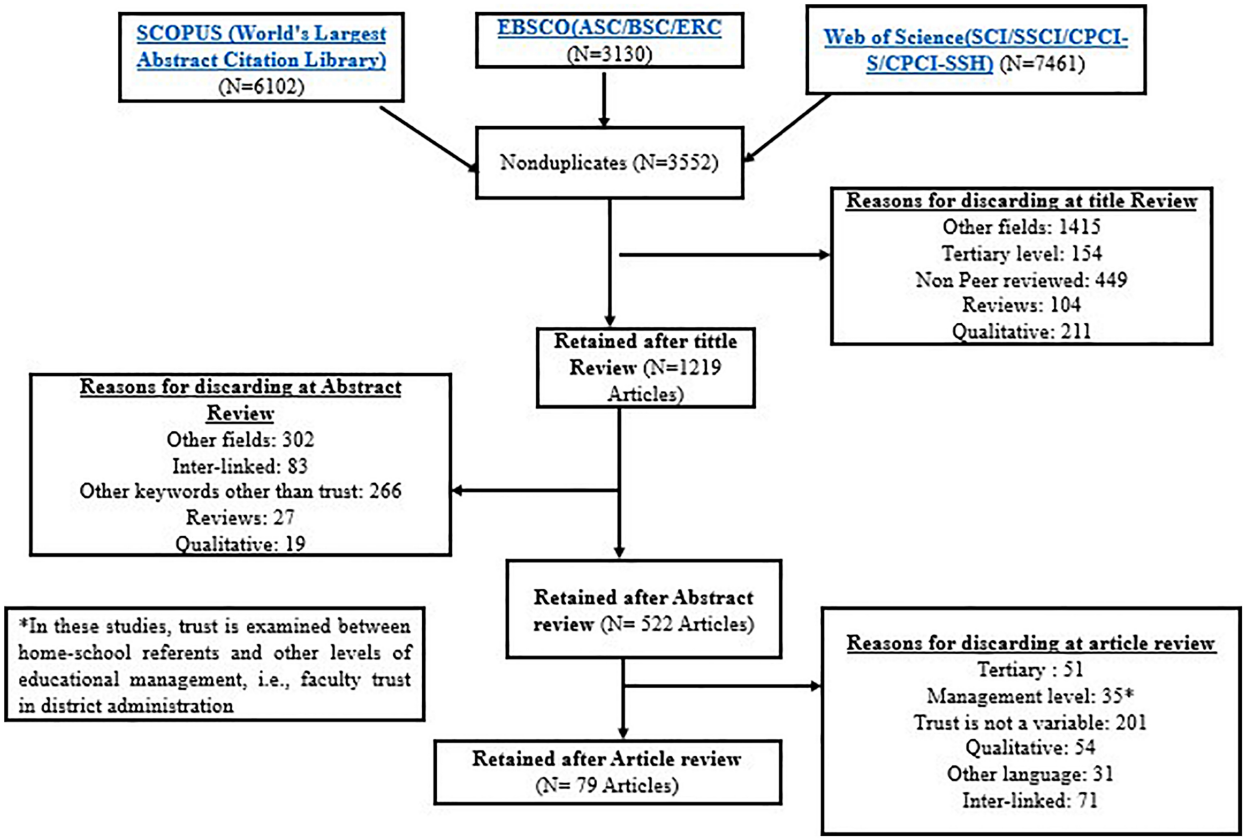

FIGURE 1 | Summary of the selection process.

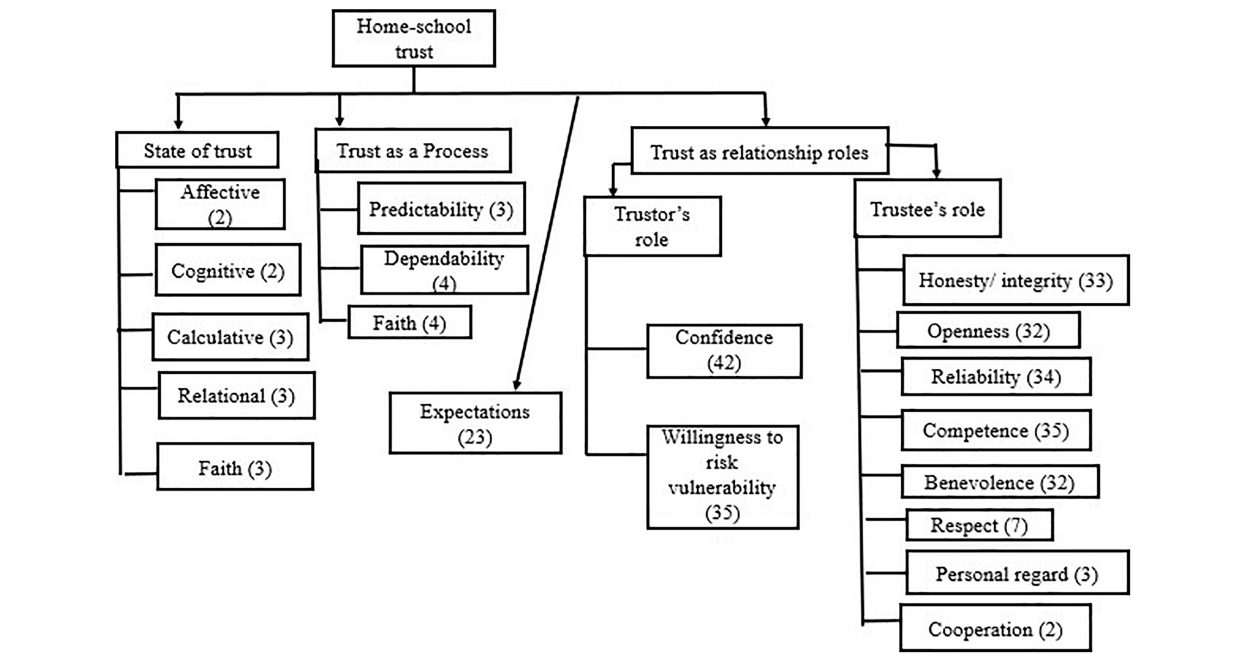

FIGURE 2 | Dimensions and elements emerged on the definition of trust.

teachers (9), parents' trust in teachers (5), and parents' trust in schools (1)]; and (4) *Trust-within-home* [parents' trust in students (2), and students' trust in their peers (1)].

Also, 23 articles (29.1%) identified trust as a multidimensional construct involving multiple trust referents, for example, faculty's trust in principals, colleagues, and clients (17), students' and parents' trust in principals (1), parents' trust in teachers and school (1), faculty's trust in principals and colleagues (2), parents' trust in principal and school (1), and student's trust in teachers and colleagues (1). The reciprocity of trust between home and school was examined in five studies (6.3%). Of the 79 reviewed articles, 65 (82%) provided a conceptual view of trust, 8 (11%) did not offer any, while 5 (7%) were not clear (see **Supplementary Table 1**). The resulting themes in the conceptualization of trust can be categorized as (1) trust as a process; (2) trust as a state; (3) trust as relationship roles; and (4) shared goals/expectations (see **Figure 2**).

Conceptualization of Trust

Trust as a State

The conceptualization of trust as a state runs deep into the psychological concept of personality traits, where cognition and affection intersect. Studies focusing on the state of trust (Rotenberg et al., 2004; Berkovich, 2018) define it through the classical model, in which trust is viewed as being either cognitive or affective (McAllister, 1995). Affective trust is defined as "an emotional experience of security and belief in the strength of connection" (Berkovich, 2018, p. 3). It is based on the sense of care (Louis and Murphy, 2017) and concern in the social exchange. In this typology, parents trust teachers based on the confidence in their relationship with schools in terms of the quality of interaction and sense of care, and concern between home and school.

Unlike affective trust, cognitive trust is based on the trustee's abilities. Parents may be willing to trust schools based on the evidence that teachers are competent. In the same vein, teachers may trust principals if there is a probability that principals will meet their obligations and expectations (Berkovich, 2018). Under the cognitive domain, trust is based on competence and dependability, whereby congregated knowledge is used to foresee the probability that expectations and obligations will be met (Berkovich, 2018). It involves both assessments of professional knowledge (including technical knowledge skills) and symbolizing practical experience and the ability to use knowledge in a particular context (professional practice) (Louis and Murphy, 2017, p. 106).

The affective and cognitive states of trust parallel what other studies have referred to as calculative, relational, and faith trust (Li et al., 2016; Liu et al., 2016a,b; Louis and Murphy, 2017). Calculative trust constitutes a teacher's assessment of costs and benefits in an exchange relationship with other teachers and leaders (Liu et al., 2016b). On the other hand, relational trust is grounded in the emotional bonds that reflect empathy, affiliation, and genuine caring for the well-being of each other (Wahlstrom and Louis, 2008; Li et al., 2016). Faith trust comes from shared beliefs, work attitudes, intentions, and expectations (Wahlstrom and Louis, 2008; Liu et al., 2016a,b). All these three dimensions (calculative, relational, and faith) appear to bear a combination of both cognitive and affective trust domains (McAllister, 1995).

Trust as a Process

Studies falling into this category (Kikas et al., 2011; Lerkkanen et al., 2013; Li et al., 2016; Santiago et al., 2016) conceptualized trust as the confidence that expected outcomes will be positive. Kikas et al. (2016), for example, define trust as the "willingness of a party to be vulnerable into the action of another party related to the child, based on the expectation that the latter party will perform a particular action to achieve positive outcomes for their child." Other researchers see it as the confidence built between schools and families that they will behave in a particular way to sustain their relationship (Adams and Christenson, 2000). These studies applied one of the earliest theories of trust in close relationships (Rempel et al., 1985) that acknowledges three stages of trust from the lowest to the highest, namely predictability, dependability, and faith.

Predictability occurs at the beginning of the relationship between home and school or within these two institutions. At this stage, trust relies on expected behavior and stability of the emotional environment (Adams and Christenson, 2000). If parents are predictable in their roles, teachers' trust toward parents will grow. The dependability stage is where trust is seen as a personal attribute (Lerkkanen et al., 2013). At this level, trustworthiness is observed through the agreed goal fulfillment. The faith stage, on the other hand, is the highest level of trust, and it reflects "an emotional security which goes beyond the available evidence or dispositional attributes" (Adams and Christenson, 2000, p. 480). It neither relies on previous experience nor the trustee's trustworthiness.

Trust as Relationship Roles

Two recent theoretical approaches – the trust model (Tschannen-Moran and Hoy, 2000) and the relational trust model (Bryk and Schneider, 2002), underpin trust conceptualization in studies that frame it in terms of relationship roles. Both models are based on roles played by the trustor (one who gives trust) and the trustee (one who is trusted) (Kwan, 2016). Fifty-five studies (87%) of the 63 articles with explicit trust definitions conceptualized trust as the individual's or group's willingness to risk vulnerability based on the confidence that the other individual or group is trustworthy in a trusting relationship. Trust was also defined as "one's vulnerability to others in terms of the belief that others will act in one's best interest" (Hoy et al., 2006a, p. 429; Bower et al., 2011). This implies that the trustor's role is to be willing to expose their vulnerability while the trustee's is to portray trustworthiness behaviors or characteristics. For example, students should be willing to put effort into their studies, based on the confidence that their parents, teachers, and school are acting in their (students) best interest. In like manner, teachers count on students, parents, and principals to act in their (teachers) interest.

In both models, the relationship roles appear similar and often overlap. The trust model (Tschannen-Moran and Hoy, 1998; Hoy and Tschannen-Moran, 1999;

Tschannen-Moran and Hoy, 2000) identifies five key facets of trust as benevolence (caring and concerned), openness (sharing information), reliability (consistency), honesty (integrity), and competence (abilities to accomplish a goal). The relational model maintains four facets, namely respect (regarding the role played by others), competence (the confidence in the abilities of the other party), personal regard for others (displaying kindness and concern for others), and integrity (constancy of one's behavior) (Kwan, 2016; Yeager et al., 2017; Yin and Zheng, 2018).

Propensity to Trust

The trustor's role includes the propensity to trust which is established from past experiences and personal characteristics and is argued to be present at the beginning of a new relationship (Kikas et al., 2016; Amemiya et al., 2020). For example, teachers receiving new students in their school may have confidence that parents will work with them to the end, not because they know those parents are trustworthy, but because of the previous experiences with other parents. The differences in the degrees of propensity to trust are directly related to differences in subsequent trust levels (Van Maele and Van Houtte, 2015; Amemiya et al., 2020).

Much as propensity is key in trust formation, its profound effect has been associated with new relationships. When it comes to ongoing relationships, school culture has been acknowledged to be more influential in the trustor's decision to risk vulnerability. Ho (2007) observes that management, parental involvement, and relationships become particularly more crucial than propensity. Trust research in home–school contexts should, therefore, not only focus on trust as a function of personality traits (propensity) but should also be extended to school culture and associated interactions among trust referents, especially in ongoing relationships. Van Maele and Van Houtte (2012) support this view by noting that trusting relations are significantly affected by school behavior, characteristics, and norms.

Shared Goals/Expectations

One other common element in trust conceptualization is the purpose shared between or among home–school relationship members. This element is evident in the contractual trust model (Bryk and Schneider, 2002), which is claimed to be built on an exchangeable basis (Kwan, 2016). In a trusting relationship, shared goals influence the two parties' behavior (Weinstein et al., 2018). They boost trust by acting as a currency of exchange in the relationship (Fox et al., 2015; Karacabey et al., 2020). As a currency for social interaction, trust makes parties accomplish things faster, with greater ease, and enhanced performance (Eng et al., 2014). Twenty-three (36%) of the reviewed studies discussed this particular aspect in their definition. Regardless of the different theoretical bases underpinning trust studies, shared goals, and expectations emerged as an essential element in the conceptualization.

Trust Referents and Context of Their Relationship

Since trust involves the trustor and trustee, its conceptualization requires an understanding of trust referents' relationships which are postulated to alter degrees of trust (Tschannen-Moran, 2001). In this paper, we examined three directions of home–school trust referents namely, *trust from home*, *trust from school*, and *trust within home and school*. Trust from home refers to the trust extended by parents and students toward teachers and the school (organization), that is, parent's trust in teachers or schools (Oghuvbu, 2008; Forsyth et al., 2011; Santiago et al., 2016; Titrek, 2016) and student trust in teachers or school (Romero, 2015).

Trust from school refers to teacher's or faculty's trust in parents (Adams and Christenson, 2000; Kursunoglu, 2009; Karakuş and Savas, 2012); faculty trust in students (Lawson, 2018; Nam and Chang, 2018); and principal trust in parents/students. Trust within home and school refers to the trust of referents within a particular context (schools or home) such as faculty trust in colleagues (Van Maele and Van Houtte, 2011; Khany and Tazik, 2015; Karacabey et al., 2020), and faculty trust in principal (Chughtai and Buckley, 2009; Babaoglan, 2016) or students trust in parents (Borawski et al., 2002) and student trust in their peers (Rotenberg et al., 2004).

Trust occurs based on interdependence between two or more parties. Thus, the degree of interdependence alters vulnerability. The relationship context between the trust referents is strongly associated with the bases and degree of trust (Tschannen-Moran, 2001). Therefore, in this context, researchers are consistent with the trust relations between other referents but inconsistent with trust in clients (parents and students) (Van Maele and Van Houtte, 2009). Research is uncertain regarding how parents should be regarded in home–school relations. It is not clear whether they should be viewed as clients (Tschannen-Moran, 2001) or partners (Ho, 2007).

Trust From School and Trust From Home

Trust in parents is strongly correlated with trust in students. Some of the reviewed articles examined trust in parents and students as a unified construct (trust in clients), while others (Santiago et al., 2016; Nam and Chang, 2018) assessed trust between these referents separately (trust in parents and trust in students). Hoy et al. (2006b) assert that while trust in parents and students may seem to be separate constructs, they are not. Similarly, Van Maele and Van Houtte (2009) claim that there is a possibility that teachers' trust in parents and students may form a unified concept at the school level.

Observing the nature of the parent–teacher relationship, Lerkkanen et al. (2013) theorized that trust between parents and teachers represents a true partnership. Provided that parents, teachers, and students are partners in the educational process (Dirks and Ferrin, 2001), parent–teacher relations carter for the most beneficial outcomes on supporting the child's education, especially that, teachers are often confronted by incompatible demands from clients. Despite the possibility that trust in parents and students is a unified construct, the level of interdependence between students and teachers, and parents and teachers differs.

Trust Within Home and School

Research is consistent about trusting relationships between parents and their children on one hand, and among colleagues (faculty's trust in colleagues) on the other. The degree of interdependence between these two groups is clear. However, trust between teachers and principals remains obscure. The

principal works hard to gain cooperation from teachers, and teachers seek fair treatment from the principal (Liu et al., 2016b). In studies that examined trust with leadership and organizational culture, the teacher–principal relationship is envisioned in various types of leadership, for example, collegial and instructional (Tschannen-Moran and Gareis, 2015; Louis and Murphy, 2017). Even so, the majority of research articles reviewed are silent on this aspect (Tschannen-Moran, 2001; Forsyth et al., 2006; Van Maele and Van Houtte, 2009).

From the foregoing presentation, it can be deduced that the trustor's self-sacrifice is connected to the degree of interdependence on the trustee's behavior, intents, or reaction. Additionally, the expected return from the relationship plays a role in the decision of whether or not the trustor should trade their vulnerability. Nevertheless, one party may decide to become vulnerable based on either self-character or previous experience (propensity to trust) or/and perception of the other's behavior. Thus, all four aspects are key in the conceptualization of trust.

Measurement of Trust

To fully understand the operationalization of home–school trust, it was also crucial to cast light on its measurement and examine the relationship between trust conceptualization and trust measurement. This review found a total of 32 scales purporting to measure trust or some aspects of it. Six scales were, however, dropped from the analysis for lack of clear dimensional focus. Therefore, only 26 measures were analyzed. **Supplementary Table 2** shows the 26 scales in the final sample alongside the 6 that were excluded (at the bottom of the table). The table lists all the studies associated with these scales and other related coding details.

Items Dimensions

The first batch included 23 scales measuring facets of trust from two models; the trust model (Tschannen-Moran and Hoy, 2000) and the relational trust model (Bryk and Schneider, 2002). The dimensions of trust captured by these scales often overlap and mainly hinge on trustee characteristics. For example, measures associated with the relational trust model (Bryk and Schneider, 2002) have examined trust through the following four facets: respect, personal regard for others, integrity, and competence (for example, Goddard et al., 2009; Kwan, 2016; Ford, 2019). Conversely, those following Tshannen-Moran's and Hoy (2000) trust model measure trust through five facets, namely benevolence, openness, reliability, competence, and honesty (for example, Hoy and Tschannen-Moran, 1999; Adams and Forsyth, 2009; Megan Tschannen-Moran and Gareis, 2015). The Omnibus scale, in particular, uses these five facets but also includes one special item measuring the "vulnerability" of the trustor in a trusting relationship. Other studies also combined two scales to measure different dimensions of trust. For example, Amemiya et al. (2020) combined Yeager et al.'s (2017) and Gregory and Weinstein's (2008) scales to capture students' trust in schools and students' trust in teachers, respectively.

Two scales, Family School Relationship Survey (FSRS) and Parent Trust in Schools (PTS) by Adams and Christenson (2000) and Forsyth et al. (2011), respectively, apparently measure trust as a process, gradually developing on a continuum running from predictability (lowest stage) through the faith stage (highest). Although parallels can be made between the faith stage of trust as a process and faith trust under the psychological dimension, these two are not the same. The formal is dependent on neither the trustor's propensity to trust nor the trustee's trustworthiness behavior (Adams and Christenson, 2000). Nevertheless, the latter arises from shared beliefs, work attitudes, intentions, and expectations (Louis and Murphy, 2017). Adams and Christenson's (2000) FSRS scale consists of two dimensions that measure reciprocal trust (i.e., parents' trust in teachers and vice-versa). Researchers from many countries have utilized the scale, for example, in the United States (Adams and Christenson, 2000), Estonia, and Finland (Lerkkanen et al., 2013; Kikas et al., 2016).

Adams and Christenson's (2000) FSRS scale is the modification of trust in close relationship scale by Rempel et al. (1985), with statements explaining a particular behavior expected to be portrayed by the trustee. For example, "I am confident that parents/teachers are doing a good job disciplining my child," or "...are worthy of my respect," or "...respect me as a competent teacher." Even though the FSRS scale was used as a trust scale, we realized that its items more likely represent parents' and teachers' roles in a family–school partnership than the trust itself. Moreover, the scale does not itself appear to adequately measure trust in home–school contexts, as can be inferred from Santiago et al. (2016) study that had to combine both the FSRS with PTS scales to capture parents' trust in schools.

Trust as a state was measured by four scales in two different ways: (1) the psychological conditions (i.e., affective and cognitive) by McAllister (1995) and (2) the modified ones (calculative, relational, and faith) by Liu et al. (2016a,b). Despite the notable differences, both of these approaches are underpinned by McAllister's (1995) theory. Liu et al. (2016a) measure was developed by blending two scales from two different theoretical perspectives – the trust scale in Tschannen-Moran (2009) – the Omnibus scale (Hoy and Tschannen-Moran, 2003) – and MacAlister's. The blended scale and McAllister's have proven their reliability in different samples, for example, in the United States, China, Israel, and Turkey, where they have been used to evaluate within school trust (i.e., collegial trust). The third scale (Lee, 2007) was used to measure students' trust in teachers, while the final scale (Louis and Murphy, 2017) measured principal's trust in teachers in terms of leadership patterns and practices. Another group of studies computed trust in terms of the new direction of trust (i.e., trust in authority), and the trustee is mainly in a higher position than the trustor, for example, students' trust in the teacher (Bower et al., 2011; Yeager et al., 2017); parents' trust in teachers (Houri et al., 2019) and students trust in their peers (Rotenberg et al., 2004). Though this dimension seems new, we noticed that they share some elements in common with relational trust (i.e., fairness and respect). However, the emphasis is on the power of the trustee rather than the relational attachment between the two parties.

Some of the scales (adapted or constructed) measured different elements of trust depending on the nature of the studies. The authors of those studies operationalize trust based on the

context of the particular study. For example, trust was measured as the degree of parental involvement (Eng et al., 2014), the quality of interaction between parents and teachers (Oghuvbu, 2008), and parental monitoring and involvement (Bower et al., 2011). As shown in **Supplementary Table 2**, we specifically placed these scales in the category "other" to highlight the new perspectives with which trust has been examined. There were, however, other scales with no clear dimensions, and hence it was difficult to understand the perspective through which they measured trust. Since they could not fit into any of the created categories (including "other"), we grouped them under the theme "*ambiguous*." An example of such scales includes Nam and Chang's (2018), which measured trust as a mediator variable through the following three items: (1) "The teaching is good," (2) "Teachers are interested in students," and (3) "Teachers praise effort." Also, Houri et al. (2019) scale, an adapted version of Vickers and Minke's (1995) scale, measured trust as a mediator variable between effective communication and parental engagement through one general item, "I trust my child's teacher."

Items and Psychometric Properties

Most of the scales showed satisfactory to high reliability, with Cronbach's alpha ranging from 0.60 to 0.95 (see **Supplementary Table 2**). Some newly constructed scales underwent psychometric properties test. For example, Oghuvbu (2008) piloted the scale to a sample of 300 participants to measure the internal consistency, reliability, and validity before administering it. Janssen et al. (2012) also tested their new scale for internal consistency, reliability, and homogeneity. We found that other researchers did not indicate whether and how they ascertained the validity and reliability of their scales. In some cases, only the reliability test and factor loadings are provided (Wahlstrom and Louis, 2008; Nam and Chang, 2018). Also, Louis and Murphy (2017) developed a "blended" trust model from four different sources without offering any clear procedures for validity assurance.

We noted that during the adaptation of trust scales, some items were eliminated during the process for various reasons, such as low reliability (Ho, 2007) and the need to maintain the goodness of fit (Lee et al., 2011). Four items of the Omnibus scale were claimed to conflict with other studies and removed in Kalkan's (2016) study. The researcher changed the Likert answers from strongly disagree-strongly agree to never-always, with no information concerning the modification. On the other hand, Forsyth et al. (2006) reduced the scale from 11 to 7 items, only explaining the close correlation between two items (11 and 12) but giving no justification for the rest. Also, Janssen et al. (2012) re-arranged items in Adams and Christenson's (2000) trust scale according to the five facets (openness, benevolence, reliability, honesty, and competence). Yet, the original scale was meant to measure trust as a process from predictability to dependability and faith. Janssen et al. (2012) did not explain the reasons behind those changes.

Operationalization of Home–School Trust

We observed that the categories under which trust is measured are closely related, as they all measure trustee behavior (see **Supplementary Table 1**). Put in another way, they all measure perceptions of the trustor regarding the trustworthiness of the trustee. Even though most researchers measure trust through five common facets of trust (i.e., benevolence, integrity/honesty, competence, reliability, and openness), there is still a lack of consensus regarding these facets. While some studies included all the five facets, others only used some (Chughtai and Buckley, 2009; Kwan, 2016; Ford, 2019). These inconsistencies have stirred up a debate about the nature and number of facets required to compute trust. Tschannen-Moran and Hoy (2000) argues that all five facets must be attended to when conceptualizing trust. She maintains that "A person who desired to be trustworthy will need to demonstrate benevolence, reliability, competence, honesty and openness" (p. 314). Romeo (2018), on the other hand, contends that students trust teachers through three facets of trust, namely benevolence, competence, and integrity.

Moreover, other researchers have established that among the five common facets, parents have more trust in the reliability, competence, and honesty of teachers than teachers have in parents (Janssen et al., 2012). Additionally, in a survey about parent–child trust, Borawski et al. (2002) maintain that trust is established through shared knowledge and communication. Their study showed perceived parental competence and integrity as significant facets of trustworthiness, often centered on parental understanding of their children's regular routines and the adolescents' preceding behavior. Teachers' trust in their leader (principal) has also been found to be based on integrity, benevolence, and competence (Freire and Fernandes, 2015).

We found that some studies measured trust differently from how they defined it. For example, Janssen et al. (2012) defined trust based on the relationship model featuring the five facets of trust yet used the scale that measures trust as a process. The author did not explain why they used a scale based on a different trust model and how this might not have reasonably affected trust measurement. Like Janssen et al. (2012) measured trust using a scale that did not reflect his conceptualization of trust. In defense of using a scale different from trust conceptualization, Bower et al. (2011) pointed out that the existing scales were insufficient since they do not measure the reciprocity of trust between home and school.

DISCUSSION

This paper reviewed research findings on home–school trust with a specific focus on the conceptualization and measurement of trust across quantitative literature. The review found numerous studies relating to home–school trust in K-12, with a noticeable upward trend in published works from 2000 to 2020. Much of the scholarly research in this field has been conducted in Western countries, especially the United States. However, there is a significant increase in research emerging from other countries such as Turkey, China, Belgium, Chile, Estonia, Finland, or Nigeria. We found marked variability in the definitions and measurement of home–school trust offered by these studies. Our findings illustrate the need to reconsider the conceptualization and measurement of trust to emphasize the vulnerability of the

trustor rather than the commonly used trustee characteristics. Much of the extant literature on trust essentially measure trustworthiness and not the purported trust. Based on our analysis, we provide a proposed model for (re)conceptualizing this body of research.

How Has Home–School Trust Been Defined and Measured? (Gaps)

More than half of the studies provided trust definitions, none of which was unanimously accepted as a definition of home–school trust. Nonetheless, the following essential elements can be gleaned from the various conceptualizations of trust: (1) it involves the risk of vulnerability on the part of the trustor; (2) it is based on the trustor's confidence in the trustee; (3) the trustee's trustworthiness characteristics are critical in the decision to trust; (4) it occurs in the course of a relationship between the trustor and trustee; and (5) it takes place within a context of expected outcomes or shared goals. The latter part involves specific roles or tasks where behavior can be taped onto. Also, some definitions relate it to social exchanges between the trustor and the trustee.

From the reviewed articles, we established that trust has been conceptualized under four pillars namely, the trustor's role, the trustee's role, shared goals, and relationships among trust referents. Romero (2015) affirms that trust includes a trustee and a trustor, who undertake a certain crucial "role in settings involving vulnerability; where confidence in another's goodwill and expertise is important" (p. 217). Scrutinizing the trustee's role – *trustor's confidence that the trustee will be benevolent, competent, honest, open, and reliable* – we found that most definitions clearly state that the trustor's confidence is built on the perception that the trustee is capable (competent) and also possesses caring and trustworthiness traits (honesty, openness, and reliability).

However, the trustor's perception of the trustee's trustworthiness appears to be wrongly mistaken for the former's willingness to risk vulnerability. Having confidence in another's perceived trustworthiness does not automatically result in one's willingness to risk vulnerability. When deciding to trust, the trustor may assess the trustee's trustworthiness (Lerkkanen et al., 2013) but still take the final step regarding the nature and degree of vulnerability they would want to extend.

Even though some scholars have theorized that the "willingness to risk is the degree of confidence one has in a situation of vulnerability" (Hoy and Tschannen-Moran, 1999, p. 187), having confidence that the other party is trustworthy, and eventually extending trust (risking vulnerability) are two separate processes. Tschannen-Moran and Gareis (2015) argue that teachers' perceptions and interactions with the principal are only a step toward the decision of whether to risk their vulnerability. We observed that most studies focus on measuring the intention to trust (willingness to risk vulnerability based on the confidence in the other party's trustworthiness) rather than on the actual trusting (risk-taking) behavior.

Although risking vulnerability is associated with other motives such as desperation, obedience, impulsivity, innocence, or self-assurance (Hoy and Tschannen-Moran, 1999), trust requires action (Nienaber et al., 2015) because it is reciprocal. Teachers can feel trusted when the principal entrusts them with managerial tasks since by doing so, the principal exposes their vulnerability to teachers. Focusing on trust intentions is not enough since there is no guarantee that the actual trusting behavior will occur. For instance, the principal may be willing to risk vulnerability but never actually attempt it. In that case, teachers may not feel trusted since what the principal has expressed is merely their (principal) perception of the teachers' trustworthy attributes. In a school setting, trust is demonstrated when leaders delegate a certain degree of power to their subordinates (Nienaber et al., 2015). Indeed, trust intentions arise from perceptions of trustworthiness. However, the most tangible evidence of trust is in the actual behavior.

Besides, trust and vulnerability are closely related. Deb and Chavali (2010) assert that "trust is consistently related to the vulnerability of the trustor because without the vulnerability of the trustor upon the trustee, trust becomes irrelevant" (p. 44). Further, Goddard et al. (2001) contend that "where there is no vulnerability, there is no need for trust" (p. 7). This implies that confidence is insufficient to be the only component in defining trust. Perceptions remain perceptions until one's vulnerability is exposed to another party, and at that point, trust is formed. Trust assumes a state of vulnerability on the part of those who trust and furthers their willingness to take risks (Walker et al., 2011). This infers that there is an evaluation of vulnerability prior to the decision to risk it. Yet, the literature is silent about what kind of vulnerability is at stake in trusting relationships.

Accordingly, vulnerability assessment comes first, and the trustor has to ascertain whether it is safe to expose it to the other party. Lewis and Weigert (1985) argue that "we choose whom we will trust, in which aspects and under what circumstances, and we base the choice on what we take to be 'good reasons,' constituting evidence of trustworthiness" (p. 670). In the same vein, Hoy and Tschannen-Moran (1999) assert that trust is manifested on account of the nature of vulnerability to be risked. Therefore, we argue that trust requires risking a particular type of vulnerability.

Many of the reviewed studies confuse trust and trustworthiness and have used them interchangeably. Yet these two constructs are not the same. While trust refers to the risking of vulnerability based on the other party's trustworthy behavior, trustworthiness refers to the characteristics of, and conditions around the person or thing being trusted, that facilitate that trust (Farnsworth et al., 2019). Thus, the so-called "*facets of trust*" are actually facets of trustworthiness and not trust. Facets are dimensions, sides, characteristics, or aspects of something. It is, therefore, grossly inaccurate to assume that benevolence, reliability, competency, openness, or integrity are components of trust. These are the trustworthiness attributes of the trustee as perceived by the trustor.

We argue that the said facets of trust should be more appropriately termed as bases of trustworthiness. On the other hand, trustworthiness is one of the bases of trust as it influences the decision to trust. Facets of trust should essentially reflect the components of trust (intrapersonal, relational, or collective) based on the context and nature of vulnerability (whether passive or active) (Poza et al., 2014; Nienaber et al., 2015). Trust is to

the trustor while trustworthiness is to the trustee. Therefore, terming trustees' characteristics as dimensions of trust weakens the conceptualization by shifting trust to the trustee. Without a doubt, the trustor's willingness to risk vulnerability may be constructed on the confidence that the other party (trustee) is trustworthy. It is for this reason that trustworthiness can only be the basis for the trustor's confidence in the trustee. However, what signifies the degree of trust is the trustor's willingness to risk vulnerability. To demonstrate that the trustee characteristics may not always influence the decision to trust (Amemiya et al., 2020), note that,

Students may have a history of perceiving institutional bias and unfairness but express willingness to trust a particular teacher. These students may initially see their teacher as an exception to their broader theory of institutional injustice. However, when their teacher disciplines them, this punitive action may be perceived as confirmation of their theory that the school and its specific actors are unjust (p. 673).

While trustworthiness attributes (bases) are in some cases the major determinants of the decision to trust, research is still inconclusive concerning which particular ones are more instrumental in that decision. Most of the reviewed studies acknowledge all five common bases of trustworthiness (benevolence, honesty, reliability, openness, and competency) as collectively constituting trust while other studies focus on only some of them. Even though there is an ongoing debate regarding the nature and number of bases required to compute trust, we argue that the major concern should be the misconception of facets of trust and those of trustworthiness. As stated earlier, the said facets of trust are in fact the bases of trustworthiness and may influence trust indirectly through a mediator namely, confidence. This fits well with trust's definition of willingness to risk vulnerability based on the confidence that the trusted party is trustworthy. The confidence (whether low or high) will lead to the decision of what degree of vulnerability can be risked. Likewise, confidence is built on those bases of trustworthiness. It will be irrational to suppose that the bases of trustworthiness have a direct influence on trust.

The confusion of facets of trust, trustworthiness, confidence, and vulnerability risking points to the weakness in the conceptualization of trust. Based on the reviewed literature, we highlight the stages of trust formation which can clarify the misperceptions in the home–school context. The first stage in trust formation is the assessment of trustworthiness. It is during this stage that the bases of trustworthiness (benevolence, honesty, reliability, openness, and competency) are considered. If assessed as positive, the perceived bases of trustworthiness will then boost the trustor's confidence in the trustee. Thereafter, working together with other factors such as propensity to trust and shared goals, the built-up confidence will influence the actual risking of vulnerability. Trust is formed when the risk is being taken without any misgiving. It bears repeating that the concept of trust incorporates risking vulnerability traded against the confidence one has in the other party. Understanding the crucial role of this aspect is a giant step toward a more valid measure of trust.

We noticed that the statistical computation of trust is based on the perception of trustworthiness. Vulnerability risk is silent in almost all computations of trust, thereby justifying the notion that empirical examinations of mutual trust have not always aligned with its conceptualization (McAllister, 1995). Even in studies that acknowledge vulnerability, trust is still computed largely based on the five "facets of trust." While we took notice of a few exceptional studies that acknowledged and incorporated both trustworthiness characteristics and vulnerability items in their scales as crucial components of trust (Hoy and Tschannen-Moran, 1999; Goddard et al., 2001), the measurement of vulnerability in these studies is shockingly cursory, and the items do not appear to measure vulnerability. Examples of such items purporting to measure vulnerability included the following: "trustor trusts trustee," "trustor trusts the trustee to support them," and "trustor is suspicious of the trustee." These items are too general and do not precisely capture the aspect of vulnerability being risked in a trusting relationship.

Moreover, the computation of trust by aggregating scores on items intended to measure vulnerability with those intended for trustworthiness raises validity concerns. This is because trustworthiness influences the degree of vulnerability to be risked. Therefore, the influencing and influenced factors should not be averaged together to compute trust. Trust scales must examine what aspects of vulnerability the trustor is risking, rather than wholly focus on the trustee's trustworthiness.

Measuring trust should also incorporate the relationship bases between trustor and trustee. This is because the trustor's risking of vulnerability is not only influenced by the trustee's trustworthiness but also the relationship between the trustor and trustee. Tschannen-Moran and Hoy (2000) observe that trust complexity extends to the relationship context of referents. They argue that "trust is multifaceted and may have different bases and degrees depending on the context of the trust relationship" (p. 551). The teacher–parent relationship, for example, is more complex (Keyes, 2002) than the teacher–student relationship. For decades research in home–school interactions has been attempted to establish relationship grounds between home and school (Fiore, 2001; Murray et al., 2008, 2013; Epstein, 2010) yet variations still exist. Parents have been perceived as uneducated or uncaring (Murray et al., 2008) in such a manner that their relationship with teachers and schools is treated at the clientele level.

On the other hand, researchers establish that a partnership-like relationship referred to as the family–professional collaborative relationship between educators and parents fosters their engagement and trust (Dirks and Ferrin, 2001; Murray et al., 2013). A partnership is built through practices such as establishing trust, stable relations, mutual respect and understanding, reciprocal communication, involvement in decision making, and efforts to use the school as a communal center (Henderson and Mapp, 2002). Apart from those practices, parents seek out advice from trusted members of the community such as educators to support their children's development (Poza et al., 2014). Given that, it is controversial to measure trust between these referents without considering their trust relationship prominence. Understanding the nature and degree of trust relies very much on the relationship between parties in such a way that that it explains the requirements needed for trust to develop and flourish.

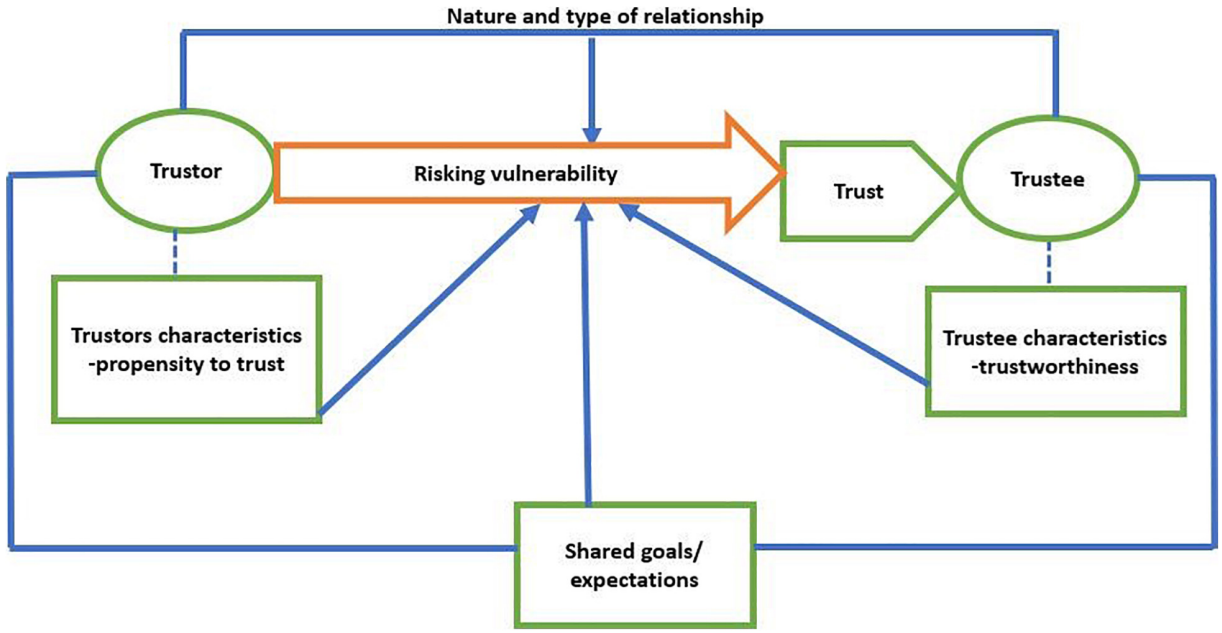

FIGURE 3 | Proposed trust model.

Bryk and Schneider (2002) contend that teacher–student trust in elementary schools operates primarily through teacher–parent trust. Additionally, research shows that teachers' trust in students should be examined as a unified concept (trust in clients) in lower levels of education since the existing relationship between teachers and students is based on that of parents (Adams and Christenson, 2000; Goddard et al., 2001; Karakuş and Savas, 2012). However, during the schooling process, teachers, parents, and students work together with different levels of needs. Research shows that the student–teacher trust relationship is based on competence (Lawson, 2018), fair treatment (Amemiya et al., 2020), and care, whilst for parents, it is built on professional relationship, that is reliability, competence, and honesty (Janssen et al., 2012). We agree that students can be treated as clients, as they are an integral part of the parent–teacher/school relationship. Nonetheless, we argue that the differences in the relationships should not be ignored.

Although it is theoretically possible for teachers and students to be examined in a unified construct, we still cannot ignore different needs and levels of interdependence especially at higher grades (Van Maele and Van Houtte, 2009). This is evident in studies where these two referents have been examined separately (Adams and Christenson, 2000; Lee, 2007; Dönmez et al., 2010; Lerkkanen et al., 2013; Romero, 2015). Grounded in those differences, we, therefore, suggest that trust in parents and students should be examined separately not as a unified construct, especially in higher grades.

Furthermore, even though the trustee is perceived to be trustworthy, the decision of risking vulnerability cannot be guaranteed. This is because there are other factors besides trustworthiness that influence the trustor's decision to risk. For example, the propensity to trust (Korsgaard et al., 2014), expectations (Fox et al., 2015), and the relationship between the trustor and trustee (Tschannen-Moran and Hoy, 2000).

Conclusion

This review has revealed discrepancies in the conceptualization, measurement, and operationalization of trust in recent home–school trust literature. Based on the discussion above, we, therefore, propose a shift in the conceptualization and measurement of trust.

Regarding trust conceptualization, the vulnerability to be risked by the trustor should be considered as an essential pillar in the trust formation process and is the ultimate evidence of trust. The assessment of the trustee's trustworthiness characteristics, the shared goal, and the state of the relationship with the other party may lead the trustor to the decision of either surrendering their vulnerability or not. However, what eventually signifies the presence of trust or lack of it is the actual act of risking vulnerability. Our proposed definition of trust is, therefore,

The extent to which the trustor is willing to risk a particular aspect or degree of vulnerability, triggered by the propensity to trust, shared goals, the relationship between the trustor and the trustee, and the confidence that the trustee is trustworthy.

This definition is represented in a simple model (see **Figure 3**) for a clear conceptualization and understanding of trust. The model includes all key aspects of trust from trustor's role (propensity to trust), trustor's role (trustworthiness characteristics), trustor's and trustee's expectations, and their relationship. It also mirrors elements to be considered for the measurement of trust.

In the same vein, we propose two approaches through which trust can be computed. In the first approach, trust can be examined through the trustor's behavior, that is, the nature

and degree of vulnerability to be risked. Researchers should determine the types of vulnerabilities within the home–school context and assess the extent to which the trustor is willing to risk them. The second approach is closely related to the current method. However, in this particular approach, trust should be measured based on all the factors that influence the decision to risk vulnerability. These include: (1) the perception of the trustee's trustworthiness, (2) shared goals/expectations, and (3) the nature of the relationship between the trustor and the trustee. Measuring trust through this method will, however, require the researcher to do the following: (a) control for the trustor's propensity to trust; (b) establish relationship types (for example, under the teacher–principal referent, the relationship can be that of a leader and followers, supervisor and subordinates, or collegial) to understand their influence on vulnerability risking. This will also enable researchers to draw a line between trust, respect, and fulfillment of obligations; (c) revisit the facets of trustworthiness by identifying critical antecedents of trustworthiness, and determine which ones are more associated with vulnerability risking; and (d) investigate home–school expectations to understand whether schools and families have a common understanding of the shared goal. As trust is reciprocal, we recommend the computation of the reciprocity of trust by examining both *from-school* and *to-school* trust, which will include all key players in home–school trust.

Limitations

The findings of this review cannot be generalized due to some limitations arising from our inclusion/exclusion criteria. First, the review excluded all gray research, books, dissertations, and symposia papers due to, among other reasons, validity concerns. Additionally, articles in languages other than English were not included. These excluded sources might probably have immensely contributed to this review.

Second, the review only dealt with papers using K-12 samples to the exclusion of those with post-high school samples. However, the post-secondary educational levels might have enriched our findings, especially the nature and types of relationships between trust referents. Finally, our review was limited to quantitative studies. Undoubtedly, qualitative studies in home–school trust have wider scope in capturing the concept of trust. Nonetheless, both qualitative and quantitative methods provide data with distinct understandings of trust, which might have been proven difficult to synthesize together. We recommend that future reviews consider expanding the scope of this current one by turning to qualitative studies to provide a deeper understanding of home–school trust.

AUTHOR CONTRIBUTIONS

HS contributed on reviewing process and manuscript writing. CR provided a professional advice. PK assisted on reviewing process as well as manuscript editing. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.742917/full#supplementary-material

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Examining the Reciprocity in Dyadic Teacher-Child Relationships: One-With-Many Multilevel Design

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Recent literature has shown the reciprocal influences of teacher-student relationships for both teachers and students in primary school. When it comes to early childhood education, very few studies have examined the level and the nature of agreement between teachers' and students' perceptions for their dyadic relationships. Using the one-with-many model (OWM), a dyadic analysis approach, the present study aims to examine the degree of agreement between teachers' and students' perceptions about their dyadic relations. The Student-Teacher Relationship Scale (STRS) and the Child Appraisal of the Relationship with the Teacher Scale (CARTS) are used to assess the quality of teacher–student dyadic relationships from teachers' and students' perceptions, respectively. The dyadic sample (N = 1,345 teacher-student dyads) is recruited from 168 preschool classrooms in Greece. Results of the OWM analysis showed that teachers and students evaluated their dyadic relationship quality in a different way and there is no reciprocity in their views. Implications of the study's results are also discussed.

Keywords: dyadic analysis, reciprocal one-with-many design, teacher-student dyadic relationship quality, students' perceptions, early childhood education, teacher-child relationships

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INTRODUCTION

Affective teacher-student relationships are considered to be one of the most powerful predictors of a student's development, learning and well-being (OECD, 2021). According to Pianta and Allen (2008), a positive teacher-student relationship "is the single most important ingredient in promoting youth development" (24). Research findings showed that teacher-student relationships contribute considerably to students' academic, social, and emotional development during the preschool years (Mashburn et al., 2008; Roorda et al., 2011; Brock and Curby, 2014; Longobardi et al., 2021). Prior research suggest that supportive relationships also influence the students' long-term behavioral outcomes (Hamre and Pianta, 2001; Roorda et al., 2014).

Much of research on teacher-student relationships is rooted in attachment theory, which considers the teacher as one of the main attachment figures in young children's lives (Verschueren and Koomen, 2012). Indeed, studies have shown that when students experience warm/positive relationships with their teachers, they feel emotionally secure, a fact which supports their participation in learning activities and allows them to explore the classroom environment (Mashburn et al., 2008; Sabol and Pianta, 2012). Contrary, conflictual relationships between teachers

and students are associated with students' school disengagement, lower academic achievement and increasing risk of behavior problems (Hamre and Pianta, 2001; Roorda et al., 2017).

Another theoretical approach which focus on motivational process and internal working models, like attachment theory, is the self-determination theory (Deci et al., 1991). This theory highlights the importance of students' motivation and within this frame, the crucial role of teacher-student relationships is interpreted (Deci et al., 1991; Brinkworth et al., 2018; Pakarinen et al., 2021). Moreover, within this theory, teachers tend to fulfill children's psychological needs (competence, autonomy and relatedness) by supporting emotional engagement, providing structure and supporting autonomy, to promote children's engagement in learning activities (Skinner and Belmont, 1993).

Research on teacher-student relationships is also based on interpersonal theory (Thijs et al., 2011; Roorda D. L. et al., 2013). According to interpersonal theory, dyadic interactions can be described on two orthogonal dimensions, namely the control and the affiliation (see the Wubbels et al., 2012). Affiliation varies from friendliness to hostility and refers to the degree of warmth, proximity, and support in the interaction. In contrast, control varies from leadership to passiveness and refers to the degree of power and influence in the interaction (Kiesler, 1996). This theory describes how teachers' and students' actual behaviors in their interactions influence each other's behaviors and applies to reciprocal effects in interactions between teachers and students (Roorda D. L. et al., 2013).

However, despite the existence of numerous studies on the quality of teacher-student relationships, researchers are still trying to configure the underlying mechanisms of teacher-student relationships quality (e.g., Hamre et al., 2013; Verschueren and Koomen, 2012), and how teachers can develop and maintain effective relationships with individual students (e.g., Roorda DL. et al., 2013; Summers et al., 2017; Tsigilis et al., 2019). Several studies in the last years have studied the teacher-student relationships in whole-classroom setting (Hamre et al., 2013; Mashburn et al., 2008; Roorda et al., 2011; Spilt et al., 2011). Fewer researchers examine teacher-student interactions or relationships toward an individual student (e.g., Roorda D. L. et al., 2013; Lippard et al., 2018; Liu et al., 2018; Koenen et al., 2019; de Ruiter et al., 2021; Koenen et al., 2022). It should be noted, however, that in preschool years little is known about the meanings that young children impute to their dyadic relationships with teachers.

Recent research showed that teachers' perceptions about their relationships with students differ regarding their students' gender (Horn et al., 2021). Teachers tend to develop more favourable perceptions of their relationships with girls than with boys (Hamre and Pianta, 2001; Buyse et al., 2011; Horn et al., 2021). Previous research underline that teachers perceive their relationships with girls as affective and less conflictual compared to their relationships with boys (Hamre and Pianta, 2001; Ewing and Taylor, 2009; Horn et al., 2021). Research also has shown that students' age affects their relationships with teachers (Jellesma et al., 2015; McNally and Slutsky, 2018). Researchers found that children tend to gradually have less close relationships with teachers when they transition to the upper grades of school (e.g., Ang et al., 2008). It is unclear, however, whether teachers' and students' gender and age also affect their dyadic teacher-student relationships. Given the importance of the dyadic teacher-student relationships, a closer investigation of this question is timely and pertinent.

Most of the studies examining teacher-student relationships were based on teachers or parents-reported measures and classroom observations guided by attachment theory (e.g., Doumen et al., 2012; Hartz et al., 2017; Lippard et al., 2018; Koenen et al., 2019; Gregoriadis et al., 2020a). Although teachers' perceptions offer valuable insights about their relationships with their students, they come with various limitations as well. For example, teachers' reports can "suffer" from response bias or social desirability bias (Doumen et al., 2012). Teachers tend to rate students in a "holistic" way and their ratings are often influenced by students' demographic characteristics such as gender, ethnicity, socio-economic status or students' behavior (e.g., Murray and Murray, 2004; Murray et al., 2008; Roorda D. L. et al., 2013). Also, the examination of only teachers' perceptions about their relationships with students could mean that a great amount of information is left unexplored (Hogekamp et al., 2016).

On the other hand, measuring students' perceptions and especially young children's perceptions about their relationships with teachers can be a challenging task (Vatou et al., 2020). The inclusion of young children's perceptions in research designs is often described as problematic, due to measurement, validity, ethical or developmental issues (Chambers and Johnston, 2002; Miller-Bains et al., 2017; Brooks and Murray, 2018). However, in the beginning of the new century researchers increasing include the examination of children's perceptions in their research designs (Koomen et al., 2012; Roorda et al., 2014; Vervoort et al., 2015; Longobardi et al., 2017; Liu et al., 2018; Verschueren et al., 2019).

Many studies have shown that young children can provide reliable information about various aspects of their school life (Mantzicopoulos and Neuharth-Pritchett, 2003; Vervoort et al., 2015; Longobardi et al., 2017; Roorda et al., 2017; Gregoriadis et al., 2020a), when asked in a developmentally appropriate way (e.g., use of child-friendly techniques like puppet interviews, story completion tasks, illustrated cards, visual aids, animation). Young children nowadays are considered able to respond to verbal questions using a binary or a limited response scale (Ruzek et al., 2020). The inclusion of young children's views about their relationships with their teachers, offers an alternative perspective that may be different from teachers' perceptions regarding their relationships with them and enhance our understanding of these relationships (Valeski and Stipek, 2001; Murray et al., 2008; Spilt et al., 2010).

Findings from studies examining both teachers' and students' perceptions about their relationships report either very weak relations between teachers' and students' perceptions (Mantzicopoulos and Neuharth-Pritchett, 2003; Harrison et al., 2007; Spilt et al., 2010) or no relation at all in early years (Valeski and Stipek, 2001; Murray et al., 2008; White, 2016). Similarly, several studies have shown weak or moderate relations between

teachers' and students' reports on early and upper elementary schools (Rey et al., 2007; Jellesma et al., 2015; Vervoort et al., 2015).

When it comes to measuring teachers' and students' perceptions about their relationships, another important issue worth mentioning is that most of the existing studies do not recognize the potential interdependence that exists between teachers' and students' perceptions (Zee and Koomen, 2017). Most studies have examined teachers' or students' perceptions about their relationship separately (e.g., Valiente et al., 2008; Hughes, 2011; Hartz et al., 2017), thus, neglecting to examine the interpersonal dynamic, especially in early childhood education (Spilt et al., 2010). Studies of teacher-student relationships quality usually assess the average students' experience in the classroom rather than teacher-student dyadic relationships quality, which may vary within dyads based on heterogeneity among students (Rucinski et al., 2018). If teacher-student relationships constitute a dyadic process by which interactions occur in a defined social context such as the classroom, then, obtaining insight knowledge regarding teachers' and students' perceptions on their interpersonal process could be valuable (Dong et al., 2021). Therefore, the examination of both parties' perceptions (teacher and students) needs to be considered simultaneously (Kenny, 2020).

From the available literature, some studies focus on teachers' interactions with individual students instead of the whole-classroom relationships (Roorda D. L. et al., 2013; Williford et al., 2017; Lippard et al., 2018; Koenen et al., 2019; Nguyen et al., 2020; de Ruiter et al., 2021; Koenen et al., 2022). According to Pianta et al. (2003), teacher-student relationships are dyadic microsystems in which teachers' and students' personal and behavioral characteristics influence how they perceive their relationship and vice versa. At the classroom-level, relationships include teachers' feelings, behaviors and perceptions of all students (O'Connor, 2008), whereas at the dyad level, relationships reflect teacher's feelings, behavior and perceptions about the relationship with a specific student (Roorda D. L. et al., 2013; Zee and Koomen, 2017; de Ruiter et al., 2021). It should be noted that the dynamics of teacher-student dyadic relationship are embedded within the larger context of whole-classroom setting (Lippard et al., 2018).

However, it seems that students have different experiences from their classmates based on their dyadic relationships with teachers (Thijs et al., 2011). The reciprocal exchanges during one-on-one interactions between teachers and students contribute to each individual's cognitive model or representations of their relationship and develop their expectations that guide subsequent interactions, behaviors and perceptions in the whole-classroom level (Pianta, 1999). Recently, Nguyen et al. (2020) explored whether teacher-student interactional quality at the classroom level and the dyad level influence the students' outcomes. Results showed that when students experience a positive teacher-child dyadic relationship they display increased engagement in school activities and improved academic achievement. Moreover, researchers found that a high-quality teacher-student dyadic relationship can act as a protective factor for students who may be at risk for socio-emotional and academic problems. It seems that the students' participation in high quality one-on-one interactions with their teacher has the potential to impact on a variety of educational outcomes including students' academic achievement, behavioral regulation, feelings of security, and task engagement and motivation (Martin, 2012; Verschueren and Koomen, 2012; Williford et al., 2017; Alamos and Williford, 2020). Similarly, when teachers perceive their interactions with individual students as positive, then, they tend to respond sensitively to individual students' needs, provide supportive experiences and develop trustful relationships (Koenen et al., 2019).

Teachers and students cultivate their relationships together. Both participants in this dyadic relationship have the opportunity to share existing and obtain new information from their interactions (Williford and Pianta, 2020). Brinkworth et al. (2018) suggest that, when examining both teachers' and students' perspectives, they should be considered the "relational unit" or "dyad unit". The current study acknowledges the importance of examining both teachers' and students' perceptions when trying to understand the nature and mechanism of teacher-student relationships (Pianta et al., 2003; Alamos and Williford, 2020; de Ruiter et al., 2021). By examining teacher-student relationships quality at the dyad level, this study investigates the agreement and reciprocity between teachers' and students' perceptions of their dyadic relationships.

The Reciprocal One-With-Many (OWM) Design in Teacher-Student Relationship Quality

The teacher-student relationship is a dyadic process in which students and teachers influence each other's behavior (Sameroff and MacKenzie, 2003; Doumen et al., 2008; Roorda D. L. et al., 2013; Roorda and Koomen, 2021). The two members of a dyad (teacher and student) are not two independent individuals, rather they share something in common that is characterized as nonindependence (Kenny et al., 2020). Kenny et al. (2020), 4) provide a formal definition of dyadic nonindependence, "If the two scores from the two members of the dyad are nonindependent, then those two scores are more similar to (or different from) one another than are two scores from two people who are not members of the same dyad". Thus, the data on teacher-student relationship are naturally nonindependent since they arise from teachers and students who interact and influence each other (e.g., Pianta et al., 2003) and share the same classroom environment (Kenny et al., 2020).

Many researchers addressed the nonindependent data by applying multilevel models or generalized estimating equations (e.g., Scherzinger and Wettstein, 2019). However, these approaches do not examine the potential interdependence that exists in the dyad (Hagiwara et al., 2014). Krasikova and LeBreton (2012) argued that traditional multilevel models form cannot be applied to dyadic data. Research analyzing dyadic data at the individual level of analysis, is possible to violate the assumption of independence of observations due to the nesting of data within dyads (Marcus et al., 2009; Krasikova and LeBreton, 2012; Kenny et al., 2020). The one-with-many (OWM) design is a framework

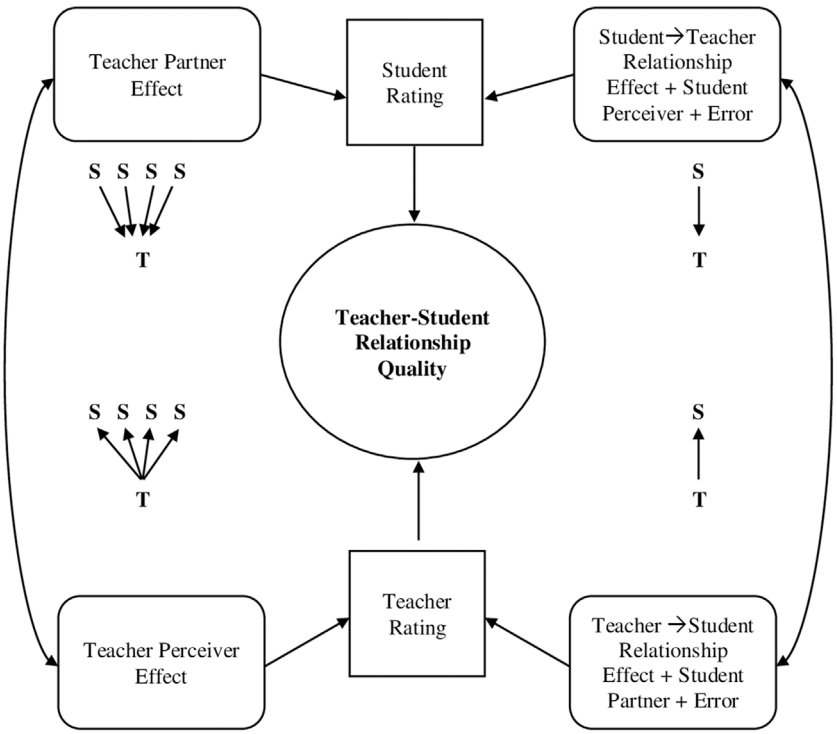

FIGURE 1 | The variance components of the teacher-child relationship quality derived from reciprocal one-with-many analysis (adapted from Marcus et al., 2009).

that can be applied in the educational context by considering the nonindependence of the data in the form of the estimation of the variance shared between students and teachers (e.g., Hogekamp et al., 2016). The OWM design enables researchers to take into account multiple perspectives on a dyadic relation such as the teachers' point of views, the students' point of views or both teachers' and students' views (i.e., reciprocal OWM design) (Marcus et al., 2009; Kenny et al., 2020). Therefore, the OWM design can provide a more complete and multifaced picture of the teacher-student dyadic relationship.

The reciprocal OWM design is based on collecting data from dependent dyads in which multiple students (the partners) have the same teacher (the perceivers). Every student provides a rating for his/her relationship with the teacher, and each teacher provides ratings for his/her relationship with a specific student. According to Kenny (2020), 2) "the perception of another person needs to be broken up into pieces to have a detailed understanding of interpersonal perceptions". Applying the reciprocal OWM design, there are three potential sources of variances in the teacher-student relationship quality–as the target outcome–that can be taken into consideration: the teacher (perceiver), the student (partner), and their relationship (see **Figure 1**). Thus, the reciprocal OWM design permits researchers also to investigate two types of reciprocity, namely dyadic reciprocity and generalized reciprocity (Marcus et al., 2009).

The reciprocal OWM design enables researchers to estimate variances for both perspectives separately. Specifically, teachers' variation decomposed into two elements, the *teacher effect* and a *teacher relationship effect* (Marcus et al., 2009). The *teacher effect* estimates the degree to which a teacher assesses his/her relationships with different students in the same way (i.e., assimilation effect). Additionally, the *teacher relationship effect* estimates the unique part of variance due to the dyadic relation between the teacher and a specific student from the teacher's point of view, over and above any other effects (Kenny et al., 2020).

On behalf of students, the OWM design also decomposes variation in students' perceptions into two elements, the *student effect* and a *student relationship effect*. The *student effect* estimates the degree to which multiple students tend to respond in a similar way to their teacher and thus their consensus as a group (Kenny et al., 2020). Moreover, the *student relationship effect* estimates the unique part of variance due to the dyadic relation between a student and his/her teacher from the student's view, over and above any other effect (Marcus et al., 2009).

Through the correlation of teacher effect and student effect, the *generalized reciprocity* is estimated by measuring the degree of the agreement between teacher's and students' evaluations (Knight and Humphrey, 2019). A high level of generalized reciprocity means that, if teachers report a high level of teacher-student relationship quality, so will students in classroom level. Regarding the correlation between the two relationship effects, *the dyadic reciprocity* estimates the degree of whether a teacher's unique behavior toward an individual student is reciprocated by that student (dyadic level). A high level of dyadic reciprocity means that, if a student sees his/her relationship with the teacher as positive, then the teacher

provides similar evaluation (Knight and Humphrey, 2019; Kenny et al., 2020).

The Present Study

The purpose of this study is to examine the degree to which teacher and student views of their dyadic relationships are similar and reciprocal by applying the reciprocal OWM design. More specifically, our research questions were:

1 Do teachers and students perceive their dyadic relationship quality in a similar manner?
a) If a student experiences high quality relationship with his/her teacher at dyad level, does the teacher in turn report high quality relationship with that student (dyadic reciprocity)?
b) If a teacher describes a high level of relational quality with their students at teacher-level, do their students in turn perceive high quality relationships with their teacher (generalized reciprocity)?
2 Are teachers' and students' evaluations of their dyadic relationships affected by their gender and age?

Relying on previous findings on teachers' and students' perceptions of their relationship quality at classroom level that suggest modest teacher-student agreement (e.g., Mantzicopoulos and Neuharth-Pritchett, 2003; Harrison et al., 2007; Spilt et al., 2010), we expected a positive relation between teachers' and students' perceptions of their dyadic relationship. We also anticipated the existence of gender differences in teachers' perceptions regarding their dyadic relationships (e.g., Buyse et al., 2011; Horn et al., 2021). Furthermore, we expected a reciprocity between teachers' and students' perceptions of their dyadic relationships.

DATA AND METHODS

Participants

The sample of the present study consisted of 1,345 teacher-student dyads from 168 preschool classrooms from four prefectures in Northern Greece (Thessaloniki, Halkidiki, Kilkis and Pella). The majority of teachers (N = 168) were female (93,7%) and their mean age was 45.34 years (SD_{age} = 7.55). The demographic information regarding the participating students was provided by the teachers. All students attended full-day kindergarten classrooms. The mean age of students was 5.19 years (SD_{age} = 0.59) and the gender composition was evenly distributed with 49.4% boys and 50.6% girls. In total, 90.6% of the participating students were from Greece and the 9.4% of students were from other countries.

Measures

Teacher-Student Dyadic Relationship Quality

Teachers' Perspectives

The Greek version of the Student-Teacher Relationship Scale-STRS (Koomen et al., 2012) was used to examine teachers' perceptions about their overall relationship quality with their students. The psychometric properties of the Greek version of the STRS have been thoroughly examined in previous studies (e.g., Gregoriadis and Tsigilis, 2008; Tsigilis et al., 2018b; Tsigilis et al., 2018a). This version includes 28 items that describe the three relational dimensions: Closeness (11 items, e.g., "This child values his/her relationship with me"), Conflict (11 items, e.g., "Dealing with this child drains my energy") and Dependency (6 items, e.g., "This child reacts strongly to separation from me"). Teachers respond to a five-point Likert scale (1 "definitely does not apply" to "definitely applies"). The internal consistency of the Greek version of STRS in the current study was good (Closeness α = 0.84, Conflict α = 0.91 and Dependency α =0.67).

Students' Perspectives

The Greek version of the Child Appraisal of Relationships with Teacher Scale–CARTS (Vervoort et al., 2015) was used to investigate students' perceptions about their overall relationship quality with their teachers. The validity and reliability of the Greek version of CARTS was also previously examined (e.g., Gregoriadis et al., 2020b; Vatou et al., 2020). The Greek adaptation of CARTS consists of 16 items and assesses the three dimensions of relationships Closeness (4 items, e.g., "I like to be with my teacher"), Conflict (7 items, e.g., "My teacher often punishes me") and Dependency (5 items, e.g., "I often ask my teacher whether I do things right"). According to the developers of the CARTS, the scale is completed in two phases. First, a student listens to a given statement the researcher reads, and the student confirms it or not. Then, the student responds whether the given statement is "always" or "sometimes" true. Researcher notes students' responses on a five-point Likert scale (1 – "No, always", 2 – "No sometimes", 3 – "Child understands the item, but does not answer with yes or no", 4 – "Yes, sometimes" and 5 – "Yes, always"). The internal consistency of the Greek version of CARTS in the current study was good (Closeness α = . 63, Conflict α = 0.73 and Dependency α =0 .74).

Procedure

The ethical approval was provided from the Greek National Educational Policy Institute. In addition, written consents from preschool directors and parents/guardians were obtained for the participation of students in this study. Teachers were recruited through an invitation letter, informing them about the study's goal, the procedures, and details regarding privacy and confidentiality. Both teachers and students participated voluntarily. Eight students were selected randomly from each classroom (four boys and four girls). The eight students evaluated their relationships with their teacher. One classroom consisted of nine students, because there were five boys in the whole classroom. Parental permission was obtained for all students participating in the study. The CARTS measure was administered individually in a quiet area of the preschool setting and the duration of the interview with each student

TABLE 1 | Descriptive across STRS and CARTS dimensions.

Rater	Teacher	Student
	M (SD)	M (SD)
Closeness	3.98 (0.59)	4.18 (0.50)
Conflict	1.42 (0.46)	1.44 (0.47)
Dependency	1.82 (0.61)	3.50 (0.92)

was around 7–9 min. Teachers were also given their STRS questionnaires about each participating student and were encouraged to fill them within 1 week of the administration of the students' surveys.

Statistical Procedure

There was no missing data in the data set. Descriptive analysis was conducted first. To address our research question, the reciprocal OWM design was used in this study. The research design was reciprocal because both teacher and student provided ratings about their views of their relationship quality. For the existing dataset, the appropriate analysis is the multilevel modeling analysis (MLM). Using MLM the different parts of the variance elements introduced above can be estimated (Kenny et al., 2020; Marcus et al., 2009). The reciprocal OWM analysis was conducted using SPSS ver. 27 and a detailed discussion of how the dataset is structured and analyzed was provided in **Supplementary Appendix SA**.

The MLM analysis for the reciprocal OWM design is based on the two-intercept approach (e.g., Raudenbush et al., 1995), in which two dummy variables are created to indicate which person provided the outcome score. The intraclass correlation coefficients (ICC) were calculated separately: one for teachers' data and one for students' data. In this context, the variance is based on two levels: 1) dyad-level (within variance) and 2) the teacher-level (between variance). More specifically, the different parts of the variance: teacher effect, student effect and relationships effects were estimated for both teachers' and students' ratings (Marcus et al., 2009). At the dyad level, the two elements of variance (teacher and student) represent the assessment of the "closeness", "conflict" and "dependency" as perceived by teachers or students. At this level, the student's variance reflects how much variability there is on the "closeness", "conflict" and "dependency" of students nested within teachers. Likewise, the teacher's variance represents how much variability there is on "closeness", "conflict" and "dependency" of teachers with their students. At the teacher-level, the variance of student's ratings represents how much variability there is on the "closeness", "conflict" and "dependency" of students between teachers, that is, from one teacher to another teacher. At this level, the variance in teacher's ratings represents how much variability there is on the "closeness", "conflict" and "dependency" of teachers from one teacher to another teacher. Finally, teachers' and students' gender and age were included to the model to predict their dyadic relationships. The gender was dummy coded (0 = girls/female teachers, 1 = boys/male teachers) to enter into the model.

RESULTS

Descriptive Statistics

Means and standard deviations for variables are reported at **Table 1**. Although both teachers and students reporting generally positive relationships, students rated high dependency on their teachers.

Variance Partitioning of Teacher-Child Quality Relationship

Table 2 provide information for the intercept models of closeness, conflict and dependency of teachers' and students' reports. These scores suggest that both members of the dyad experience high levels of closeness and low levels of conflict in their dyadic relationships. With regard to dependency, teachers experience less depended relationships than students. The intraclass correlation coefficient was estimated separately for each of the dimensions of STRS and CARTS ranging from 0.355 to 0.105 (see **Table 2**). These values indicated that a multilevel approach is meaningful.

Table 3 represents the estimates of the three elements of variances and the correlational parameters that were estimated for the dyad-level and the teacher-level. The variance partitioning yielded significant teacher effect, student effect and relationship effects with the exception of the generalized reciprocity across the three relational dimensions.

At the dyad-level, the first two variance terms refer to relationship effects variance and represent the evaluation of the three relational dimensions the "closeness", the "conflict" and the "dependency" as reported by the teacher or student. From **Table 2** it is evident that teachers' ratings about their relationships with their students seem to be consistent with students' ratings across the dimension of "conflict" (0.195 versus 0.183), whereas the teachers' and students' variance of "closeness" (0.246 versus 0.216) and "dependency" (0.745 versus 0.243) differ from one student to another student within teachers. At the second level of hierarchy, that is, teacher-level, findings suggest that the variance partitioning for teachers' and students' means on "conflict" is similar, whereas the variance in teachers' ratings on "closeness" and "dependency" vary considerably from one teacher to another teacher (see **Table 3**).

TABLE 2 | Fixed effects and ICC results for teachers' and students' reports across STRS and CARTS dimensions.

	Estimate (*SD*)	df	T	ICC
Closeness				
Teacher	4.01 (0.03) **	156.813	137.958	0.293
Student	4.18 (0.02) **	155.515	210.427	0.256
Conflict				
Teacher	1.43 (0.2) **	172.104	73.065	0.105
Student	1.42 (0.02) **	172.685	82.980	0.171
Dependency				
Teacher	1.82 (0.03) **	154.964	56.449	0.355
Student	3.49 (0.04) **	150.034	99.347	0.123

**p < *0.001, ICC, intraclass correlation coefficient.*

TABLE 3 | Estimates of variance and correlational parameters.

Dimension	Parameter level	Term	Estimate	Standard error	*p* value
Closeness	Dyad	Teacher relationship effect	0.246	0.010	<0.001
		Student relationship effect	0.216	0.009	<0.001
	Dyadic reciprocity	Correlation	0.129	0.028	<0.001
	Teacher	Teacher effect	0.102	0.015	<0.001
		Student effect	0.040	0.007	<0.001
	Generalized reciprocity	Correlation	0.185	0.115	0.109
Conflict	Dyad	Teacher relationship effect	0.195	0.008	<0.001
		Student relationship effect	0.183	0.007	<0.001
	Dyadic reciprocity	Correlation	0.184	0.027	<0.001
	Teacher	Teacher effect	0.023	0.004	<0.001
		Student effect	0.038	0.006	<0.001
	Generalized reciprocity	Correlation	0.084	0.629	0.529
Dependency	Dyad	Teacher relationship effect	0.243	0.010	<0.001
		Student relationship effect	0.745	0.030	<0.001
	Dyadic reciprocity	Correlation	0.063	0.029	0.027
	Teacher	Teacher effect	0.134	0.018	<0.001
		Student effect	0.105	0.022	<0.001
	Generalized reciprocity	Correlation	0.039	0.120	0.743

The dyad-level refers to within variance and the teacher-level refers to between variance.

TABLE 4 | Results for the prediction of the STRS and CARTS dimensions.

	Estimate	Df	t	Estimate	df	t
	Gender			Age		
Closeness						
Teacher	−0.005	252.73	−0.031	−0.002	145.72	−3.491
Student	−0.145**	1,268.64	−5.693	−0.023	1,121.27	−0.966
Conflict						
Teacher	0.085	222.38	0.663	0.002	148.90	6.155
Student	0.104**	1,284.21	4.325	0.012	1,065.25	0.571
Dependency						
Teacher	−0.159	284.28	−0.793	−0.019	146.98	−0.236
Student	−0.10*	1,270.84	−2.033	−0.03	1,053.53	−6.934

*p < *0.05*, **p < *0.001*.

Next, teachers' and students' gender and age were tested as covariates in two separated models. Results showed a negative association between the closeness and students' gender (t (−5.963) = −1.45, p = 0.001), suggesting that teachers perceived lower levels of closeness in relation to boys. With respect to the association between conflict and students' gender, results showed that teachers' views of conflict are positively predicted by students' gender (t (4.35) = 0.104, p = 0.001 for boys). Teachers' views of dependency in their dyadic relationships are also predicted by students' gender (t (−2.03) = −0.10, p = 0.042 for boys). All other characteristics (e.g., teachers' and students' age, teachers' gender) did not reach the significance threshold (**Table 4**).

Reciprocity Between Teachers' and Students' Reports

The correlation between teachers' and students' ratings consist of two different processes, the dyadic reciprocity and the generalized reciprocity. The dyadic reciprocity correlation (student relationship effect with teacher relationship effect) showed a statistically significant positive and weak reciprocity for "closeness" (r = 0.129, p < 0.001), conflict (r = 0.185, p < 0.001) and "dependency" (r = 0.063, p < 0.001). Although these correlations were statistically significant, their magnitudes are very low and suggest incongruence between teachers' and students' views of the teacher-student relationship quality. Furthermore, the generalized reciprocity was not significant across the three relational dimensions (see **Table 3**). Therefore, based on the above findings, it seems that there is neither agreement nor reciprocity between teachers' and students' perspectives of the teacher-student relationships quality.

DISCUSSION

When it comes to examining the reciprocity between members of the teacher-student dyad, most studies approach this issue on a theoretical basis (Brinkworth et al., 2018). This study examined the degree of agreement between teachers' and students' perspectives of their dyadic relationships and the degree to which teachers' and students' views are reciprocal. We applied the reciprocal OWM design in early childhood education, considering the teacher-student relationships quality as a dyadic phenomenon, and used the dyad as the unit of analysis. The reciprocal OWM design enabled us to investigate the sources of the shared variance which decomposed into three elements: the teacher effect, student effect and relationship effects.

Although the correlations among teacher effects, student effects and relationships effects were statistically significant, the correlation coefficients were comparatively low (ranging from 0.03 to 0.18). Thus, this study suggests that there is no agreement between teachers' and students' ratings of their dyadic relationships. Even if this study considered the dyad as the unit of analysis, the results are consistent with findings described in the literature at a classroom level (e.g., Howes et al., 2000; Murray

et al., 2008; White, 2016). Teachers' and students' perceptions of their relationships have been characterized as being different. This raises questions about whether teachers' one-on-one interactions with students are more salient for them to regulate their strategies or behaviors to develop a close relationship with individual students. For example, teachers may feel more efficacious to engage all students in classroom activities rather than to engage a student who may feel that s (he) does not belong in the classroom. In the meantime, recent studies mentioned that a focus on different set of teachers' skills (e.g., social self-efficacy, management of challenging behavior) and intervention programs is needed to improve the relationship quality at both dyad level and classroom level (e.g., Roorda D. L. et al., 2013; Roorda DL. et al., 2013; Williford et al., 2017; Zee and Koomen, 2017; Lippard et al., 2018; Koenen et al., 2019).

When it comes to examine the reciprocity, the results revealed weak significant dyadic reciprocity and non-significant generalized reciprocity, which means that both teachers and students perceived their dyadic relationship quality in a different way, especially for the dimensions of closeness and dependency. This finding could be an indication that there is something about the teachers' actions or behaviors that evokes different responses from their students (Kenny et al., 2020). One possible explanation for this finding could be that teacher-student affective relationships tend to be influenced by teacher-level characteristics including teacher's sensitivity or behavior expectations (Pianta et al., 2003; Buyse et al., 2011).

The finding about the variation on dependency dimension shows that students in the Greek context evaluate and perceive teacher-student dependency quite differently from one student to another student within teachers. It should be noted that based to our knowledge so far, it is the first time that such a finding is reported from young children's perspectives in early childhood education. This finding suggest that students may assign a positive value to dependency and may acknowledge dependency as an aspect of proximity to obtain support and emotional security from their teachers (Tsigilis et al., 2018a; Gregoriadis et al., 2020a; Gregoriadis et al., 2020b). Also, the findings of this study showed a modest agreement between teachers and students for their conflictual dyadic relationships. An interpretation of this result could be that conflictual or negative dyadic relationships are more easily recognized by both members of the dyad. In contrast, experiences of warmth or dependency within relationships, may require a different amount of time to develop and both members may need more time to understand the needs and feelings of the other member of the dyad (Hughes, 2011; Zee and Koomen, 2017).

The lack of generalized reciprocity in teachers' and students' assessments of their relationships, further implies that there is no consistency in the way a teacher assesses his/her relationship with a student and the way a student perceives his/her relationship with the teacher. This finding echoes previous research indicating that the different internal working models and the different perceptions in a dyadic relationship, could perhaps explain the lack of concordance between teachers' and students' perceptions (Pianta et al., 2003). This finding implies that although there was no direct association between teachers' and students' perceptions of their dyadic relationship quality, an indirect association with some teachers' or students' characteristics may lead to new measurement models. For example, based on the theoretical model of the teacher-student dyadic relationships and teacher wellbeing (Spilt et al., 2011), de Ruiter et al. (2021) found that teachers' representations of their relationship with a specific student are associated with how teachers manage their emotions in interactions with particular students during classroom events.

The findings of the study revealed differences in teacher-student dyadic relationships regarding students' gender. It should be noted that these differences did not explain the low agreement between the two informants as the dyadic reciprocity was low. This finding is consistent with previous studies that examined teacher-student relationships at the whole classroom level (e.g., Horn et al., 2021). Similar to previous studies (e.g., Hamre and Pianta, 2001; Ewing and Taylor, 2009) the participating teachers seem to experience more conflict in their dyadic relationships with boys than with girls. In addition, it should be mentioned that teachers' gender and both teachers' and students' age did not significant predict the three relational dimensions. This could be explained by the fact that the majority of teachers was female (93.7%). Moreover, the sample of preschool students in the current study had an age range from 4.5 to 6 years old.

To summarize, by examining teacher-child shared perceptions about their dyadic relationship, this study offers additional information about how teacher-student dyadic relationships function. Findings from students' perspectives showed that when a teacher tends to rate a relationship with a student as positive, this does not necessarily reflect on the student's perceptions of the relationship as well. In the daily classroom reality, it seems that researchers cannot ignore this lack of reciprocity. According to Koenen et al. (2022), without reciprocity, teachers may struggle or give up on their relationships with students. Recognition of the importance of the shared variance between teachers and students implies that additional studies including both teachers' and students' reports are required to understand in depth the teacher-student dyadic relationship quality.

Limitations and Future Research

Several limitations of the current study need to be considered. Although this study recruited a large sample, collected data from different sources (teachers and students) and took into account the nonindependence of the data, it has a cross-sectional design. Thus, the interpretation of our results does not offer causality that could be inferred from the teachers' and students' perceptions about their dyadic relationship quality. As such, future studies should continue examining the dyadic level of teacher-student relationships with research designs that will allow the extraction of conclusions about causal relations. Another limitation is that although this study used two instruments measuring the same three relational dimensions, their items were not identical. The lack of similarity in item content could be another reason for the lack of concordance between teachers and students reports. Future research could develop and use a common instrument

to measure teacher-student dyadic relationship quality to provide additional clarity. A final limitation inherent to the OWM design is that we couldn't separate student perceiver variance or student partner variance from relationship variance because each student evaluated only one teacher. Future studies should also encompass other sources of information (e.g., peers, parents or external observers) to continue deepening our understanding of the dynamics of relationships at the dyad level.

CONCLUSIONS AND IMPLICATIONS

This study considered the teacher-student relationship quality as a dyadic phenomenon. By applying the reciprocal OWM design in teacher-student relationship research, this study gained insight in both teachers' and students' experiences of their dyadic relationships. In addition, this study examined whether there was teacher-student agreement and reciprocity of their views regarding their dyadic relationships. According to Pianta et al. (2003) conceptual model, we expected that a teacher's perceptions of his/her relationship quality with a student would reciprocate to the student's shared experience with the teacher (Pianta, 1999; Verschueren and Koomen, 2012). However, it seems that there is neither agreement nor reciprocity between teachers' and students' views of their dyadic relationships. The study showed that young children are able to provide meaningful information regarding their dyadic relationships with teachers. Dyadic relationships are particularly important for every young child in a classroom. Thus, assessing relationships between an individual teacher-student dyad is a step forward in understanding teachers' and students' feelings about each other (White, 2016).

The findings of this study have some implications for practice. Teachers and other practitioners must be encouraged to further reflect upon the importance of the dyadic teacher-student relationship. It is important to be aware of the possibility that students may not perceive the same relational quality as their teachers do. Teachers need to acknowledge students' needs and recognize them as individuals (Spilt et al., 2010). A more targeted reflection on their relationship with a specific student may facilitate teachers' understanding of the relations among their emotions, thoughts and behavior (Koenen et al., 2019; de Ruiter et al., 2021). Thus, this study could inform teachers about young children's feelings of their dyadic relationships with them. Second, the findings of this study highlight that researchers cannot rely solely on teachers' or students' perspectives. As teachers and students have different views of their relationship, they may also have different effects on teacher-, student- and school-outcomes (e.g., Hughes, 2011; Martin, 2012). Although the dyadic teacher-student relationship research is still at an early stage, researchers can develop new approaches regarding the assessment of this relationship. An observation measure can provide additional information about the multiple factors that contribute to the quality of the teacher-child dyadic relationship and their moment-to-moment interactions. Teacher educational and professional development programs can benefit from training teachers in pedagogical practices that help build affective teacher-child dyadic relationships and improve their social-emotional strategies and skills (e.g., emotional support provision). Moreover, intervention programs improving teacher-child relationships could extend their focus on the two components of the relationship. For example, interventions could focus on improving both teachers' practices and students' socio-emotional skills to enhance positive relationships (e.g., Banking time, Driscoll et al., 2011).

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because of restrictions in the Ethics procedure. Requests to access the datasets should be directed to Athanasios Gregoriadis (asis@nured.auth.gr).

ETHICS STATEMENT

The ethical approval was provided from the Greek National Educational Policy Institute (Official ethics committee of the Greek Ministry of Education). Protocol number of the licence approval:Φ15/72,273/136296/Δ1. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. AG and AV organised the database. AV and NT and AG performed the statistical analysis. AG and AV wrote the first draft of the manuscript. All authors wrote sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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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.2021.811934/full#supplementary-material

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Online Versus Classroom Teaching: Impact on Teacher and Student Relationship Quality and Quality of Life

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The student-teacher relationship (STR) has been consistently associated to positive and generalized outcomes, though its quality seems to be questioned in online teaching, which in turn has had a negative impact on students and teachers' wellbeing during school closures forced by the COVID-19 pandemic. The current work compared students and teachers' perceptions of STR quality and quality of life after online and after classroom teaching, and if STR quality relates with perceived wellbeing across those teaching modalities. Participants were 47 teachers (61.7% female, Mage = 47.85) and 56 students (48.2% female, Mage = 13.13), who self-reported on the quality of STR and quality of life twice: after 3 months of online teaching and after 3 months of classroom teaching. Quality of life remained stable across teaching modalities. Teachers perceived no differences in teacher-student quality across both moments; students perceived higher conflict after classroom teaching. Closeness in STR associated with increased wellbeing and the reverse was true for conflict, though diverse domains of quality of life were implicated across timings and across teachers and students. These findings concur to online teaching being an impersonal experience for students, where conflict is lower due to the absence of social stimuli; alternatively, teachers may be urged to use the STR as a resource to sustain better positive outcomes even when teaching online, both for them and for their students.

Keywords: student-teacher relationship, adolescence, online teaching, classroom teaching, quality of life

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INTRODUCTION

One of the many societal costs of the COVID-19 pandemic was school closures and the consequent interchange between online and classroom teaching. Though a public health necessity, online teaching took a tool on teachers' mental health, who showed increases in anxiety (Li et al., 2020), exhaustion and burnout (Sokal et al., 2020), and intention to leave the profession (Zamarro et al., 2021). The health of adolescents was also negatively impacted by the pandemic, with children and adolescents reporting lower health-related quality of life, and higher mental health problems and anxiety symptoms (Ravens-Sieberer et al., 2021), particularly in relation

to online teaching (Hyseni Duraku and Hoxha, 2020; Petillion and McNeil, 2020).

Several challenges appeared associated with online teaching, one of which named by both teachers and students has to do with restricted interactions opportunities (Hebebci et al., 2020). Online student-teacher interactions are thought of as non-authentic and lacking the spontaneity that in-person teaching provides (Tichavsky et al., 2015; Niemi and Kousa, 2020), leading students to prefer in-person courses because they provide for higher and closer interactions opportunities with teachers (Diebel and Gow, 2009; Tichavsky et al., 2015). This emotional connectedness is proposed to be an essential feature of positive teacher-student relationships (STR), either in person (Spilt et al., 2011) or online (Lai and Xue, 2012).

A positive and high quality of STR has been conceptualized based on low conflict (i.e., problematic relationship process between student and teacher) and high closeness (i.e., positive affect and communication between teacher and student; Pianta and Steinberg, 1992). Based on that conceptualization, the STR has been proposed to develop through contributions of both teachers and students (e.g., beliefs, attitudes, and behaviors), and impact on a myriad of positive outcomes experienced by students and teachers (for reviews on the subject see Hamre and Pianta, 2006; Myers and Pianta, 2008). Though the characteristics of the STR change across teaching levels (e.g., primary to secondary school, with secondary school teachers reporting that school organization and professional norms on interactions with students limit the opportunities of emotionally engaging with students; Hargreaves, 2000), this relationship remains an important contributor to older students' academic and inter and intrapersonal adjustment within schools (Myers and Pianta, 2008; Roorda et al., 2011).

It remains to be determined if teaching modality (i.e., online versus classroom) changes the way STR manifests, given that previous literature has focused on one or the other (e.g., Longobardi et al., 2016; Hebebci et al., 2020). When comparisons were made between online and classroom teaching, STR was based on a general perception of positive relationships (Tichavsky et al., 2015), but not considering its specific closeness and conflict dimensions. Concerning quality of life, previous works suggested an increase in mental health difficulties following online teaching (e.g., Petillion and McNeil, 2020; Sokal et al., 2020), but considered only adults and mental health indicators. In turn, given that online teaching changes, for instances, the social and environmental context of learning, other dimensions that make up ones' quality of life should be considered. Quality of life refers to ones' idiosyncratic perception on ones' functioning in relation to personal goals and cultural expectations and is applicable to diverse domains of life, namely, physical health (e.g., sleep patterns, experience of pain, energy, or mobility), psychological wellbeing (e.g., presence/absence of negative/positive feelings), social relations (e.g., perceived social support), and outer environment (e.g., perception of safeness or availability of resources for transportation, leisure; The WHOQOL Group, 1998). The way online teaching compares to classroom teaching concerning ones' physical health, social relations, and perception of environment quality, in addition to psychological wellbeing has not been addressed. Finally, the association between STR and inter and intra personal positive outcomes has been found for classroom teaching (e.g., Myers and Pianta, 2008) but has not been addressed in the case of online teaching. Addressing these issues is the focus of the current work.

ARTICLE TYPES

The current work is a brief research report using a repeated measures design to compare the perceived quality of STR and quality of life following two teaching moments (i.e., online followed by classroom teaching), as perceived by independent samples of teachers and students. Given that online teaching encompasses overall less opportunities for interacting (Diebel and Gow, 2009; Hebebci et al., 2020), we expect both closeness and conflict to be lower after online teaching: closeness would be lower, given that its absence is particularly referred to as a downside to online teaching (Tichavsky et al., 2015; Niemi and Kousa, 2020); conflict would also be lower, given that it depends strongly on interpersonal dynamics (Drugli, 2013), which may be absent in online teaching. As for quality of life, it is expected to be lower after online teaching, following previous work that proposes online teaching to have negatively impacted students (Hyseni Duraku and Hoxha, 2020; Petillion and McNeil, 2020) and teachers (Li et al., 2020; Sokal et al., 2020). Finally, another aim of this work is to analyze the association between STR and quality of life, across teaching modalities. Based on previous works that associate STR with positive individual-related outcomes (Pianta et al., 2003), we expect higher quality of STR to associate with higher quality of life (and vice-versa) after classroom teaching; as evidence is scarcer on that association after online teaching, we expect to find the same direction of association.

MATERIALS AND METHODS

Participants

Teacher Sample

Forty-seven teachers at public schools composed the teacher sample. They were aged between 28 and 61 years old (M = 47.85, SD = 6.54) and taught from the first to the fourth grade ($n = 3$), from the fifth to the ninth grade ($n = 39$), and from the 10th to the 12th grade ($n = 5$). Concerning gender, 61.7% ($n = 29$) of these teachers were female and 38.3% ($n = 18$) were male. Most teachers were married/co-habited with a significant other ($n = 40$, 85.1%) and were full-time employed ($n = 44$, 93.6%). Female and male participants had similar mean ages [$t_{(4)} = -0.29$, $p = 0.77$] and were similarly distributed concerning marital status [$\chi^2_{(2)} = 2.14$, $p = 0.34$] and professional situation [$\chi^2_{(1)} = 1.98$, $p = 0.16$].

Student Sample

Fifty-six students attending urban schools and aged between 12 and 15 years old ($M = 13.13$, SD = 0.92) comprised our student sample, of which 29 were male (51.8%) and 27 were female

(48.2%). They attended the seventh ($n = 31$. 55.4%), the eighth ($n = 15$, 26.8%), and the ninth ($n = 10$, 17.9%) grades; only a minority of them had been previously retained in the same school year ($n = 2$, 3.6%). Boys and girls were similarly distributed by school year [$\chi^2_{(2)} = 0.29$, $p = 0.87$] and had similar mean ages [$t_{(54)} = 0.99$, $p = 0.33$].

Instruments

All instruments were used in their Portuguese version.

Teacher Protocol

Short Form of the Student-Teacher Relationship Scale (STRS-SF)

This self-report instrument includes 15 items according to which teachers report on their perception of student-teacher relationship, conceptualized as low levels of conflict and high levels of closeness (Pianta, 2001). Results on its Portuguese version using a 5-point scale ranging from "Definitely does not apply" to "Definitely applies" presented with very good psychometric properties, namely: good internal consistency ($\alpha < 0.86$), internal structure validity based on two measures *via* confirmatory and exploratory factor analyses, and sensitivity to diversity by sex (Patrício et al., 2015). Its results using the current sample obtained very good internal consistency values for closeness ($\alpha = 0.70$ after-online teaching and $\alpha = 0.78$ after-classroom teaching) and conflict ($\alpha = 0.83$ after-online teaching and $\alpha = 0.84$ after-classroom teaching).

WHOQOL Bref (Bref)

The WHOQOL Bref is a self-report instrument composed of 26 items intended to address quality of life referring to several domains relevant to adults: physical wellbeing, psychological wellbeing, social relationships, and environment (The WHOQOL Group, 1998). Results on its Portuguese version presented with at least acceptable internal consistency for each of the four domains ($\alpha > 0.64$), temporal stability, and construct validity in relation to measures of psychopathology and depression (Canavarro et al., 2010). Using the current sample, internal consistency values for scores on all domains were very good: $\alpha = 0.84$ after-online teaching and $\alpha = 0.86$ after-classroom teaching for physical wellbeing, $\alpha = 0.87$ after-online teaching and $\alpha = 0.80$ after-classroom teaching for psychological wellbeing, $\alpha = 0.86$ after-online teaching and $\alpha = 0.75$ after-classroom teaching for social relationships, and $\alpha = 0.77$ after-online teaching and $\alpha = 0.76$ after-classroom teaching for environment.

Student Protocol

Short Form of the Student-Teacher Relationship Scale—Student Version (STRS-Student)

This self-report instrument resulted from the adaption of the STRS-SF (see Maia et al., 2020) to be filled in by students and assess the same two dimensions proposed to be part of the quality of STR (i.e., closeness and conflict; Pianta, 2001). It includes 16 items (i.e., item 10 from the STRS-SF was split into two items that differentiate the option of becoming angry when being disciplined by teachers and of not complying with orders received during that disciplining) that the student uses to characterize his/her relationships with teachers in general, using a 7-point scale ranging from "Has nothing to do with me" to "Has everything to do with me." Its two-factor internal structure was confirmed using a Portuguese adolescent sample and both factors showed good internal consistency values and invariance by gender (Maia et al., 2020). At least good internal consistency values were found for the measures of this instrument within the current sample: $\alpha = 0.81$ for closeness at both assessment moments, and $\alpha = 0.80$ and $\alpha = 0.83$ for conflict, after-online and after-classroom teaching, respectively.

KIDSCREEN 27

The KIDSCREEN 27 (Ravens-Sieberer et al., 2014) was designed to assess children's and adolescents' perception of wellbeing and health. Its 27-item version, which was used in the current work, assesses physical wellbeing, psychological wellbeing, autonomy and parent relations, peers and social support, and school environment. The Portuguese version of this instrument is said to be sensitive to differences based on gender, age, socioeconomic status, and health condition, with findings being overall similar to its full 52-item version (Gaspar and Matos, 2008). Internal consistency values for domains were good using the current sample: $\alpha = 0.77$ after-online teaching and $\alpha = 0.80$ after-classroom teaching for physical wellbeing; $\alpha = 0.91$ after-online teaching and $\alpha = 0.89$ after-classroom teaching for psychological wellbeing; $\alpha = 0.73$ after-online teaching and $\alpha = 0.78$ after-classroom teaching for autonomy and parent relation; $\alpha = 0.74$ after-online teaching and $\alpha = 0.83$ after-classroom teaching for peers and social support; and $\alpha = 0.77$ after-online teaching and $\alpha = 0.80$ after-classroom teaching for school environment.

Procedures

This study was conducted after approval by the National Education Ministry (Inquiry number 0617900005) and the Ethics Committee at the host institution. The student sample was recruited in school settings. Two schools located at the center region of Portugal were asked to take part of this research and sent informed consents to the parents/legal guardians of students attending the seventh through ninth grades. Students with parental consent were then asked verbal assent to fill in the research protocol in class using time made available by teachers. The teacher sample was collected online using the google forms platform, where teachers filled in an informed consent form before replying to the research protocol. The study was divulged *via* social media platforms and each participant was asked to refer other potential participants to the study.

Data collection took place during one single school year. The first assessment moment occurred in the first week of April 2021, when students and teachers had just came back to schools after a confinement period of 3 months in Portugal (from mid-January to March 2021); this corresponds to the after-online teaching moment. The online experience consisted of classes being held *via* synchronized videoconferences (i.e., Google Teams), when teachers were expected to be present throughout the

sessions and to abide by the expected teaching-learning agenda for each course. Then, the same students and teachers were asked to fill in the same research protocols at the end of June, after having been in classroom teaching for about 3 months; this corresponds to the after-classroom teaching moment. A *priori* power analyses indicated that a sample size of at least 47 participants would be needed to find medium effect size differences between two matched samples using non-parametric analyses, with type 1 error fixed at $p = 0.05$. Given that most of our measures did not follow a normal distribution, non-parametric statistics were used to analyze the data.

RESULTS

Teachers' Perception of Teacher-Student Relationship and Its Associations With Quality of Life

No significant differences were found for teachers' perception of the quality of the relationship with their students, either for closeness ($z = -0.12$, $p = 0.91$, $r = -0.01$) or for conflict ($z = -1.14$, $p = 0.25$, $r = -0.12$). Similarly, no significant differences were found across time for physical wellbeing ($z = -0.37$, $p = 0.71$, $r = -0.04$), psychological wellbeing ($z = -0.03$, $p = 0.98$, $r = -0.00$), social relationships ($z = -0.11$, $p = 0.91$, $r = -0.01$), or environment ($z = -0.56$, $p = 0.57$, $r = -0.06$). See **Table 1** for descriptive values for both moments.

After-online teaching, closeness associated positively and significantly with social relationships ($r_s = 0.23$, $p = 0.04$). After-classroom teaching, conflict associated negatively and significantly with psychological wellbeing ($r_s = -0.29$, $p = 0.04$) and with environment ($r_s = -0.352$, $p = 0.02$). No other significant correlation values were found between STR and quality of life using the teacher sample.

TABLE 1 | Descriptive values for teacher-student relationship and wellbeing, for teachers and for students.

	After online teaching	After classroom teaching
Teacher sample		
Closeness	28.08 (3.63)	28.06 (3.67)
Conflict	17.98 (5.81)	18.85 (6.16)
Physical wellbeing	27.43 (4.95)	27.45 (4.58)
Psychological wellbeing	23.81 (4.25)	24.00 (3.27)
Social relationships	11.64 (2.82)	11.62 (2.41)
Environment	30.51 (9.98)	30.72 (4.09)
Student sample		
Closeness	19.83 (5.67)	19.29 (5.71)
Conflict	16.96 (5.48)	18.78 (6.51)
Physical wellbeing	16.14 (2.67)	16.00 (2.90)
Psychological wellbeing	27.67 (5.46)	27.09 (5.49)
Autonomy and parent relation	25.56 (3.48)	25.30 (4.00)
Peers and social support	17.02 (2.649)	17.42 (82.68)
School environment	15.32 (2.87)	14.71 (3.46)

Data are presented as M (SD).

Students' Perception of Teacher-Student Relationship and Its Associations With Quality of Life

A significant difference was found for conflict ($z = -3.03$, $p = 0.002$, $r = -0.29$), with higher scores being found after classroom teaching in comparison with after online teaching; the same comparison for closeness was not statistically significant ($z = -1.14$, $p = 0.26$, $r = -0.11$). No significant differences were found across teaching modalities for physical wellbeing ($z = -0.65$, $p = 0.52$, $r = -0.06$), psychological wellbeing ($z = -1.58$, $p = 0.12$, $r = -0.14$), autonomy and parent relation ($z = -0.42$, $p = 0.68$, $r = -0.04$), peers and social support ($z = 0.90$, $p = 0.37$, $r = -0.01$), and school environment ($z = -1.93$, $p = 0.05$, $r = -0.18$; see **Table 1**).

Consistently across teaching modalities, closeness associated positively and significantly with psychological wellbeing ($r_s = 0.28$, $p = 0.04$ after-online teaching and $r_s = 0.29$, $p = 0.03$ after-classroom teaching) and school environment ($r_s = 0.45$, $p = 0.001$ after-online teaching and $r_s = 0.35$, $p = 0.008$ after-classroom teaching). Also consistently, conflict correlated significantly and negatively with school environment after-classroom teaching ($r_s = -0.49$, $p < 0.001$) and after-online teaching ($r_s = -0.50$, $p < 0.001$). After-online teaching only, conflict also correlated significantly and negatively with psychological wellbeing ($r_s = -0.35$, $p = 0.01$), whereas after-classroom teaching only it correlated significantly with physical wellbeing ($r_s = -38$, $p = 0.005$) and autonomy and parent relation ($r_s = -0.36$, $p = 0.007$) dimensions. No other significant correlations values were found between STR and quality of life using the student sample.

DISCUSSION

This work set out to compare perceived quality of STR, as reported by teachers and students, after-online and after-classroom teaching. Previous findings highlight the lack of interaction opportunities as a downside to online teaching (e.g., Tichavsky et al., 2015; Niemi and Kousa, 2020) but have not address how that compares to classroom teaching for adolescents, who more strongly crave for social contacts (Orben et al., 2020), nor based on an operationalized and comparable conceptualization of that relationships based on closeness and conflict. Also, we wanted to verify the associations between STR and quality of life after both teaching modalities, following previous findings that online teaching impacted on the mental health of both teachers and students (Hyseni Duraku and Hoxha, 2020).

Findings only partially confirm our hypotheses concerning conflict and closeness after-online teaching compared to after-classroom teaching: the difference was only statistically significant for students' perception of conflict. The conflict dimension of the STR has been associated specifically to the behaviors that students practice in school contexts: STR has been found to both predict (Drugli, 2013; Longobardi et al., 2016) and be predicted (Rudasill et al., 2010; Longobardi et al., 2018) by those behaviors. Besides interaction opportunities likely being lower in online teaching (Diebel and Gow, 2009), thus

resulting in less opportunities for conflict, this effect may be particularly pronounced for adolescents who lack the self-regulatory skills that have been proposed to facilitate involvement in online teaching (Tichavsky et al., 2015; Flores et al., 2021).

As for the associations between STR and quality of life reported by students, they were more consistent for closeness than for conflict. Positive associations were consistently found across teaching modalities between closeness and psychological wellbeing and school environment, mirroring what was previously found as outcomes for positive STR relationships (Bernstein-Yamashiro and Noam, 2013). Another consistent association was found between conflict and a negative perception of the school environment; students who are in conflict with teachers may seek the comfort/approval from peers who face similar experiences (Rudasill et al., 2010) and, inadvertently, that may lead them to be further alienated from both teachers and peers, thus leading to a negative perception of the school environment. No significant differences were found for quality of life across teaching modalities, unlike previous findings (e.g., Petillion and McNeil, 2020); the fact that we explored several domains of quality of life, instead of specific symptoms (e.g., motivation, stress, or anxiety) may have sustained these diverse findings. It nevertheless seems worth mentioning the near-significant difference found for school environment, which had a lower score after classroom teaching. This may be another way of students expressing a more generalized conflict-based interaction pattern of relating to both teachers and peers. As for the way STR associated with conflict, it only negatively associated with psychological wellbeing after online teaching; the fact that this was not found after-classroom teaching may have to do with the biggest emphasis on social aspects of wellbeing when opportunities for in-person interactions are available. Conflict after-classroom teaching associated with physical wellbeing and autonomy and parent relations. On the one hand, and because conflict with teachers usually also reflects in conflict with peers (Longobardi et al., 2018; Maia and Vagos, 2021), schools may be a context where face-to-face overt aggression acts are possible (because students are in the same physical place), which impacts on physical wellbeing. On the other hand, after having lived in close quarters with parents and away from teachers, adolescents may be experiencing a renewal in their developmental task of negotiating their autonomy from adults (Moretti and Peled, 2004), which may be reflected both in conflict with teachers and perceived difficulties in managing parental relationships.

Teachers' perception of STR was unchanged when comparing after-online with after-classroom teaching. Teachers have been found to be more focused on the technical difficulties of teaching online (e.g., available resources and infrastructures; Trust and Whalen, 2020). This, plus the fact that the sample is composed mostly of teachers of older students who consider emotional connections and expressions to be less relevant (Hargreaves, 2000), may have made them less aware of changes to the way they relate with their students. After online teaching, teachers' perception of closeness associated with their satisfaction with social relationships. Feeling closer to ones' students is proposed to be another way of satisfying teachers' needs for connection (Spilt et al., 2011) and has actually been found to fulfils this role, at least for some teachers (O'Connor, 2008). This, in addition to the fact that while confined teachers may have had more opportunities to connect with significant others (e.g., family members), may have made this period when online teaching occurred particularly satisfying concerning the social domains of teachers' life. After-classroom teaching, teachers' perception of conflict associated with diminished psychological wellbeing and with a negative perception of their surroundings. Classroom teaching may demand more of teachers, namely, in the way they connect with students, manage students' and their owns' behavior, and are subjected to students' potentially reactive and quarrelsome interaction patterns (O'Connor, 2008). These demands may negatively impact on their psychological wellbeing and the way they perceive their (working) environment.

Implications for Applied Settings

Because STR are available to all students (Myers and Pianta, 2008), its quality may be improved so that STR may be a resource put to use to contribute to better personal and professional/academic outcomes, in both students and teachers (Pianta et al., 2003). Interventions aimed at promoting higher quality in STR have growingly received attention and empirical support (Hamre and Pianta, 2006), namely, by helping teachers recognize the relevance of classrooms as developmental and communication contexts and actively using them as such (Pianta et al., 2012). This line of thinking should also be applied to online teaching. Online education has been thought of as encompassing a lack of emotion in STR, where the focus is on knowledge reporting without any emotional communication being involved in the learning process (Lai and Xue, 2012). Alternatively, helping teachers and students develop not only the technical but also the socio-emotional competencies to manage online learning and secure a significant online social and supportive presence, may result in a better overall online teaching experience (Flores et al., 2021).

Limitations

Though teaching modality was clearly differentiated in the current work (i.e., online implied online contact only whereas classroom implied in-person contact only) and lasted for the same amount of time, we could not distinguish the effects of teaching modality from potential longitudinal (i.e., derived from the passing of time across the school year, which in this case corresponded to transitioning from online to classroom teaching) or learning effects (i.e., producing similar responses from one moment to another based on recollection of what was answered in the first assessment moment). Having had access to other groups who had gone through the opposite transition (i.e., from classroom to online teaching) or using independent (but homogenous) groups who experienced different teaching modalities at the same time would be an important way to further compare and explore current findings in the future. Nevertheless, because previous literature indicates conflict to be stable but closeness to be less so (Roorda et al., 2011) and we did not replicate those outcomes, particularly for

students, we may expect that teaching modality was the main precursor of current findings. Also, we did not assess dyads so the reciprocal effects of closeness and conflict among teachers and students could not be inferred, but only proposed and discussed based on existing literature (e.g., Baker et al., 2008; Longobardi et al., 2016). Future works considering the mutual perceptions of student-teacher dyads would allow a closer look into the characteristics and evolution of student-teacher relationships across diverse demands, such as online versus classroom teaching. Finally, our sample size and sites where data were collected are limited, which implies caution when generalizing current findings and prevented us from analyzing other person-related variables that may have impacted current findings, such as, to name only a few, student or teacher gender (Drugli, 2013) or resources available to implement diverse online- and classroom-based teaching strategies (Hebebci et al., 2020).

Conclusion

Online teaching, as practiced during one of the confinement periods in Portugal, seemed to be an impersonal experience, where neither closeness nor conflict arose in comparison with classroom teaching. Though lower conflict may be thought of as positive, it does not seem to derive from increased social abilities nor the establishment of positive interactions, but rather from the absence of interpersonal stimuli. So, following previous assumptions (Orben et al., 2020), another consequence of social isolation may be the underdevelopment of social competences needed for students' interpersonal adjustment in the long run. Alternatively, neither online nor classroom teaching was superior in relation to providing feelings of closeness and connectedness between teachers and students but that does not have to be the case. As educational practices evolve to accommodate online teaching and other technology mediated teaching strategies as prompted by the COVID-19 pandemic (Poletti, 2020; Stoller, 2021), teachers should be encouraged to establish a social presence and connect with students, thus contributing not only to their own quality of life but also to the whole development of their students.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, upon reasonable request.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Comissão de Ética para a Saúde da Universidade Portucalense Infante D. Henrique. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

PV was responsible for the design of the study and for describing the methods and results sections of the manuscript. LC was responsible for the introduction and discussion section of the manuscript. PV and LC contributed to the validating each other's responsibilities and to the writing of the manuscript in its current presentation. All authors contributed to the final version of the article and approved the submitted version.

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Development of the Competence Measure of Individual Teacher-Student Relationships (COMMIT): Insight Into the Attitudes, Knowledge, and Self-Efficacy of Pre-service Teachers

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The importance of dyadic teacher-student relationships for both teachers and students is widely acknowledged. However, only limited research has explored how competent teachers feel in building these relationships. The current study aimed, first, to deepen the knowledge on relational competence by targeting teachers' competence in building dyadic teacher-student relationships specifically. To this end, the Competence Measure of Individual Teacher-student relationships (COMMIT) was developed. This questionnaire is explicitly based on theories used in research on affective teacher-student relationships and addresses multiple aspects of competence (attitudes, knowledge, and self-efficacy). Second, as teacher education programs have been repeatedly criticized for not sufficiently targeting relational competencies, the current study focused on pre-service teachers' perceived competence and aimed to explore differences in this competence across pre-service teachers in subsequent years of their teacher training. Criterion validity of the newly developed COMMIT was examined in a sample of pre-service teachers in pre-primary and primary teacher education programs (N = 535). Six subscales were created, addressing pre-service teachers' attitude toward teacher-student relationships (1 scale), their knowledge of teacher-student relationships and coping (2 scales), and their self-efficacy beliefs with regard to building closeness, coping with conflict, and reflective functioning (3 scales). Results showed that pre-service teachers had a rather positive attitude toward teacher-student relationships, and felt quite knowledgeable and self-efficacious, yet not in all aspects of dyadic relationship-building. Results further revealed that pre-service teachers in the final year of teacher training felt more competent, yet, again, not for all aspects of dyadic relationship-building. Notably, differences between pre-service teachers in subsequent years of teacher education were less pronounced in primary compared to pre- primary teacher education programs. Suggestions for future research and implications for initial teacher training are discussed.

Keywords: teacher-student relationship, teacher perceived competence, measure development, teacher education, dyadic teacher-student relationships, teacher attitudes, teacher self-efficacy

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INTRODUCTION

The importance of the affective qualities of dyadic teacher-student relationships, both for child development and teacher well-being, has repeatedly been demonstrated (e.g., McGrath and Van Bergen, 2015; Corbin et al., 2019). Students who have a close relationship with their teacher for instance hold more positive attitudes toward school, achieve better in class, and are more likely to develop positive peer relations (Roorda et al., 2017, 2020; Ansari et al., 2020a), while students who have a conflictual relationship with their teacher are at risk for negative outcomes and the amplification of initial internalizing and externalizing problems (Roorda et al., 2014; Ansari et al., 2020a; Nguyen et al., 2020; Roorda and Koomen, 2021). Likewise, close teacher-student relationships contribute to teachers' self-efficacy, sense of personal accomplishment, job satisfaction, and professional motivation (Hagenauer et al., 2015; Zee et al., 2017; Corbin et al., 2019; Evans et al., 2019; Aboagye et al., 2020), whereas conflictual relationships are an important source of teacher stress and are predictive of burnout symptoms such as emotional exhaustion (Milatz et al., 2015; Corbin et al., 2019; Ansari et al., 2020b). In sum, both teachers and students profit from close relationships, while both suffer from conflictual relationships. Although the importance of affective teacher-student relationships is widely acknowledged, only limited research has focused on how competent teachers feel in building these relationships and how this competence can be influenced by, for example, teacher education. This study aimed to fill this gap and focused on teachers' perceived competence in dyadic relationship-building, specifically targeting pre-service teachers in (pre-) primary education programs.

Affective Teacher-Student Relationships

Within research on affective teacher-student relationships, attachment theory has become the dominant framework (Pianta, 1999; Sabol and Pianta, 2012; Verschueren and Koomen, 2012). The teacher-student relationship is conceptualized based on three dimensions: closeness, conflict, and dependency (Pianta, 2001). Closeness reflects the openness and warmth within the relationship, while conflict refers to resistance and disharmony in teacher-student interactions. Dependency, in turn, reflects (excessive) dependent behavior of the student toward the teacher (Verschueren and Koomen, 2012). The attachment framework states that in a positive, effective relationship, characterized by closeness and the absence of conflict and dependency, the teacher functions as a "secure base" and "safe haven" for students, allowing them to explore the world and supporting their further social, emotional and academic development (Pianta, 1999; Verschueren and Koomen, 2012). Attachment-based interventions emphasize the importance of teachers' reflective functioning, that is their ability to reflect upon their own and their students' emotions and cognitions (Slade, 2007; Spilt et al., 2012; Bosman et al., 2021). Moreover, the teacher's sensitivity, reflected in for instance their ability to take the students' perspective as well as to respond appropriately to each student's needs, is considered vital in building a warm, positive relationship (Pianta, 1999; Koomen and Lont, 2004; Sabol and Pianta, 2012; Verschueren and Koomen, 2012).

Together with attachment theory, research often builds on the self-determination theory (Deci et al., 1991; Ryan and Deci, 2000). Self-determination theory states that every human has three fundamental, psychological needs: the need for autonomy, competence, and relatedness. Fulfillment of these needs is a requirement for motivation, engagement, and growth (Deci et al., 1991; Ryan and Deci, 2000). In a school context, this means that all three needs have to be fulfilled in order for students to truly engage and learn (Deci et al., 1991; Ryan and Deci, 2000; Opdenakker, 2014). Teachers are important actors who can support students in fulfilling these needs. In this light, the teacher-student relationship has been identified as an important lever to fulfill students' need for relatedness (Deci et al., 1991; Ryan and Deci, 2000; Opdenakker, 2014). Moreover, positive relationships with students can also fulfill the teachers' own need for relatedness (Klassen et al., 2012).

In addition to these two psychological approaches, educational scientists have studied the teacher-student relationship using the model of interpersonal teacher behavior. This model builds upon the communicative systems approach to model interactions between teachers and students (Wubbels et al., 2006, 2012a,b). Teacher behavior in the classroom is described along two dimensions, Dominance (also called "Influence," dominance vs. submission) and Affiliation (also called "Proximity," opposition vs. cooperation). By combining these two dimensions, the pattern of teacher behavior can be summarized in one of eight interpersonal styles (e.g., Leadership, Understanding, Strict; Wubbels et al., 2006, 2012a). Interactions between two parties can be either symmetrical or complementary. Within teacher-student relationships, interactions are often symmetrical with regard to affiliation [i.e., cooperative or friendly behavior from the teacher elicits cooperative or friendly behavior from the student(s)], yet complementary with regard to dominance (i.e., dominant behavior from the teacher elicits submissive behavior from the student(s); Wubbels et al., 2006). Although the model of interpersonal theory behavior is most frequently used in research focused on classroom-level relationships, it has also been applied to the dyadic teacher-student relationship (Thijs et al., 2011; Roorda et al., 2012). On both the dyadic and classroom level, the teacher's interpersonal behavior was found to be related to cognitive and affective student outcomes (Wubbels et al., 2007, 2012b; Thijs et al., 2011; Roorda et al., 2012; Zijlstra et al., 2013).

As mentioned above, teachers interact with the class as whole, as well as with individual students. Although classroom-level and dyadic teacher-student relationships are related (Buyse et al., 2008; Moen et al., 2019; Walker and Graham, 2019), the impact of dyadic teacher-student relationships on student development can be distinguished from the impact of relationships at the classroom level (Buyse et al., 2009; Rucinski et al., 2018; Nguyen et al., 2020). A low-quality dyadic teacher-student relationship can subvert the benefits of high-quality classroom environments (Crosnoe et al., 2010; Nguyen et al., 2020) and classroom-level emotional support cannot compensate for low-quality dyadic relationships (Rucinski et al., 2018). These results

highlight the importance of teachers' competence to build positive relationships with *each* of their students.

Teachers' Relationship-Building Competence

Although investing time and effort in building positive teacher-student relationships benefits both parties, researchers have suggested that teacher education programs might not sufficiently prepare teachers for building positive teacher-student relationships (Jo, 2014; Korpershoek et al., 2016; Rucinski et al., 2018; Aspelin and Jonsson, 2019). Teacher education programs have been criticized for focusing too strongly on (subject) knowledge and teaching skills rather than addressing didactical, pedagogical and relational competencies equally. If attention is given to pedagogical competencies, the focus is mainly on classroom management (Jensen et al., 2015; Aspelin and Jonsson, 2019). While reports from teachers and pre-service teachers revealed that they consider interactions and relationships with students the most difficult aspect of teaching (Jensen et al., 2015), only limited research has explored how competent (pre-service) teachers feel in building teacher-student relationships with individual students and how teacher education impacts this perceived competence.

An important effort toward the inclusion of relational competencies in teacher training has been initiated, both in policy and research, in Denmark and Sweden (Jensen et al., 2015; Aspelin and Jonsson, 2019). In various, in-depth qualitative studies, researchers have investigated how (pre-service) teachers themselves conceptualize "relational competence," how relational competencies are visible in teachers' practice, and how teacher education can strengthen teachers' relational competencies (Jensen et al., 2015; Aspelin and Jonsson, 2019; Aspelin et al., 2020, 2021). This line of research conceptualizes relational competence as "being able to meet students and parents with openness and respect, to show empathy and to be able to take responsibility for one's own part of the relationship as an educator" (Jensen et al., 2015, p. 206). This approach does thus not solely focus on affective teacher-student relationships, nor does it determine specific skills or attitudes needed to build relationships with individual students. The current study aims to deepen the knowledge on relational competence by focusing on pre-service teachers' competence in building dyadic teacher-student relationships.

Several quantitative measures have been developed to assess the quality of teacher-student relationships or interactions, both from the perspective of the student and the perspective of the teacher [for an overview of self-report measures, see Roza et al. (2021)]. However, to our knowledge, only two quantitative measures have been developed which target teachers' perceived relational competence[1]. First, in line with the multidimensional Scandinavian framework, the Teacher's Relational Competence Scale (TRCS; Vidmar and Kerman, 2016) addresses teachers' authenticity, responsibility, and respect for individuality in teacher-student relationships. Notably, only two scales, responsibility and individuality, were retained: the expected, theory-based three-factor structure including authenticity was not supported (Vidmar and Kerman, 2016). Relational competence as measured with the TRCS, combining responsibility and individuality, was shown to positively predict teachers' job satisfaction (Perše et al., 2020). Second, the unidimensional Teacher Relational Self-Efficacy Scale (TRSES; Robinson, 2020) assesses teachers' feelings of relational self-efficacy: "teachers' beliefs about their capability to successfully form, maintain, and repair relationships with students" (Robinson, 2020, p. 2). The dissertation research of Robinson (2020) suggested that relational self-efficacy is predictive of teacher-student relationship quality, over and above self-efficacy in other aspects of teaching.

However, neither of these existing measures seem to be specific enough to address *dyadic relationship-building* competence. First, development of these measures was guided by social-emotional competence research and teacher self-efficacy research, respectively, rather than theoretical perspectives on dyadic teacher-student relationships such as the attachment framework, self-determination theory and the theory of interpersonal teacher behavior (Vidmar and Kerman, 2016; Robinson, 2020). As a result, the value of these measures notwithstanding, the existing measures do not distinguish between *classroom-level* relationships and *dyadic* teacher-student relationships. However, it is possible that teachers feel generally competent in building relationships with their students (e.g., how much can you do to get your students to trust you?), yet they feel less competent in their interactions with one or two specific students (e.g., do you know for each individual student in your class how to calm or console them when they are angry or upset or do you know this for most, but not all students?). As this study focuses on dyadic relationships, the measure used should be tailored to these one-on-one relationships. As discussed, prominent theories in research on dyadic teacher-student relationships are attachment theory, self-determination theory as well as the theory of interpersonal teacher behavior. We argue that when targeting teachers' perceived dyadic relationship-building competence, at least the most prominent aspects of these theories (e.g., for attachment theory: how the teacher can function as a secure base) should be included.

Second, the mentioned measures target only one aspect of teachers' perceived competence, namely teachers' self-efficacy beliefs. However, both theoretical models of competence (Baumert and Kunter, 2013; Blömeke and Kaiser, 2017) and empirical research emphasize that different aspects of teachers' competence – that is teachers' affect-motivation (attitudes or beliefs) (theoretical) knowledge, and self-efficacy beliefs – separately contribute to their teaching practice (Kunter et al., 2013; Spruce and Bol, 2014; Charalambous, 2015; Depaepe and König, 2018; Horzum and Izci, 2018; Yu, 2018). Notably,

[1]Although frequently used measures of teacher self-efficacy (e.g., Tschannen-Moran and Woolfolk Hoy, 2001; Zee et al., 2016) refer to several aspects of the teacher-student relationship (e.g., "How much can you do to calm a student who is disruptive or noisy?" as part of classroom management, or "How well can you provide a safe and secure environment for this student?" as part of emotional support), relationship-building skills of teachers are not explicitly addressed and we do not consider these measures specific enough to assess the concept of relational competence.

studies investigating whether teachers' self-efficacy beliefs, most often in the domain of emotional support, are associated with dyadic teacher-student relationship quality have yielded mixed results (Zee and Koomen, 2016, 2017; Hajovsky et al., 2020). It might thus be necessary to include teachers' attitudes and knowledge as well to fully capture associations between teachers' perceived competence and actual performance (i.e., relationship quality).

Finally, the discussed measures of relational competence focus primarily on the students' relational and supportive needs: what can, or should, the teacher do to support the student? However, the teacher is also part of the relationship and what the teacher needs to be able to support the student should not be overlooked. It is not always evident to build close teacher-student relationships with each and every student in your class, and how teachers cope with negative emotions and conflicts in interactions with students is crucial to preserve and maintain teacher sensitivity (Koenen et al., 2019a; Ansari et al., 2020b). For example, if a teacher wants to calm down or console the student following a conflict, they need to be able to cope with their own emotions. Only then can they restore the relationship. In building teacher-child relationships, teachers are the ones responsible for trying to establish, maintain and, if needed, restore the relationship. Negative teacher emotions and cognitions, such as helplessness or not feeling in control, can discourage the teacher from searching for new strategies to connect with a student, might cause teachers to withdraw from a student, and can undermine their sensitivity toward that student (Chang and Davis, 2009; Spilt and Koomen, 2009; Koenen et al., 2019a). The ability to cope with these negative emotions and cognitions, however, can strengthen teachers' resilience and is crucial in preventing teachers from becoming discouraged in the face of challenges, such as repeated conflict with students (Hastings and Brown, 2002; Beltman et al., 2011).

Teachers need to regulate their emotions and (maladaptive) cognitions both in the moment and in the long run (Hastings and Brown, 2002; Beltman et al., 2011; Pillen et al., 2013; Wang et al., 2019; Zaretsky and Katz, 2019; de Ruiter et al., 2021). The use of maladaptive coping strategies (e.g., hiding or faking emotions; cognitive avoidance) in interactions with students decreases occupational well-being, puts teachers at risk for burnout, and can subvert the development of positive teacher-student relationships (Hastings and Brown, 2002; Beltman et al., 2011; Wang et al., 2019; de Ruiter et al., 2021). In contrast, adaptive coping (e.g., reflecting upon your own emotions; keeping calm; problem solving) enhances teachers' resilience in dealing with conflict with students and allows teachers to build positive relationships (Whitaker et al., 2015; McGrath and Van Bergen, 2019; Zaretsky and Katz, 2019; de Ruiter et al., 2021). We therefore argue that adaptive coping with negative emotions and conflict is a core aspect of teachers' dyadic relationship-building competence. When targeting pre-service teachers' dyadic relationship-building competence it might thus be especially valuable to assess how teachers react to difficult interactions with students [e.g., giving up or getting frustrated when dealing with disruptive behavior (maladaptive) or searching for a new solution (adaptive)].

The Present Study

Seeking a more profound understanding of teachers' perceived competence in dyadic relationship-building and to explore differences between pre-service teachers in different phases of their teacher education in this competence, we developed a measure explicitly based on theories used in research on dyadic teacher-student relationships (attachment theory, self-determination theory, theory of interpersonal teacher behavior), which addresses multiple aspects of competence (attitudes, knowledge and self-efficacy) and includes both student-oriented competencies (e.g., taking the students' perspective) and teacher-oriented competencies [e.g., (mal)adaptive coping].

In a sample of pre-service teachers in pre-primary and primary education programs we first investigated construct validity using exploratory and confirmatory factor analysis. Next, criterion validity was examined. We aimed to examine whether perceived dyadic relationship-building competence was positively associated with pre-service teachers' general teacher self-efficacy and feelings of competence, emotional intelligence, affect-motivation, and well-being. First, with regard to general teacher self-efficacy and competence, we expected to find a relatively strong, positive association between dyadic relationship-building competence and the more general, broader concept of relational self-efficacy as these concepts are closely related. Furthermore, we expected pre-service teachers who feel competent as a teacher and student in general, to feel more competent in dyadic relationship-building as well. We thus expected a moderate to strong, positive association with general teacher self-efficacy and a smaller, positive association with academic self-concept. Second, as emotional intelligence is a requirement for both student- and teacher-oriented dyadic relationship-building competencies, we expected small to moderate associations between dyadic relationship-building competence and emotional intelligence. Emotional intelligence is considered to be a multidimensional construct, including both appraisal and regulation of emotions, with both a focus on one-self and on the other (Pekaar et al., 2018). We more specifically expected to find associations between student-oriented dyadic relationship-building competencies and other-focused emotional appraisal and regulation as well as between teacher-oriented dyadic relationship-building competencies and self-focused emotional appraisal and regulation. Third, with regard to affect-motivation we expected small to moderate associations with job motivations (including motivations related to a desire for contact with students and motivations related to a desire to contribute to the future of students), and with student-oriented beliefs (vs. subject matter-oriented beliefs). Finally, as poor well-being and in particular depressive symptoms might negatively influence competence perceptions (Gable and Shean, 2000), we included a measure of depression. We expected small negative associations between dyadic relationship-building competence and depression.

In addition, differences between pre-service teachers in subsequent years of the teacher education program

were explored. As teacher education programs have been criticized for not sufficiently targeting relationship-building competencies, we expected only small differences between pre-service teachers in different cohorts. Relatedly, we explored differences between the pre-primary and primary teacher education programs. In line with the predominance of early childhood, as compared to middle or late childhood, in research on teacher-student relationships (Verschueren, 2015), pre-service teachers in the pre-primary teacher education program might feel more competent compared to teachers in the primary education program.

MATERIALS AND METHODS

Sample

A sample of 535 pre-service teachers (88.7% female) from three university colleges participated in the study. Pre-service teachers both from pre-primary (69.0%) and primary (30.8%) programs, as well as from all three years of the programs (1st year cohort: 46.4%; 2nd year cohort: 23.4%; 3rd year cohort: 30.1%) participated. Mean age of pre-service teachers was 21.9 years (SD = 4.4; range = 19 to 51). Sample characteristics for each university college separately are summarized in **Table 1**.

Procedure and Recruitment

Recruitment of Teacher Training Programs

In Flanders, initial teacher education programs typically entail 3 years and consist of both theoretical courses and internships. All 11 university colleges who offer pre-primary and/or primary teacher training at a professional bachelor level in Flanders were invited to participate. An e-mail was sent to department heads of teacher education programs including a short summary of the study and an invitation to ask any questions and to explore further collaboration. Three university colleges agreed, with three pre-primary and two primary teacher education programs participating in the study.

TABLE 1 | Sample characteristics for each university college.

Sample characteristic	College A		College B		College C		Full sample	
N	112		232		191		535	
Age								
Mean (*SD*)	21.80 (4.56)		22.41 (5.55)		21.40 (2.09)		21.93 (4.41)	
Range	19–47		19–51		19–36		19–51	
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Gender								
Female	98	87.50	193	83.19	183	95.81	474	88.76
Male	13	11.61	37	15.95	7	3.67	57	10.65
Not indicated	1	0.89	2	0.86	1	0.01	4	0.75
Program								
Pre-primary	68	60.71	111	47.85	191	100	369	68.97
Primary	44	39.29	121	52.16	0	0	165	30.84
Year								
1st year	44	39.29	143	61.64	61	31.94	248	46.36
2nd year	42	37.50	22	9.48	61	31.94	125	23.36
3rd year	25	22.32	67	28.88	69	36.13	161	30.09

Recruitment of Pre-service Teachers

All pre-service teachers of the participating programs were invited to complete the questionnaire, there were no exclusion criteria. The online questionnaire was distributed during a(n online) class of a compulsory course. Pre-service teachers first received information about the study either in a short video summary or live from the researcher and were then invited to complete the questionnaire. Informed consent was obtained at the start of the online survey. If pre-service teachers indicated they did not wish to participate, the questionnaire was not shown. Pre-service teachers were able to quit the questionnaire at any time without consequences. Movie tickets were raffled among participants as an incentive.

Procedure

Ethical approval was granted prior to the start of the research by the authors' research institute. First, a smaller group of pre-service teachers (N = 156) was recruited to pilot the questionnaire. The researcher was present during the pilot data collection to answer questions and to record any feedback or remarks from the participating pre-service teachers (e.g., the phrasing of some questions was unclear; the questionnaire was perceived as too long). Second, adaptions were made to the questionnaire and additional pre-service teachers (N = 379) were recruited for the main study. In total, 576 pre-service teachers were invited to participate in the study. 41 questionnaires (7.12%) were not started (i.e., no consent obtained) or showed indications of inattentive response [e.g., non-random answer patterns such as choosing the same option throughout the full questionnaire, including reverse scored items, Meade and Craig (2012)]. These questionnaires were excluded from the study, resulting in the final sample of 535 pre-service teachers.

Questionnaire Development

Teachers' perceived competence in dyadic relationship-building was assessed for three aspects of competence (Baumert and Kunter, 2013; Blömeke and Kaiser, 2017): affect-motivation (attitudes or beliefs), knowledge and self-efficacy. The items were constructed based on a literature review focused on the discussed theories (attachment theory, self-determination theory and theory of interpersonal teacher behavior) and on teacher-oriented competencies required for building relationships (understanding of emotions and coping). Further on, example items are provided for each part of the questionnaire[2]. Content of the items and format of the questionnaire were discussed with experts in the field of teacher-student relationships as well as teacher educators from our partner university colleges. Based on their feedback, items were adapted to both reflect the current state of the art of research on dyadic teacher-student relationships and to resonate well with pre-service teachers. Finally, based on explorative factor

[2]The original items are in Dutch, available upon request. The items presented in the methods and results section have not been translated to English using backtranslation procedures.

analyses in a pilot study (N = 156), 8 additional items were added to the questionnaire in order to strengthen preliminary-found subscales.

The first part of the questionnaire addressed pre-service teachers' *affect-motivation*, particularly their attitudes, beliefs and motivation concerning teacher-student relationships, e.g., "A personal relationship with the teacher is important, but it is not crucial for the quality of education." Twenty items were rated on a five-point scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). We expected one affect-motivation scale to emerge.

The second part of the questionnaire addressed pre-service teachers' *knowledge* of the discussed theories (attachment theory, self-determination theory, theory of interpersonal teacher behavior, understanding of emotional experiences and coping) and related constructs regarding dyadic relationship-building in 18 items, e.g., an item addressing knowledge based on the attachment framework "I understand how a teacher can provide a secure base for a child" or an item addressing knowledge of coping strategies "I understand which coping skills are efficient when I feel stressed in the classroom." Each item was constructed in this way, starting with "I understand. . .." The goal was not to test whether pre-service teachers' knowledge is correct, but rather to assess the level of mastery pre-service teachers think they have obtained. Pre-service teachers indicated to what extent they are familiar with the constructs on a scale ranging from 1 [*I don't understand this (yet)*] to 5 (*I fully understand this, and I am able to explain it to my peers*). *A priori*, we expected one set of items mainly targeting a theoretical understanding of teacher-student relationships (e.g., how a relationship with a student can be described in terms of control and affiliation) to form one scale, while we expected a second set of items mainly targeting a theoretical understanding of emotional experiences, relational-emotional coping and self-care (e.g., which emotions teachers often experience in interactions with students) to form a second scale. Additionally, four non-relationship content items, covering other domains of teaching, were added. These items described contents taken from the so called 'professional profile and start competencies' of teachers of the department of education (Aelterman et al., 2008), which are presumed to be amply included in and repeated throughout teacher training (e.g., powerful learning environment, difference between formative and summative evaluation). These items were used as filler items and therefore not included in our analyses.

The third part of the questionnaire addressed pre-service teachers' *dyadic relationship-building self-efficacy*. The structure of this part was inspired by the Perceived Competence Scale for Children (Harter, 1982). Thirty-two bipolar items gave two descriptions of teachers, e.g., "Some teachers can get through to every child in their classroom" and "Other teachers can get through to some, but not to all children in their classroom" (see **Figure 1**). Pre-service teachers were asked to indicate where they position themselves between those two statements, indicating to what extent either the right or left statement is true for them (1 through 6, *very typical of me*, *sort of typical of me*, *not that typical of me, not that typical of me, sort of typical for me, very typical of me*). *A priori*, we expected one set of items mainly targeting self-efficacy in building teacher-student relationships (student-oriented competencies, e.g., being aware of the interests, feelings, ideas, and goals of each student) to form one scale, while we expected a second set of items mainly targeting self-efficacy in relational-emotional coping and self-care (teacher-oriented competencies, e.g., keeping your emotions in check during conflicts with students) to form a second scale.

Instruments for Validation[3]

Teacher Self-Efficacy and Competence

First, the *Teachers' Relational Self-Efficacy Scale* (TRSES; Robinson, 2020) consists of eight items (e.g., "How confident are you that you can build positive relationships with all your students?", ω = 0.86, α = 0.86) targeting teachers' beliefs about their "capability to successfully form, maintain and repair relationships with students" (Robinson, 2020, p. 17). Items were rated on a five-point Likert scale ranging from 1 (*Not at all confident*) to 5 (*Extremely confident*). First evidence was found for the reliability and validity of the TRSES in a sample of middle and high school teachers in dissertation research (Robinson, 2020).

Second, to capture pre-service teachers' perceptions about themselves as a teacher, we included the widely used *Teacher Self-Efficacy Scale* (TSES; Tschannen-Moran and Woolfolk Hoy, 2001). The TSES comprises three subscales: efficacy in instructional strategies (6 items, e.g., "To what extent can you craft good questions for your students?", ω = 0.87, α = 87), classroom management (5 items, e.g., "How much can you do to control disruptive behavior in the classroom?", ω = 0.92, α = 0.92) and student engagement (5 items, e.g., "How much can

[3]As recently has been argued to use Omega rather than Cronbach's alpha to evaluate scale reliability (e.g., Peters, 2014; Hayes and Coutts, 2020), yet Cronbach's alpha is still most often used, we included both indices in this manuscript.

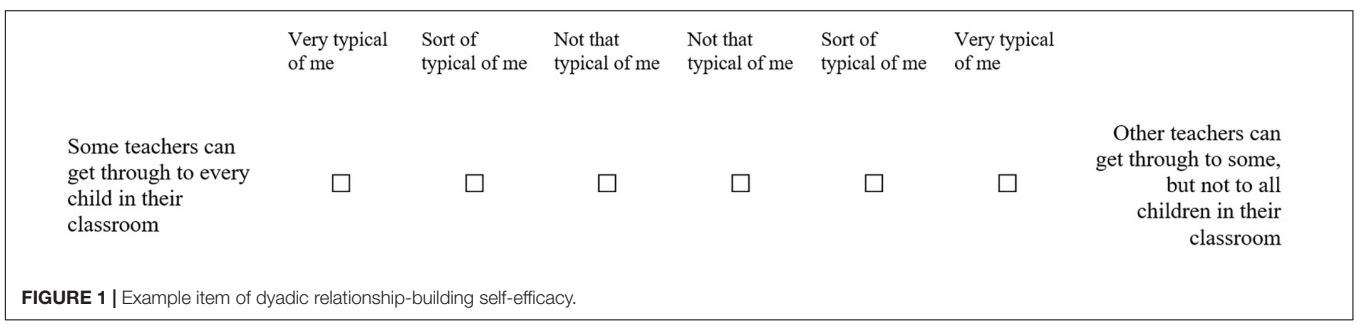

FIGURE 1 | Example item of dyadic relationship-building self-efficacy.

you do to foster student creativity?", ω = 0.91, α = 0.90). Pre-service teachers indicated their response on a nine-point Likert scale ranging from 1 (*nothing*) to 9 (*a great deal*). One student engagement item, focused on pupils' families, was removed as this is less relevant for pre-service teachers. All subscales were highly correlated with one another (*rs* from 0.66 to 0.74). Across grades and countries, the TSES has shown satisfactory reliability and construct validity, including in a Belgian sample of primary school teachers (Tschannen-Moran and Woolfolk Hoy, 2001; Klassen et al., 2009; De Smul et al., 2018).

Third, to capture pre-service teachers' perceptions about themselves as a student, we adapted the *academic self-concept* subscale of the Self-Concept Scale (Mertens, 1997) to apply to a context of higher education (10 items, e.g., "I am a smart student," "I am happy with my study results," ω = 0.88, α = 0.87). Pre-service teachers indicated how they feel or think about themselves on a four-point scale ranging from 1 (*not at all applicable*) to 4 (*very applicable*). Evidence for the reliability and convergent validity of the academic subscale was found in a sample of 700 Belgian students (Mertens, 1997; Germeijs and De Boeck, 2002).

Emotional Intelligence

The Rotterdam Emotional Intelligence Scale (REIS; Pekaar et al., 2018) consists of 28 items and measures four aspects of emotional intelligence: self-focused emotion appraisal (7 items, e.g., "I understand why I feel the way I feel," ω = 0.88, α = 0.87), self-focused emotion regulation (7 items, e.g., "I can suppress my emotions easily," ω = 0.81, α = 0.80), other-focused emotion appraisal (7 items, e.g., "I know which feelings others experience," ω = 0.88, α = 0.88) and other-focused emotion regulation (7 items, e.g., "I know what to do to improve people's mood," ω = 0.87, α = 0.87). Pre-service teachers indicated the extent to which they agree with each item on a five-point Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). All four subscales were moderately, yet significantly, correlated with one another (*rs* from 0.20 to 0.50). The REIS showed good reliability as well as convergent and discriminant validity in diverse Dutch samples, including pre-service teachers (Pekaar et al., 2018).

Teacher Affect-Motivation

We used the *Teacher Beliefs Questionnaire* developed by de Vries et al. (2013) to distinguish between pre-service teachers' subject-matter orientated beliefs (7 items, e.g., "In my teaching, it is important that I pass on my subject matter to the students," ω = 0.84, α = 0.84) and student orientated beliefs (5 items, e.g., "In my teaching, it is important to relate to the students' own knowledge and experiences," ω = 0.81, α = 0.81). Both subscales were positively correlated (*r* = 0.59). The Teacher Beliefs Questionnaire showed high reliability in a Dutch sample of secondary school teachers (de Vries et al., 2013).

A second questionnaire targeted the *career motivations of pre-service teachers*, why they want to become a teacher and chose teacher training (De Cooman et al., 2007). Pre-service teachers indicated to what extent they agree that a certain motive convinced them to start their study to become a teacher on a five-point scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). The expected subscales social role (4 items), transfer of knowledge (4 items), student contact (4 items) and variety and challenge (3 items) were not reliable (α's ≤ 0.66) in our pilot study. Instead, based on exploratory factor analysis we created two scales. To shorten the questionnaire following the pilot study, only these two scales were included in the main study as well: student contact (5 items, e.g., "I am motivated to be a teacher because of the contacts with students," ω = 0.80, α = 0.80) and social role of the teacher (4 items, e.g., "I am motivated to be a teacher because I want to participate in the future of young people," ω = 0.71, α = 0.71). Both subscales were highly correlated (*r* = 0.67).

Well-Being

Pre-service teachers completed the short version (10 items, ω = 0.88, α = 0.87) of the *Center for Epidemiological Studies Depression Scale* (CES-D; Radloff, 1977). To shorten the questionnaire in order to reduce the workload for participants, a planned missingness, within-block design was administered in the main study (Rhemtulla and Hancock, 2016). Three items were completed by all participants. The remaining items were attributed to either form A, B, C, or D based on the pilot study data. Items that correlated strongly in the pilot study were attributed to different forms, whereas items that correlated less strongly were attributed to the same form (Rhemtulla and Hancock, 2016). Participants were randomly assigned to complete two of these forms.

RESULTS

Factorial Validity

Exploratory Factor Analysis

In accordance with guidelines on scale development (Flora and Flake, 2017), we first performed exploratory factor analysis (EFA) before proceeding to confirmatory analysis (CFA). A random subsample (*N* = 156) was drawn from the main study sample (excluding the pilot study sample) for EFA. To account for the use of ordinal values and an asymmetrical distribution, EFA was based on the polychoric correlation matrix (Watkins, 2018). The number of factors was chosen based on parallel analysis, interpretation of the scree plot, and eigen values of the factors (Costello and Osborne, 2005; Montoya and Edwards, 2020). Items were retained if the factor loading was larger than |0.40| and no cross loadings greater than |0.32| were observed (Costello and Osborne, 2005; Watkins, 2018). The three questionnaire parts were analyzed separately. Factor loadings are reported in **Tables 2–4**. First, for affect-motivation a one-factor solution was found. This factor was comprised of 11 items and explained 21% of the variance with factor loadings ranging from |0.41| to |0.78|. Second, for knowledge two factors were retained. Factor 1 included 10 items and explained 29% of the variance with factor loadings from 0.56 to 0.86. Factor 2 included 5 items and explained 18% of the variance with factor loadings from 0.45 to 1.08. Finally, for self-efficacy a three-factor solution was chosen. Factor 1 included 11 items and explained 12% of the variance with factor loadings from 0.41 to 0.59. Factor 2 included 8 items and explained 12% of the variance with factor loadings from 0.49 to

TABLE 2 | Results of exploratory factor analysis for affect-motivation: factor loadings.

Item	Loadings
Item 4: Personal relationships with students offer me personal satisfaction	**0.78**
Item 15: As a teacher, I strive to have a personal relationship with each student in the class	**0.74**
Item 7: I regret when a relationship with a student is rather impersonal	**0.63**
Item 2: Each student deserves a personal relationship with their teacher	**0.60**
Item 10: Personal relationships with students are my number one priority	**0.58**
Item 14: I want to be a teacher who understands every student in their class through and through	**0.49**
Item 12: I am motivated to understand how personal relationships with students can touch me personally	**0.47**
Item 9: Relationships with students can teach me something about who I am	**0.46**
Item 3: A personal relationship with a student is important, but not crucial for the quality of education	**−0.55**
Item 5: Teachers cannot do much when they experience problems in personal relationships with students	**−0.43**
Item 18: Teachers have a rather small impact on a personal relationship with a student	**−0.41**
Item 16: Personal relationships with students make it easier to maintain order in the classroom	0.32
Item 11: It is important to question my own behavior in a conflict with a student	0.29
Item 8: It is impossible to build a personal relationship with each student	−0.38
Item 6: Other things in education are more important than building a personal relationship with each student	−0.36
Item 1: Teacher stress is caused by difficult student behavior	−0.16
Item 19: Difficult student behavior hinders a personal relationship	−0.16
Item 13: It is inevitable that you sometimes have a poor relationship with a student	−0.10
Item 17: The personal relationship with a student is strongly impacted by the student's personality	−0.08
Item 20: The personal relationship with a student is strongly impacted by the student's family background	−0.04

Factor loadings above 0.40 are in bold.

TABLE 3 | Results of exploratory factor analysis for knowledge: factor loadings.

Item	Factor 1	Factor 2
Item 4: Why a warm, personal relationship is important for exploration and motivation of students	**0.86**	−0.26
Item 17: How behavioral problems can be an expression of emotional insecurity	**0.79**	−0.10
Item 9: Function of the teacher as a secure base	**0.78**	−0.13
Item 12: How a relationship can be strengthened through supporting the students' need for competence, belonging, and autonomy	**0.74**	−0.11
Item 2: Emotional security	**0.70**	−0.08
Item 15: How friendly teacher behavior elicits friendly student behavior	**0.66**	0.18
Item 16: How authoritarian teacher behavior elicits defiant student behavior	**0.62**	0.13
Item 20: Why a warm, personal relationship is important for students' academic achievement	**0.59**	0.14
Item 6: Resilience	**0.56**	0.13
Item 10: How a personal relationship with a student influences me as a teacher	**0.56**	0.22
Item 22: How I can effectively cope with emotions and stress I experience in the classroom	−0.31	**1.08**
Item 13: Which coping skills are efficient when I feel stressed	−0.29	**0.92**
Item 14: How a relationship with a student can be described in terms of control and affiliation	0.12	**0.62**
Item 8: Emotional labor	0.03	**0.53**
Item 18: Which emotions teachers often experience in interactions with students	0.31	**0.45**
Item 21: How ideas or thoughts about an individual student can influence my pedagogical behavior	0.38	0.25
Item 11: What a relationship characterized by closeness, conflict or dependency looks like	0.21	0.33
Item 19: Why coping with their own negative emotions requires energy from teachers	0.27	0.33

Factor loadings above 0.40 are in bold.
All knowledge items start with "I understand. . .".

0.75. Factor 3 included 6 items and explained 11% of the variance with factor loadings from 0.52 to 0.74.

Confirmatory Factor Analysis and Scale Reliability

The exploratory factor solution was confirmed in the remaining sample (N = 379, combining pilot and main study sample) and compared to the *a priori* solution based on item content (for knowledge and self-efficacy)[4]. Factor loadings and a short description of the items are presented in **Tables 5–8**. Due to the ordinal nature of our data, models were fitted using diagonally weighted least squares (DWLS) estimation. It should be noted that using DWLS estimation tends to result in more extreme fit measures compared to other estimators (Xia and Yang, 2019) and conventional cut-off criteria (Hu and Bentler, 1999) should be applied with caution. Reliability analysis was performed on the complete data set (N = 535) to examine the internal consistency of the six factors[5]. Descriptive statistics for each scale and correlations between scales are summarized in **Table 9**.

First, the exploratory one-factor model for affect-motivation as presented in **Table 5** (χ^2 = 36.87, df = 44, CFI = 1.00, TLI = 1.00, RMSEA = 0.00 (90% CI [0.00, 0.03]), SRMR = 0.05) showed acceptable fit. The corresponding scale *attitude toward teacher-student relationships* (11 items, ω = 0.82, α = 0.81, e.g., "Each student deserves a personal relationship with the teacher") represented a positive attitude toward teacher-student relationships and motivation to invest in building these relationships.

Second, the exploratory two-factor model for knowledge as presented in **Table 6** showed acceptable fit ($\chi 2$ = 118.51, df = 89, CFI = 0.99, TLI = 0.99, RMSEA = 0.03 (90% CI [0.01, 0.04]), SRMR = 0.06). However, interpretation of these factors was

[4]Confirmatory factor analyses using only the remaining main study sample yielded similar results, with fit indices differing at most 0.01.

[5]Reliability analysis using only the main study sample yielded similar results, with both α and ω ranging from 0.82 to 0.85.

TABLE 4 | Results of exploratory factor analysis for self-efficacy: factor loadings.

Item	Factor loadings		
	1	2	3
Item 2: Can get through to each student	**0.58**	−0.12	0.04
Item 13: Succeed in building a warm, personal relationship with each student	**0.57**	0.09	−0.02
Item 19: Know how to talk with each student about feelings and thoughts	**0.56**	−0.01	0.28
Item 15: Can take the perspective of each student	**0.55**	0.13	0.00
Item 14: Are aware of the interests, values, feelings, ideas, and goals of each student	**0.53**	0.13	0.16
Item 3: Can talk with each student about feelings and experiences	**0.49**	−0.03	−0.14
Item 1: Know for each student what they need when they are sad	**0.45**	−0.02	0.13
Item 5: Obtain a feeling of self-confidence in relation with each student	**0.45**	0.14	−0.19
Item 11: Know how to offer emotional security to each student	**0.45**	0.16	−0.11
Item 7: Know for each student how to calm them when they are angry or upset	**0.59**	−0.16	0.15
Item 9: Can get each student to try new things	**0.41**	0.22	0.05
Item 31: Frequently reflect on the positive and negative emotions they experience in conflicts with individual students	−0.01	**0.75**	0.07
Item 32: Frequently reflect on the positive and negative emotions they experience in interactions with disruptive students	0.00	**0.70**	0.09
Item 21: Frequently reflect on the positive and negative emotions they experience in daily interactions with individual students	0.16	**0.62**	0.01
Item 23: Frequently reflect on thoughts and ideas about individual students and how these impact their behavior	0.04	**0.57**	−0.01
Item 10: Can react sincerely to each student	−0.10	**0.54**	−0.06
Item 25: Easily have confidential talks with each student	0.22	**0.52**	0.06
Item 22: Can understand the perspective of each student, even when the student is behaving inappropriately or disruptively	0.20	**0.50**	−0.02
Item 8: Can almost always react positively to each student	0.07	**0.49**	−0.09
Item 28: Get exhausted by conflicts with students	−0.12	0.13	**0.74**
Item 30: Are at risk of losing self-control when a certain student disrupts the class	0.09	−0.15	**0.74**
Item 26: Have a hard time keeping emotions in check during conflicts with certain students	0.17	−0.13	**0.66**
Item 27: Give up after several efforts and stop searching for further strategies to handle disruptive behavior	0.23	−0.30	**0.63**
Item 6: Get exhausted by disruptive student behavior or behavior they cannot control	−0.19	0.30	**0.57**
Item 20: Feel attacked or insulted by inappropriate or offensive student behavior	0.15	0.15	**0.52**
Item 29: Get discouraged by disruptive behavior that is out of their control	−0.39	**0.40**	**0.65**
Item 18: Wait until the student reaches out to them following a conflict	0.35	−0.22	**0.42**
Item 12: Recognize for each student timely when they don't feel well in the classroom	0.35	0.09	0.00
Item 4: Obtain a feeling of self-efficacy in relation with each student	0.32	0.12	−0.16
Item 24: Know how to restore the trust for some, but not all children	−0.02	0.31	0.19
Item 17: Can stay calm when any student challenges them	0.29	0.10	−0.24
Item 16: Can stay calm when any student upsets them	0.21	0.22	−0.22

Factor loadings above 0.40 are in bold.
All self-efficacy items start with "Some teachers…". Only one pole of the two-pole item is reported. If applicable, items were reverse scored so that a high score reflects high competence.

not clear. For instance, item 6 ("I understand the concept resilience") which targeted a teacher-oriented competence loaded together with several student-oriented competencies (e.g., "I understand the function of the teacher as a secure base"). Likewise, item 14 ("I understand how a relationship with a student can be described in terms of control and affiliation") which targeted a student-oriented competence loaded together with items targeting several teacher-oriented competencies (e.g., "I understand which coping skills are efficient when I feel stressed"). Moreover, 3 items were not retained based upon EFA, while we felt these items represented important theoretical concepts. Item 21 ("I understand how ideas or thoughts about an individual student can influence my pedagogical behavior") represented the concept of mental representations guiding everyday interactions and decisions, a central concept within the extended attachment perspective. Item 19 ("I understand why coping with negative emotions requires energy from teachers") related both to the concept of emotional labor and resilience. Finally, item 11 ("I understand what a relationship characterized by closeness, conflict or dependency looks like") represented a widely used and well-validated conceptualization of the teacher-student relationship. To explore whether the data would support the inclusion of these three items as hypothesized, we continued with an examination of the *a priori* two-factor model, based on item content (**Table 7**). This model showed a less ideal but still acceptable fit ($\chi 2$ = 275.27, *df* = 134, CFI = 0.98, TLI = 0.97, RMSEA = 0.05 (90% CI [0.04, 0.06]), SRMR = 0.07). As interpretation of the factors is also an important criterium to consider (Costello and Osborne, 2005), the *a priori* solution as presented in **Table 7** was chosen. The two resulting knowledge scales reflected on the one hand *knowledge of teacher-student relationships* (10 items, ω = 0.86, α = 0.86, e.g., "I understand

TABLE 5 | Results of confirmatory factor analysis for affect-motivation.

	Est.	Std. error	Std. est.
Attitude toward teacher-student relationships			
Item 15: As a teacher, I strive to have a personal relationship with each student in the class	0.50	0.03	0.70
Item 4: Personal relationships with students offer me personal satisfaction	0.42	0.03	0.66
Item 7: I regret when a relationship with a student is rather impersonal	0.45	0.03	0.60
Item 10: Personal relationships with students are my number one priority	0.47	0.03	0.59
Item 2: Each student deserves a personal relationship with their teacher	0.43	0.03	0.59
Item 14: I want to be a teacher who understands every student in their class through and through	0.32	0.03	0.49
Item 9: Relationships with students can teach me something about who I am	0.28	0.03	0.44
Item 12: I am motivated to understand how personal relationships with students can touch me personally	0.24	0.02	0.43
Item 3: A personal relationship with a student is important, but not crucial for the quality of education	−0.48	0.04	−0.53
Item 18: Teachers have a rather small impact on a personal relationship with a student	−0.32	0.03	−0.48
Item 5: Teachers cannot do much when they experience problems in personal relationships with students	−0.32	0.03	−0.44

$p < 0.001$ for all factor loadings.

TABLE 6 | Results of confirmatory factor analysis for knowledge: EFA solution.

	Est.	Std. error	Std. est.
Knowledge EFA factor 1			
Item 17: How behavioral problems can be an expression of emotional insecurity	0.60	0.03	0.67
Item 20: Why a warm, personal relationship is important for students' academic achievement	0.50	0.02	0.67
Item 9: Function of the teacher as a secure base	0.63	0.03	0.66
Item 10: How a personal relationship with a student influences me as a teacher	0.52	0.02	0.66
Item 16: How authoritarian teacher behavior elicits defiant student behavior	0.63	0.03	0.63
Item 12: How a relationship can be strengthened through supporting the students' need for competence, belonging, and autonomy	0.64	0.03	0.62
Item 15: How friendly teacher behavior elicits friendly student behavior	0.48	0.02	0.62
Item 4: Why a warm, personal relationship is important for exploration and motivation of students	0.51	0.02	0.58
Item 6: Resilience	0.63	0.03	0.56
Item 2: Emotional security	0.50	0.03	0.53
Knowledge EFA factor 2			
Item 14: How a relationship with a student can be described in terms of control and affiliation	0.88	0.03	0.77
Item 18: Which emotions teachers often experience in interactions with students	0.71	0.03	0.76
Item 13: Which coping skills are efficient when I feel stressed	0.84	0.03	0.66
Item 22: How I can effectively cope with emotions and stress I experience in the classroom	0.71	0.03	0.64
Item 8: Emotional labor	0.68	0.03	0.58

$p < 0.001$ for all factor loadings.
All knowledge items start with "I understand…".

how a teacher can function as a secure base"), and on the other hand *knowledge of coping* (8 items, ω = 0.82, α = 0.82, e.g., "I understand how I can cope with the daily emotions and stress I experience in the classroom").

Third, the exploratory three-factor model for self-efficacy as presented in **Table 8** showed acceptable fit (χ^2 = 318.66, *df* = 272, CFI = 0.99, TLI = 0.98, RMSEA = 0.03 (90% CI [0.01, 0.04]), SRMR = 0.08). The three-factor model fit the data substantially better compared to the *a priori* two-factor model based on item content (χ^2 = 1919.46, *df* = 463, CFI = 0.69, TLI = 0.67, RMSEA = 0.13 (90% CI [0.12, 0.13]), SRMR = 0.14). Therefore, the three-factor solution was chosen. The three corresponding self-efficacy scales represented *building closeness* (11 items, ω = 0.83, α = 0.83, e.g., knowing what a child needs when it is sad); *coping with conflict* (6 items, ω = 0.82, α = 0.82, e.g., keeping your cool when a child disturbs the lesson); and *reflective functioning* (8 items, ω = 0.81, α = 0.81, e.g., reflecting upon your emotions toward a specific child). All subscales were positively correlated with all other scales, with the exception of *coping with conflict*, which was not correlated with *building closeness* nor with *reflective functioning* (**Table 9**).

Criterion Validity

First, as **Table 10** displays, all COMMIT subscales were positively and significantly correlated with relational self-efficacy (*rs* from 0.26 to 0.45, $p < 0.001$) as well as with general teacher self-efficacy (*rs* from 0.16 to 0.44, $p < 0.001$). All COMMIT subscales except *coping with conflict* were positively correlated with academic self-concept (*rs* from 0.11 to 0.20, $p < 0.05$).

Second, all COMMIT subscales were positively and significantly correlated with emotional intelligence. Correlations with other-focused emotional intelligence were stronger than correlations with self-focused emotional intelligence (*rs* from 0.23 to 0.37, $p < 0.001$ compared to *rs* from 0.05 to 0.24, not all significant) for all subscales except for *coping with conflict* which was equally strongly correlated with other-focused and self-focused emotional intelligence (*rs* 0.13 and 0.29, $p < 0.01$ compared to *rs* 0.21, $p < 0.001$).

Third, all COMMIT subscales were positively and significantly correlated with student-oriented and subject matter-oriented teacher beliefs (*rs* from 0.10 to 0.31, $p < 0.05$), and student contact and social role job motivations (*rs* 0.16 to 0.30, $p < 0.01$).

Finally, the COMMIT subscales *knowledge of coping*, *building closeness, coping with conflict* and *reflective functioning* were negatively correlated with depression (*rs* from −0.11 to −0.15, $p < 0.05$).

Perceived Dyadic Relationship-Building Competence of Pre-service Teachers

Descriptive statistics for each scale are summarized in **Table 9**. To aid in interpretation, distribution plots for the overall sample are presented in the **Supplementary Material**. For all subscales

TABLE 7 | Results of confirmatory factor analysis for knowledge: final solution.

	Est.	Std. error	Std. est.
Knowledge *a priori*: Knowledge of teacher-student relationships			
Item 14: How a relationship with a student can be described in terms of control and affiliation	0.80	0.03	0.70
Item 11: What a relationship characterized by closeness, conflict or dependency looks like	0.73	0.03	0.66
Item 17: How behavioral problems can be an expression of emotional insecurity	0.58	0.02	0.65
Item 20: Why a warm, personal relationship is important for students' academic achievement	0.48	0.02	0.64
Item 9: Function of the teacher as a secure base	0.60	0.02	0.62
Item 12: How a relationship can be strengthened through supporting the students' need for competence, belonging, and autonomy	0.64	0.02	0.62
Item 16: How authoritarian teacher behavior elicits defiant student behavior	0.60	0.02	0.61
Item 15: How friendly teacher behavior elicits friendly student behavior	0.45	0.02	0.58
Item 4: Why a warm, personal relationship is important for exploration and motivation of students	0.48	0.02	0.55
Item 2: Emotional security	0.48	0.02	0.51
Knowledge *a priori*: Knowledge of coping			
Item 18: Which emotions teachers often experience in interactions with students	0.66	0.02	0.71
Item 10: How a personal relationship with a student influences me as a teacher	0.51	0.02	0.64
Item 21: How ideas about an individual students can influence my pedagogical behavior	0.59	0.02	0.63
Item 13: Which coping skills are efficient when I feel stressed	0.73	0.03	0.57
Item 19: Why coping with negative emotions in the classroom asks for the teacher's energy	0.56	0.02	0.57
Item 22: How I can effectively cope with emotions and stress I experience in the classroom	0.63	0.03	0.57
Item 6: Resilience	0.63	0.03	0.56
Item 8: Emotional labor	0.62	0.03	0.54

$p < 0.001$ for all factor loadings.
All knowledge items start with "I understand…".

TABLE 8 | Results of confirmatory factor analysis for self-efficacy.

	Est.	Std. error	Std. est.
Building closeness			
Item 19: Know how to talk with each student about feelings and thoughts	1.13	0.05	0.76
Item 15: Can take the perspective of each student	1.00	0.06	0.66
Item 13: Succeed in building a warm, personal relationship with each student	0.99	0.06	0.64
Item 2: Can get through to each student	0.92	0.05	0.62
Item 14: Are aware of the interests, values, feelings, ideas, and goals of each student	0.94	0.05	0.61
Item 11: Know how to offer emotional security to each student	0.86	0.05	0.61
Item 7: Know for each student how to calm them when they are angry or upset	0.83	0.05	0.58
Item 1: Know for each student what they need when they are sad	0.90	0.05	0.56
Item 3: Can talk with each student about feelings and experiences	0.85	0.06	0.53
Item 9: Can get each student to try new things	0.71	0.05	0.51
Item 5: Obtain a feeling of self-confidence in relation with each student	0.56	0.05	0.41
Coping with conflict			
Item 26: Have a hard time keeping emotions in check during conflicts with certain students	1.16	0.07	0.78
Item 27: Give up after several efforts and stop searching for further strategies to handle disruptive behavior	1.11	0.07	0.77
Item 28: Get exhausted by conflicts with students	1.07	0.07	0.75
Item 30: Are at risk of losing self-control when a certain student disrupts the class	1.01	0.06	0.73
Item 20: Feel attacked or insulted by inappropriate or offensive student behavior	0.82	0.06	0.61
Item 6: Get exhausted by disruptive student behavior or behavior they cannot control	0.81	0.07	0.53
Reflective functioning			
Item 22: Can understand the perspective of each student, even when the student is behaving inappropriately or disruptively	0.90	0.06	0.72
Item 32: Frequently reflect on the positive and negative emotions they experience in interactions with disruptive students	0.73	0.05	0.67
Item 23: Frequently reflect on thoughts and ideas about individual students and how these impact their behavior	0.74	0.05	0.63
Item 25: Easily have confidential talks with each student	0.80	0.05	0.63
Item 31: Frequently reflect on the positive and negative emotions they experience in conflicts with individual students	0.61	0.05	0.58
Item 10: Can react sincerely to each student	0.69	0.05	0.57
Item 21: Frequently reflect on the positive and negative emotions they experience in daily interactions with individual students	0.58	0.05	0.50
Item 8: Can almost always react positively to each student	0.56	0.05	0.46

$p < 0.001$ for all factor loadings.
For self-efficacy items only one pole of the two-pole item is reported. All self-efficacy items start with "Some teachers…". The coping with conflict items are reverse scored, so that a high score on the scale reflects high competence.

either the distribution was skewed to the left or the center of the distribution was located to the right side of the scale. This indicated that the majority of pre-service teachers had a positive attitude toward teacher-student relationships, felt knowledgeable about teacher-student relationships and coping, and felt rather self-efficacious with regard to building closeness, coping with conflict and reflective functioning. However, an important group felt less competent or even incompetent with regard to knowledge of coping, building closeness and coping with conflict.

Mean Differences Between Pre-primary and Primary Education Programs

Independent samples *t*-tests revealed no mean differences between pre-service teachers in the pre-primary program and pre-service teachers in the primary program in the full sample ($0.18 \leq p \leq 0.97$, see **Table 11**). When analyzing each cohort separately, we found two mean differences. In the first year cohort, pre-service teachers in the primary program ($M = 4.00$) felt more self-efficacious with regard to building closeness compared to pre-service teachers in the pre-primary program [$M = 3.73$, $t(227) = -2.22$, $p = 0.03$, $d = -0.31$]. In the third

TABLE 9 | Descriptive statistics and correlations between COMMIT subscales.

Variable	*M* (*SD*)	Range	Skewness (*SD*)	Kurtosis (*SD*)	1.	2.	3.	4.	5.	6.
1. Attitude toward teacher-student relationships	3.92 (0.43)	2.44–5.00	−0.13 (0.11)	0.02 (0.21)	–					
2. Knowledge of teacher-student relationships	3.81 (0.63)	1.40–5.00	−0.40 (0.11)	−0.03 (0.21)	0.39***	–				
3. Knowledge of coping	3.45 (0.70)	1.50–5.00	−0.20 (0.11)	−0.31 (0.21)	0.30***	0.82***	–			
4. Building closeness	3.91 (0.90)	1.64–6.00	−0.05 (0.11)	−0.53 (0.22)	0.26***	0.33***	0.38***	–		
5. Coping with conflict	3.86 (1.02)	1.00–6.00	−0.27 (0.11)	−0.52 (0.22)	0.13**	0.19***	0.10*	−0.08	–	
6. Reflective functioning	4.54 (0.76)	1.63–6.00	−0.88 (0.11)	1.01 (0.22)	0.32***	0.36***	0.28***	0.51***	0.08	–

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 10 | Correlations between COMMIT subscales and related measures.

Variable	*M* (*SD*)	Attitude toward teacher-student relationships	Knowledge of teacher-student relationships	Knowledge of coping	Building closeness	Coping with conflict	Reflective functioning
Teacher self-efficacy and competence							
Relational self-efficacy	3.89 (0.47)	0.38***	0.42***	0.37***	0.39***	0.26***	0.45***
Instructional strategies	6.53 (0.97)	0.20***	0.44***	0.43***	0.35***	0.23***	0.30***
Classroom management	6.57 (1.12)	0.16***	0.36***	0.40***	0.34***	0.25***	0.26***
Student engagement	6.91 (1.04)	0.26***	0.43***	0.40***	0.38***	0.20***	0.36***
Academic self-concept	2.40 (0.30)	0.12*	0.20***	0.13**	0.14**	0.04	0.15**
Emotional intelligence							
Self-focused emotion appraisal	3.62 (0.67)	0.10*	0.23***	0.24***	0.21***	0.21***	0.23***
Other-focused emotion appraisal	3.91 (0.54)	0.33***	0.37***	0.30***	0.29***	0.19***	0.30***
Self-focused emotion regulation	3.50 (0.67)	0.05	0.19***	0.19***	0.16***	0.21***	0.10*
Other-focused emotion regulation	3.63 (0.54)	0.29***	0.32***	0.30***	0.23***	0.13**	0.29***
Teacher affect-motivation							
Subject-matter orientation	3.26 (0.49)	0.21***	0.21***	0.25***	0.21***	0.10*	0.22***
Student orientation	3.53 (0.44)	0.31***	0.26***	0.20***	0.12*	0.17***	0.29***
Student contact motivation	4.31 (0.59)	0.30***	0.28***	0.25***	0.20***	0.17***	0.26***
Social role motivation	4.27 (0.64)	0.19***	0.26***	0.30***	0.20***	0.16***	0.16**
Well-being							
Depression	2.21 (0.58)	0.06	−0.08	−0.11*	−0.13**	−0.11*	−0.15***

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

year cohort, pre-service teachers in the pre-primary program ($M = 4.33$) felt more self-efficacious with regard to building closeness compared to pre-service teachers in the primary program [$M = 3.78$ $t(152) = 3.72$, $p < 0.001$, $d = 0.61$]. No other within-cohort differences between pre-service teachers in the pre-primary program and pre-service teachers in the primary program were found ($0.07 \leq p \leq 0.92$, see **Table 11**).

Differences Between Pre-service Teachers Throughout Teacher Training

We explored cohort differences between pre-service teachers in the first, second and third year of their teacher training (1) in the full sample and (2) for pre-primary and primary teachers separately. Descriptive statistics are summarized in **Table 12**. Results of ANOVA and *post hoc* tests for the pre-primary and primary program are reported in **Tables 13**, **14**.

First, with regard to *attitude toward teacher-student relationships* we found statistically significant differences in the total sample [$F(2,528) = 12.00$, $p < 0.001$, $\eta^2 = 0.04$]. *Post hoc* test revealed that pre-service teachers in the third year showed a more positive attitude ($M = 4.05$) compared to pre-service teachers in the first ($M = 3.84$, $p < 0.001$, $d = 0.48$) and second year ($M = 3.93$, $p = 0.05$, $d = 0.28$). There was no significant difference between pre-service teachers in the first and second year ($p = 0.12$). When analyzing pre-primary and primary programs separately, we found a significant difference for pre-primary teachers only (see **Tables 13**, **14**). Pre-service teachers in the third year of the pre-primary program showed a more positive attitude ($M = 4.10$) compared to teachers in the first ($M = 3.83$, $p < 0.001$, $d = 0.61$) and second year ($M = 3.93$, $p = 0.02$, $d = 0.41$). There was no statistically significant difference between pre-service teachers in the first and second year ($p = 0.13$) of the pre-primary program.

Second, with regard to *knowledge of teacher-student relationships* we found significant differences in the total sample [$F(2,517) = 22.44$, $p < 0.001$, $\eta^2 = 0.08$]. *Post hoc* test revealed that pre-service teachers in the third year reported more knowledge of teacher-student relationships ($M = 4.08$) compared to pre-service teachers in the first ($M = 3.66$, $p < 0.001$, $d = 0.69$) and second year ($M = 3.77$, $p < 0.001$, $d = 0.54$). There was no

TABLE 11 | Comparison of pre-service teachers in the pre-primary or in the primary program: independent samples *t*-tests.

	Mean (*SD*) Pre-primary	Mean (*SD*) Primary	*t*	*df*	*p*	Cohens' *d*
Full sample						
Attitude toward TSRS	3.93 (0.44)	3.91 (0.41)	0.40	528	0.69	0.04
Knowledge of TSRS	3.81 (0.65)	3.81 (0.61)	0.02	517	0.99	0.00
Knowledge of coping	3.44 (0.70)	3.48 (0.69)	−0.70	517	0.49	−0.07
Building closeness	3.92 (0.92)	3.90 (0.86)	0.27	496	0.79	0.03
Coping with conflict	3.82 (1.04)	3.95 (0.98)	−1.29	495	0.20	−0.12
Reflective functioning	4.51 (0.78)	4.61 (0.70)	−1.35	495	0.18	−0.13
First year pre-service teachers						
Attitude toward TSRS	3.83 (0.44)	3.86 (0.40)	−0.50	244	0.62	−0.07
Knowledge of TSRS	3.66 (0.65)	3.67 (0.63)	−0.19	240	0.85	−0.03
Knowledge of coping	3.24 (0.72)	3.36 (0.69)	−1.24	240	0.22	−0.17
Building closeness	3.73 (0.85)	4.00 (0.90)	−2.22	227	0.03*	−0.31
Coping with conflict	3.93 (1.01)	3.89 (1.00)	0.31	226	0.76	0.04
Reflective functioning	4.42 (0.78)	4.62 (0.74)	−1.91	226	0.06	−0.27
Second year pre-service teachers						
Attitude toward TSRS	3.93 (0.38)	3.92 (0.39)	0.11	123	0.92	0.03
Knowledge of TSRS	3.77 (0.61)	3.72 (0.79)	0.30	120	0.77	0.08
Knowledge of coping	3.40 (0.60)	3.24 (0.93)	0.99	120	0.33[a]	0.26
Building closeness	3.85 (0.89)	3.88 (0.85)	−0.13	113	0.90	−0.03
Coping with conflict	3.72 (1.00)	4.01 (1.06)	−1.10	113	0.27	−0.29
Reflective functioning	4.47 (0.76)	4.59 (0.46)	−0.64	113	0.53	−0.17
Third year pre-service teachers						
Attitude toward TSRS	4.10 (0.44)	3.97 (0.43)	1.82	157	0.07	0.29
Knowledge of TSRS	4.14 (0.57)	3.99 (0.48)	1.70	153	0.09	0.28
Knowledge of coping	3.85 (0.58)	3.70 (0.57)	1.61	153	0.11	0.26
Building closeness	4.33 (0.97)	3.78 (0.80)	3.72	152	<0.001***	0.61
Coping with conflict	3.74 (1.12)	4.00 (0.95)	−1.51	152	0.13	−0.25
Reflective functioning	4.71 (0.78)	4.59 (0.70)	0.99	152	0.32	0.16

Student's t-test.
*$p < 0.05$, ***$p < 0.001$.*
[a]*Levene's test is significant ($p < 0.05$), suggesting a violation of the equal variance assumption.*

statistically significant difference between pre-service teachers in the first and second year ($p = 0.27$). This difference was found for both pre-primary and primary programs.

Third, with regard to *knowledge of coping* we found significant differences in the total sample [$F(2,517) = 22.44$, $p < 0.001$, $\eta^2 = 0.10$]. *Post hoc* test revealed that pre-service teachers in the third year reported more knowledge of coping ($M = 3.78$) compared to pre-service teachers in the first ($M = 3.27$, $p < 0.001$, $d = 0.76$) and second year ($M = 3.38$, $p < 0.001$, $d = 0.65$). There was no statistically significant difference between pre-service teachers in the first and second year ($p = 0.32$). We found this difference for both pre-primary and primary programs.

Fourth, with regard to self-efficacy in *building closeness* we found significant differences in the total sample [$F(2,496) = 4.96$, $p = 0.007$, $\eta^2 = 0.02$]. *Post hoc* test revealed that pre-service teachers in the third year felt more efficient in building closeness ($M = 4.10$) compared to pre-service teachers in the first year ($M = 3.85$, $p = 0.007$, $d = 0.31$). There were no statistically significant differences between pre-service teachers in the first and second year ($p = 0.94$), and the second and third year ($p = 0.06$). Notably, when analyzing data for each program separately, we found differences in self-efficacy in *building closeness* for the pre-primary program only (see **Table 13**). Pre-service teachers in the third year of the pre-primary program felt more competent in building closeness ($M = 4.33$) compared to teachers in the first ($M = 3.73$, $p < 0.001$, $d = 0.67$) and second year ($M = 3.85$, $p < 0.001$, $d = 0.52$). There was no statistically significant difference between pre-service teachers in the first and second year ($p = 0.56$) of the pre-primary program.

Finally, in the total sample we found no differences with regard to self-efficacy in *coping with conflict* [$F(2,496) = 0.81$, $p = 0.44$] and self-efficacy in *reflective functioning* [$F(2,495) = 2.86$, $p = 0.06$]. We did find small differences in self-efficacy in *reflective functioning* for the pre-primary program when analyzing this data separately (see **Table 13**). Pre-service teachers in the third year of the pre-primary program ($M = 4.75$) felt more competent compared to teachers in the first year ($M = 4.42$, $p = 0.01$, $d = 0.37$). There were no significant differences between teachers in the first and second year ($p = 0.87$), and teachers in the second and third year ($p = 0.09$).

TABLE 12 | Descriptive statistics for each year of teacher training.

		Mean (*SD*)		
	Year of program	**Overall sample**	**Pre-primary**	**Primary**
Attitude toward TSRS	1	3.84 (0.43)	3.83 (0.44)	3.86 (0.40)
	2	3.93 (0.38)	3.93 (0.38)	3.92 (0.39)
	3	4.05 (0.44)	4.10 (0.44)	3.97 (0.43)
Knowledge of TSRS	1	3.66 (0.64)	3.66 (0.65)	3.67 (0.63)
	2	3.77 (0.63)	3.77 (0.61)	3.72 (0.79)
	3	4.08 (0.53)	4.14 (0.57)	3.99 (0.48)
Knowledge of coping	1	3.28 (0.71)	3.24 (0.72)	3.36 (0.69)
	2	3.38 (0.66)	3.40 (0.60)	3.24 (0.93)
	3	3.78 (0.58)	3.85 (0.58)	3.70 (0.57)
Building closeness	1	3.82 (0.87)	3.73 (0.85)	4.00 (0.90)
	2	3.85 (0.88)	3.85 (0.89)	3.88 (0.85)
	3	4.10 (0.94)	4.33 (0.97)	3.78 (0.80)
Coping with conflict	1	3.92 (1.00)	3.93 (1.01)	3.89 (1.00)
	2	3.77 (1.01)	3.72 (1.00)	4.01 (1.06)
	3	3.86 (1.06)	3.74 (1.12)	4.00 (0.95)
Reflective functioning	1	4.49 (0.78)	4.42 (0.78)	4.62 (0.74)
	2	4.48 (0.73)	4.47 (0.76)	4.59 (0.46)
	3	4.66 (0.75)	4.71 (0.78)	4.59 (0.70)

DISCUSSION

Seeking an in-depth understanding of teachers' perceived competence in dyadic relationship-building and aiming to explore differences between pre-service teachers in different phases of their teacher education, we developed the Competence Measure of Individual Teacher-student relationships (COMMIT) and administered this new questionnaire in a sample of pre-service teachers in pre-primary and primary teacher education programs. Results showed that the COMMIT measured pre-service teachers' perceived competence in dyadic relationship-building reliably. Based on factor analyses, six scales were retained. Regarding criterion validity, all subscales were significantly and positively correlated with relational self-efficacy, general teacher self-efficacy, emotional intelligence, teacher beliefs, and job motivations. Comparisons between cohorts of pre-service teachers in the first, second and third year of initial teacher education revealed that pre-service teachers in the third (and final) year feel more competent compared to cohorts in the first and second year, yet not in all aspects of dyadic relationship-building. Moreover, these differences were more pronounced for pre-service teachers in the pre-primary program as compared to teachers in the primary program.

Development of the Competence Measure of Individual Teacher-Student Relationships

The current study aimed to deepen the knowledge on relationship-building competence by focusing on teachers' competence in building dyadic teacher-student relationships. Inspired by the multidimensional conceptualization of teacher competence, including teachers' affect-motivation, knowledge and self-efficacy beliefs (Baumert and Kunter, 2013; Blömeke and Kaiser, 2017), a new measure was developed. Based on exploratory and confirmatory factor analyses, six reliable subscales were formed: attitude toward teacher-student relationships, knowledge of teacher-student relationships, knowledge of coping, and self-efficacy in building closeness, in coping with conflict, and in reflective functioning.

First, the attitude scale represented pre-service teachers' positive attitudes toward and beliefs about the importance of teacher-student relationships for each child. Moreover, this unidimensional scale also reflected the teachers' sense of satisfaction with, responsibility for and motivation to invest in building these relationships, which aligns with the Scandinavian conceptualization of relational competence (Vidmar and Kerman, 2016; Aspelin and Jonsson, 2019). Second, building upon our *a priori* expectations, we retained two knowledge scales. Knowledge of teacher-student relationships mainly targeted a theoretical understanding of these relationships, based on related theories and constructs, whereas knowledge of coping mainly targeted a theoretical understanding of emotional experiences in relationships with individual children and coping. Finally, instead of the anticipated two subscales, we retained three subscales for self-efficacy. The distinction between the first two subscales, self-efficacy in building closeness and self-efficacy in coping with conflict, corresponds well to research identifying closeness and conflict as two distinguished dimensions of the teacher-student relationship (Sabol and Pianta, 2012; Verschueren and Koomen, 2012). Further research

TABLE 13 | ANOVA results for pre-primary and primary programs.

	Pre-primary programs					**Primary programs**				
	df	***MS***	***F***	**η**	***p***	***df***	***MS***	***F***	**η**	***p***
Attitude toward TSRS	2	2.17	12.11	0.06	<0.001***	2	0.23	1.36	0.02	0.26
Knowledge of TSRS	2	6.78	17.86	0.09	<0.001***	2	1.87	5.35	0.06	0.006**
Knowledge of coping	2	10.81	25.08	0.12	<0.001***	2	2.62	5.78	0.07	0.003**
Building closeness	2	10.41	13.07	0.07	<0.001***	2	0.84	1.15	0.01	0.32
Coping with conflict	2	1.65	1.54	0.01	0.22	2	0.27	0.28	0.00	0.76
Reflective functioning	2	2.49	4.12	0.02	0.02*	2	0.03	0.05	0.00	0.95

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 14 | *Post hoc* comparisons for pre-primary and primary programs.

		Pre-primary				Primary			
	Year of program	**Mean difference (*SD*)**	***t***	**Cohen's *d***	***p***	**Mean difference (*SD*)**	***t***	**Cohen's *d***	***p***
Attitude toward TSRS	1 vs. 2	−0.10 (0.05)	−1.94	0.24	0.13				
	1 vs. 3	−0.27 (0.05)	−4.92	0.61	<0.001***				
	2 vs. 3	−0.17 (0.06)	−2.80	0.41	0.02*				
Knowledge of TSRS	1 vs. 2	−0.12 (0.08)	−1.51	0.18	0.29	−0.05 (0.16)	−0.32	0.08	0.95
	1 vs. 3	−0.48 (0.08)	−5.93	0.78	<0.001***	−0.32 (0.10)	−3.21	0.56	0.004**
	2 vs. 3	−0.36 (0.09)	−4.11	0.62	<0.001***	−0.27 (0.16)	−1.66	0.48	0.22
Knowledge of coping	1 vs. 2	−0.17 (0.08)	−2.06	0.25	0.10	0.12 (0.18)	0.68	0.17	0.78
	1 vs. 3	−0.61 (0.09)	−7.06	0.90	<0.001***	−0.34 (0.11)	−3.00	0.53	0.009**
	2 vs. 3	−0.44 (0.09)	−4.66	0.74	<0.001***	−0.46 (0.18)	−2.51	0.70	0.03*
Building closeness	1 vs. 2	−0.12 (0.12)	−1.02	0.14	0.56				
	1 vs. 3	−0.60 (0.12)	−5.03	0.67	<0.001***				
	2 vs. 3	−0.48 (0.13)	−3.68	0.52	<0.001***				
Reflective functioning	1 vs. 2	−0.05 (0.10)	−0.50	0.06	0.87				
	1 vs. 3	−0.29 (0.10)	−2.81	0.37	0.01*				
	2 vs. 3	−0.24 (0.11)	−2.12	0.31	0.09				

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
P-value adjusted for comparing a family of three. Cohen's d does not correct for multiple comparisons.

is needed to establish whether these self-efficacy subscales are indeed differentially associated with teacher- or student-reported closeness and conflict, respectively. Contrary to our expectations, a third self-efficacy scale emerged, representing reflective functioning, the teachers' ability to reflect both on their own and their students' emotions and cognitions. Reflective functioning was first studied within parent-child relationships and was shown to be predictive of adequate caregiving practices and relationship quality (Slade, 2007; Rostad and Whitaker, 2016; Camoirano, 2017). Similarly, reflective functioning is considered a valuable skill in professional caregiver relationships, such as teacher-student relationships, and expected to be related to teachers' supportive practices (Stacks et al., 2013). Building upon parental reflective functioning intervention research (Slade, 2007), attachment-based interventions targeting teacher-student relationships emphasize the importance of teachers' ability to reflect upon their (implicit) thoughts and emotions (Spilt et al., 2012; Bosman et al., 2021). Moreover, recent research suggests that teacher reflective functioning might protect against teacher burn-out (Dexter and Wall, 2021). Our results show that teachers' self-efficacy in reflective functioning can be distinguished from self-efficacy in building closeness, which further emphasizes the value of this skill and warrants the need for future research into this concept and its associations with diverse teacher and student outcomes.

The strength of the correlations between the COMMIT-subscales varied, which can partly be explained by the diversity of the COMMIT, covering attitudes and perceived knowledge as well as self-efficacy. Correlations between scales addressing the same aspect of competence (e.g., the two knowledge scales) were higher compared to correlations between scales addressing separate aspects of competence (e.g., attitude scale with the knowledge scales). Notably, the subscale self-efficacy in coping with conflict showed only low correlations with the other scales and was not significantly correlated with the two other self-efficacy scales. The small correlations between self-efficacy in coping with conflict and other subscales can be understood, as coping with conflict strongly focuses on teacher-oriented competencies, whereas attitude toward teacher-student relationships, knowledge of teacher-student relationships, self-efficacy in building closeness and self-efficacy in reflective functioning put more emphasis on student-oriented competencies. However, one could have expected a stronger association between self-efficacy in coping with conflict and knowledge of coping. The small correlation between these scales might be explained by the difference in item content specificity. Knowledge of coping addresses a general, theoretical knowledge of coping skills and stress regulation, whereas self-efficacy in coping with conflict specifically focuses on how competent teachers feel in response to conflicts with individual students. Alternatively, the small association between the knowledge and self-efficacy scales might reflect the gap between theory and practice (Korthagen, 2010a,b).

To provide first evidence for construct validity, we explored associations between the COMMIT subscales and conceptually related measures of relational and general teacher self-efficacy, emotional intelligence and affect-motivation in a sample of pre-service teachers. Overall, correlations with closely related concepts (relational self-efficacy, general teacher self-efficacy) were stronger compared to correlations with concepts that are further removed from dyadic relationship-building competence (academic self-concept, self-focused emotional intelligence, teacher affect-motivation, and depression). Strength of the associations varied across COMMIT-subscales. As expected, the attitude subscale was more closely associated with teacher affect-motivation (teacher beliefs and job motivations) compared to the knowledge and self-efficacy scales, which were in turn more closely associated with relational and general teacher self-efficacy.

These results supported discriminant validity of the different COMMIT subscales. The self-efficacy in coping with conflict subscale showed the least strong associations with relational and general teacher self-efficacy. This might be explained by a difference in item content: self-efficacy in coping with conflict emphasizes teacher-oriented competencies (e.g., understanding of emotional experiences and coping), whereas relational and general teacher self-efficacy primarily include student-oriented or caregiving competencies (e.g., support a student emotionally, calm a disruptive student). In line with this difference in focus, self-efficacy in coping with conflict was more strongly associated with self-focused emotional intelligence, whereas self-efficacy in building closeness and self-efficacy in reflective functioning showed a stronger association with other-focused emotional intelligence. Unexpectedly, self-efficacy in building closeness was associated with both student-oriented and subject-matter oriented beliefs, but associations with subject-matter oriented teacher beliefs were stronger. Indeed, while some studies showed that student-oriented teacher beliefs are related to closer teacher-child relationships (e.g., Driscoll and Pianta, 2010), others found no significant associations between teacher beliefs and closeness (e.g., Mashburn et al., 2006; Castle et al., 2015).

In sum, these results provided initial evidence that the COMMIT reliably measured the various dimensions of perceived dyadic relationship-building competence and were related to, but could be distinguished from, existing measures of teacher self-efficacy, emotional intelligence, and teacher affect-motivation.

Pre-service Teachers' Average Perceived Competence

Following development of the COMMIT, we aimed to investigate the level of pre-service teachers' perceived relationship-building competence. Overall, pre-service teachers reported a positive attitude toward teacher-student relationships. They felt quite knowledgeable and held positive self-efficacy beliefs, although not in all aspects of dyadic relationship-building. Pre-service teachers on average felt rather knowledgeable about teacher-student relationships and efficacious in reflective functioning, while they reported relatively less knowledge of coping and felt relatively less efficacious with regard to coping with conflict and building closeness. As discussed, all three aspects of teachers' (perceived) competence need to be developed in order to be translated into effective practices (Kunter et al., 2013; Spruce and Bol, 2014; Blömeke and Kaiser, 2017; Depaepe and König, 2018). Thus, a positive attitude toward teacher-student relationships and theoretical knowledge about these relationships without a feeling of self-efficacy is not sufficient for teachers to build positive, close relationships with each of their students.

Differences in Perceived Competence Across Years of Teacher Education

Furthermore, we aimed to explore differences between pre-service teachers in different phases of their teacher education on pre-service teachers' perceived dyadic relationship-building competence, by comparing cohorts of pre-service teachers in their first, second, and third (final) year of teacher education. In the overall sample, third-year pre-service teachers held a slightly more positive attitude toward teacher-student relationships, reported more knowledge of teacher-student relationships and coping, and felt more competent with regard to building closeness. However, no overall differences were found with regard to self-efficacy in coping with conflict and in reflective functioning. Notably, these results varied when analyzing the pre-primary and primary program separately. Third-year pre-service teachers in the primary program reported more knowledge of teacher-student relationships and coping compared to cohorts of first- and second-year pre-service teachers. No differences in attitude nor in self-efficacy were observed between cohorts in the primary program. In contrast, in the pre-primary program, third-year pre-service teachers reported more knowledge of teacher-student relationships and coping, and additionally held a more positive attitude toward teacher-student relationships and felt more competent with regard to building closeness and reflective functioning compared to first- and second-year pre-service teachers. Moreover, these third-year pre-service teachers in the pre-primary program felt more self-efficacious in building closeness compared to their peers in the third year of the primary program.

These differential effects in the pre-primary and primary program reflect a trend in research on teacher-student relationships to focus on early childhood, as compared to middle or late childhood (Verschueren, 2015). This trend might also be present within the curricula of teacher education programs. In both programs, third-year pre-service teachers felt more knowledgeable compared to first- and second-year teachers. However, only third-year pre-primary teachers reported more positive self-efficacy beliefs and a more positive attitude. It is possible that (the importance of) the teacher-student relationship is more often included or emphasized within pre-primary teacher education programs. As students in pre-primary schools are younger and their self-regulation abilities less developed, teachers might need to take on the role of caregiver more frequently (whereas gradually more emphasis is put on the instructional role of teachers as children grow older). Teacher education programs might, explicitly or implicitly, be tailored to this difference. However, a positive teacher-student relationship is important for students of all ages, from pre-primary to secondary and higher education (e.g., Engels et al., 2016; Roorda et al., 2017; Bosman et al., 2018), as well as for the well-being of all teachers (Evans et al., 2019). Therefore, all teachers should be able to build close relationship with their students, regardless of student age.

Although pre-service teachers in the third year reported more knowledge of coping, no differences were found with regard to self-efficacy in coping with conflict, neither in the overall sample, nor in any of the subgroups. These results can possibly be explained by a lack of attention for teachers' coping skills in the teacher education curriculum or a lack of opportunities to apply these coping skills (Korthagen, 2010a,b). These possible explanations are supported by earlier research on teachers' social emotional learning (SEL). When screening teacher education curricula for the integration of SEL, Schonert-Reichl et al. (2017) noted that teachers' self-awareness and

self-management (including an understanding of emotional experiences and coping skills) were only rarely included in teacher education, whereas responsible decision-making, social awareness and general relationship skills (e.g., running an effective meeting; collaborating with parents and colleagues) were integrated in most curricula (Schonert-Reichl et al., 2017). In addition, students' SEL were more often included in the curricula compared to teachers' SEL. When learning about students' SEL, including students' self-awareness and self-management, pre-service teachers' general knowledge about coping might increase. However, without the opportunity to apply this knowledge to their own experiences of conflict with students, pre-service teachers' self-efficacy in coping with conflict might not increase. Yet, as discussed, teachers' coping skills are crucial for their well-being as well as their students' wellbeing (Hastings and Brown, 2002; Beltman et al., 2011; Whitaker et al., 2015; McGrath and Van Bergen, 2019). Moreover, the experience of and inability to cope with negative emotions in interactions with students can negatively impact teachers' ability to respond sensitively to their students' needs (Koenen et al., 2019a,b). As pre-service teachers were found to often rely on maladaptive coping strategies (Gustems-Carnicer et al., 2019) and our results showed that almost half of pre-service teachers do not feel competent in coping with conflicts with students, we argue that teacher education curricula should focus more on teacher well-being in teacher-student relationships and address self-awareness, adaptive coping skills, and self-care. A tool that could be used to this end is the intervention LLInC (Leerkracht Leerling Interactie Coaching in Dutch, or Teacher Student Interaction Coaching; Koomen and Spilt, 2010–2017), which has recently been applied and evaluated in teacher education (Koenen et al., 2021). LLInC was delivered to pre-service teachers during their final internship in a specialization year of the education program. LLInC offers guided relationship-focused reflection which helped pre-service teachers to become more aware of the (both positive and negative) emotions they experienced in interactions with students and of the cognitions they had about their relationships with students. This could help them cope with negative emotions and focus on (re)building a positive teacher-student relationship.

Increased attention to teacher stress and well-being from a relationship perspective during initial teacher education would not only benefit pre-service teachers during their teacher training, but can also offer an advantage when they enter the profession (Spilt et al., 2011; Gustems-Carnicer et al., 2019). The majority of teachers who leave the profession attribute their decision to occupational stress, which is often related to stressful interactions with students (Friedman, 1995; de Jonge and de Muijnck, 2002; Liu and Meyer, 2005; Liu and Onwuegbuzie, 2012). Providing starting teachers with the tools to cope with occupational stress in general and interpersonal stress specifically, might increase their chances of staying in the profession. In light of the teacher shortage across several countries (UNESCO, 2015) and the remarkably high attrition of beginning teachers (who leave the profession within the first 5 years) in Flanders specifically (Departement Onderwijs en Vorming, 2013, 2014), it is definitely worthwhile to further investigate the potential of teacher education in supporting teacher well-being from a relationship perspective.

Limitations and Future Directions

Development of the COMMIT offers new possibilities for future research, although some limitations need to be considered. First, differences between cohorts of teachers in subsequent years of the teacher education program might not be completely attributed to the program itself but rather to differences between the cohorts. No causal conclusions can therefore be drawn about the impact of teacher education based on this cross-sectional study. To further explore the effects of teacher education on teachers' perceived dyadic relationship-building competence, a longitudinal design which follows the progression of a single cohort of students might be more appropriate.

Second, we pointed to differences in the curriculum as a possible explanation for the differential results in the pre-primary and primary teacher education program. An investigation of the curricula might support or refute this hypothesis and offer additional insights into how future teachers are prepared for the relational and emotional challenges they will face in the classroom.

Third, this study focused on pre-service teachers' self-reported, perceived competence and could be complemented by tests of actual relationship-building competence. An instrument that could be used to this end is the TRUST (Aldrup et al., 2020), a situational judgment test which assesses teachers' competence in emotion management (with content largely similar to the coping and reflective functioning scales of the COMMIT) and relationship management (content largely similar to building closeness).

Finally, as this study focused on pre-service teachers, who spent only a limited amount of time with the same students during their practicum, associations with actual relationship quality could not be examined. Validation of the COMMIT in a sample of in-service teachers might offer new insights into the relationship between teachers' perceived competence and (developments in) actual teacher-student relationship quality. In addition, we argued that coping and reflective functioning are crucial skills in teachers' ability to build relationships and inadequate coping and lack of reflection might impact their well-being. Although research supports this assumption (Hastings and Brown, 2002; Beltman et al., 2011; Whitaker et al., 2015; McGrath and Van Bergen, 2019), the relevance of self-efficacy in coping with teacher-student conflict specifically (rather than coping with occupational stress in general) and reflective functioning for relationship quality and teachers' well-being should be further investigated. The COMMIT could be used to this end.

In addition to its value in clarifying theoretical issues, the COMMIT could, once predictive validity has been established, be used to evaluate teacher education programs, professional development initiatives or interventions targeting teacher-child relationships, teachers' relational competence or teacher well-being. Furthermore, the COMMIT might be used to assess in-service teachers' perceived competence and to signal the need for intervention or targeted professional development.

CONCLUSION

In search of a deeper understanding of teachers' perceived competence in dyadic relationship-building, we developed the Competence Measure of Individual Teacher-student relationships (COMMIT). This measure offers new possibilities for future research, including a more in-depth investigation of the attitudes, knowledge and skills that teachers need to build positive teacher-student relationships. Pre-service teachers appeared to have a rather positive attitude toward teacher-student relationships, and felt quite knowledgeable and self-efficacious, yet not in all aspects of dyadic relationship-building. In addition, results revealed that pre-service teachers in the final year of teacher training felt more competent compared to their colleagues in the first and second year, although, again, not for all aspects of dyadic relationship-building. Notably, differences between pre-service teachers in subsequent years of teacher education were less pronounced in primary compared to pre-primary teacher education programs. Given the importance of close relationships for both child development and teacher well-being, more efforts should be made to prepare teachers to build positive teacher-student relationships.

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 Social and Societal Ethics Committee of KU Leuven. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

LB coordinated the study, collected and analyzed the data, and wrote the manuscript. JS contributed to the discussion. Both authors contributed to conception, design and methodology of the study, development of the new measure, and reviewed and edited the manuscript.

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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.2022.831468/full#supplementary-material

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Reflective Activity as a Promoter of Awareness Processes in College Students: A Study

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As the literature clearly shows, supporting the development of reflective awareness skills is undoubtedly an important element in learning processes. In psychology, multiple theoretical approaches and research work have delved into the study of what is termed implicit knowledge. In particular, the relationship between human activity (in terms of actions, thoughts, beliefs, motivation, and reasoning) and different levels of awareness is a relevant subject of analysis that we consider as the core of this paper. In order to deepen our understanding of the concepts of awareness and reflexive activity, we refer to Pierre Vermersch's psycho-phenomenological approach and Piaget's theory of cognitive awareness. In this paper, we aim to show the use of the reflective approach centered on the elicitation of specific lived experiences. The objective is to promote in students a process of awareness of their activity and their role within the university context. Two students case studies from the University of Salerno took part in the research. The method used was based on narrative interviews that makes use of some techniques and principles of elicitation interviews, a conversational approach that supports the participant in focusing and describing a specific experience. The interviewer guides subjects, without induction, through the transition from the implicit of lived experience (particularly action) to the explicit of reflected awareness of that action. The data collected show how reflective activity by means of guided evocations of lived experiences helped participants become aware of how some distortions and irrational thoughts (related to the self and context) negatively affected them during the activities. The reflective work fostered by the elicitation of experiences often allows for enhanced self-awareness; the subject takes ownership of the action, analyzes it, and understands the difficulties.

Keywords: awareness, difficulties, grasp of consciousness, reflexivity, university student

INTRODUCTION

This work is part of an international collaboration, of which the main objective is to support in students a process of awareness specifically focused on their past and present educational practices, starting from the narration of specific experiences (Bruner, 1986, 1995). In this paper, educational practices are "elicited" using an interview based on techniques and principles of the psycho-phenomenological approach (Vermersch, 2012). The psycho-phenomenological perspective is based on a conversational approach defined by elicitation interviews (Vermersch, 1994, 2000a,b, 2015) and centered on the reconstruction by the participants of the lived experience. This technique intended to support students' learning though the awareness of their past unsuccessful experiences. In this sense, the narrative flow aims for a reflective return. In psychology, the importance of narrative is already well established; it constitutes an indispensable activity for understanding reality and reflecting on it (Bruner, 1990; Smorti, 2018). Bruner (2002) in seminal empirical and theoretical works has shown how in biographical narrative, the canonical and the possible are in a kind of perpetual dialectical tension in which the primary purpose would seem to be to maintain a balance between *the past* and *the possible*. The narrative is a fundamental resource for the construction of individual and collective identity; it is all the activity through which we construct meaning and make sense of our story (Bruner, 2002). The narrative is a communicative act; it opens to the relationship with *the Other*, in a dimension that goes from the individual to the social; in which the memory is externalized and, in the narrative act, becomes the object of reflection and awareness to then return to be internalized in a new form (Savarese et al., 2013; Marsico, 2017; Iannaccone et al., 2018; Smorti, 2018). As part of the broader narrative approach, this article highlights the importance of reconstructing in detail the processes that led the student into situations of learning difficulty. It aims to show the use of the reflective approach centered on the elicitation of specific lived learning experiences. Eliciting the experiences can encourage students to reflect on their activities, their skills, and their role as students, the aim being to analyze and modify those actions that emerge from the narrative (and are evaluated by them) as ineffective and/or insufficient. The elicitation method is based on psychological interviewing that, through certain techniques of formulation (questions, rephrasing, and silences; see examples provided in the cases discussed below), supports the interviewee in focusing on and describing a specific experience (Vermersch, 2007a). The area of verbalization is the "action" considered as a valuable source of information. Action that can be defined by the elicitation approach as the actualization of the task accomplishment. Knowing how a task is performed (in a given situation and context) allows the student to better understand and analyze the difficulties encountered in learning, the possible causes of mistakes and dysfunctions, the reasons that seem to determine its success, any distortions. An elicitation interview is a non-inductive technique that supports people in the process of becoming aware. Recent studies have used specific narrative elicitation methods (Soroko, 2019; Naldemirci et al., 2020). Soroko's (2019) study drew on self-narrative elicitation methods, which are based on a type of in-depth psychological interview in which the subject's self-reflection appears. These approaches consist of a narrative stimulus (elicit self-narrative instruction, verbal stimulus, and visual stimulus) that helps the person produce an open narrative statement about their biography and structure experiences narratively (Soroko, 2019). Narrative elicitation has been used in an internal medicine department specializing in cardiology in a Swedish hospital (Naldemirci et al., 2020); this study focused on narrative elicitation observations conducted with nurses. Naldemirci et al. (2020) stated that narrative elicitation involves skills and strategies practiced especially in person-centered care that can help patients articulate goals that are meaningful and important to themselves. These skills and strategies are preparing for narrative elicitation, dwelling in the patient's narrative, and constructing and co-constructing the narrative. In a previous study (Savarese et al., 2019b), the psycho-phenomenological approach of counseling intervention carried out through the method of an elicitation interview was presented and discussed. The analysis showed how the reflexive activity, promoted by the elicitation of the experience, mitigated in the student, involved reactions full of anxiety and promoted a positive change in the perception of the Self in the situation narrated.

In this paper, we try to show how the reflective process can effectively support, in university students, a process of awareness of their own actions and skills, helping them to analyze and identify those distortions (of themselves in that context and in that situation) that, very often, hinder and/or block their university path.

THEORETICAL FRAMEWORK

Research in the psycho-pedagogical field has shown, in recent decades, a particular interest in the role of the reflexivity and reconstruction of lived experience in learning processes. Previously, cultural–historical studies (Lurija, 1974; Tulviste, 1991; Iannaccone, 2010) shown the importance of the role of cultural frames in problem-solving activities. An understanding of how knowledge is constructed not only within institutional settings, but also in everyday life contexts has emerged from these works (in a similar way the cognitivism become aware of the ecological dimensions of psychological activity: Neisser, 1967). The knowledge acquired in everyday life is largely implicit and can be actively used as the individual becomes aware of it. However, although human activity is the result of the intertwining of cognitive, cultural, relational, and institutional dimensions (Iannaccone, 2010; Mollo, 2021), it is useful to remember how this activity remains largely opaque to consciousness. Piaget (1974) observed how individuals belonging to certain professional categories (e.g., mechanics), when faced with logical problems (typical of school), failed to solve them, while on the contrary, in their work activity, put in place a kind of formal reasoning (Anolli, 2004; Perret and Perret-Clermont, 2011). It follows that, in order to activate reflective skills on actions performed, it is necessary to make explicit the

lived experience. In other words, the activity of individuals—understood in terms of actions, thoughts, beliefs, motivations, and reasoning—is influenced by the interweaving of explicit and implicit knowledge. They are the result of latent, informal learning that occurs through experience in everyday life contexts, within certain cultural frames (Perret-Clermont, 1979; Perret and Perret-Clermont, 2011) or socially and emotionally safe thinking spaces (Bachtin, 1981; Perret-Clermont, 2001, 2004; Zittoun and Iannaccone, 2014; Coppola et al., 2015, 2019; Szulevicz et al., 2016).

Awareness, Elicitation, and Reflexivity

To set as a goal the understanding of the implicit and explicit aspects of action and, in particular, of the gap between activity and what makes the success or failure of that action possible calls into question the problem of awareness.

Within the field of developmental psychology, Piaget's (1974) theory of *grasp of consciousness* is an important landmark in understanding the relationship between behavior and consciousness (Stoltz, 2018). In his theory, Piaget (1974) had shown how *grasp of consciousness* should be considered as a construction, an elaboration of the different levels of consciousness, with the latter being understood in terms of integrated systems (and not as a whole). We must assume that action, as knowledge in action - understood both in terms of conceptualized and conscious knowledge and in terms of knowledge in action and not reflected - in order to be fully conscious (conscious knowledge) needs to be conceptualized. To do this, it is necessary to understand how action evolves toward conceptualization (Piaget, 1974). The need for *grasp of consciousness* emerges from the need to search for new means with a more active *réglage* (adaptation). It does not necessarily arise from situations of maladjustment, but rather from the pursuit of a new (conscious) objective *from which derives the observation of success or failure*. The process of becoming aware passes through stages, and the process of internalization takes place according to a progression that goes from the periphery *(P)* toward the center *(C)*. It starts from the periphery[1] (objectives, results, perceptible effects, and significant sensory data) and, in an attempt to reach the internal mechanism of action, progressively moves toward the central regions of action (recognition of the means employed and reasons for choice or their modification). Consciousness does not arise from the subject or the object, but from the interaction between the two (Piaget, 1974). In the case of failure, an understanding of the reasons that produced it leads consciousness toward the more central regions of action (purpose or overall direction); a subject starting from the observable on the object (missed result) will try to understand on which points the accommodation of the scheme to the object is lacking and will direct their attention toward the employed means. This process proceeds in stages *(from P to C)* toward the internal mechanism of the act, and internalization of the action leads to a conceptualization of reality that moves from practical assimilation (empirical abstraction) to an assimilation by concepts (reflexive abstraction). *Grasp of consciousness* cannot be reduced exclusively to a process of illumination that produces no effects (or changes) other than making "visible" what was previously "obscure"; it is to be considered a construction, a conceptualization that transforms a pattern of action into a concept (Piaget, 1974). Piaget is credited with having proposed a methodology of observation using traces and classes of observables of which the application is subject to the analysis of the task and knowledge of its cognitive relationship with the subject (in terms of logical–mathematical relationships).

Vermersch (1994, 2000a,b, 2015), starting from some elements of the Piagetian theory of grasp of consciousness, arrived to establish a theoretical link between consciousness-raising and elicitation. Vermersch's model can be considered a methodologically grounded description of subjective experience. The lived experience (in term of action) is an essential source of inference for the analysis of intellectual functioning. The psycho-phenomenological approach (psychophenomenologie) focuses on describing the kind of cognitive relationship that a subject has with the matter he is talking about, which, on the phenomenological level, translates into the feeling of reliving it. Action is composed of explicit and implicit aspects; therefore, Vermersch (1994, 2000a,b, 2015), in his work, highlighted the need to help subjects develop abstraction skills based on experience and its evocation. To better understand the concept, the author proposes the metaphor of the amateur draftsman who must practice observing in order to learn to draw *what he sees* and not to draw *what he knows*. Through an elicitation interview, the individual is placed in the position of *describing themself* the nature of the difficulty they encountered or the error they made during the activity they evoked. Knowledge of the rational procedures put in place by the individual when accomplishing a task represents the focus of Vermersch's proposed technique. This methodology is a useful tool for supporting the student in becoming aware. The need to be heard drives people toward revisions and reconstructions of the stories used to tell their lives while remaining true to a set of values and beliefs that are not subject to radical revisions (Bruner, 1996; Smorti, 2018). This reflexive activity, promoted by verbalization, activates in the subject an awareness provoked by elements that the subject himself did not know he knew or was convinced he did not know (Vermersch, 1994, 2000a,b, 2015).

In this sense, narration and elicitation fit within a dialogical dimension in which the individual tries to make sense of past events and the presence of the Other (the Self or other than the Self), and this implies the modification and modulation of the communicative act (Bachtin, 1981; Bruner, 2002; Marková, 2016).

A VIEW OF UNIVERSITY STUDENTS IN NEED

Previous studies (Savarese et al., 2015, 2016, 2019a) have shown that becoming aware of one's difficulties promotes in college

[1]The periphery can be defined as the subject's immediate and external reaction to an object, who uses it according to a goal (assimilating the object into an earlier schema) and takes note of the result obtained. The two terms (periphery and center) are conscious in every intentional action, while the schema (which assigns a goal to the action) can remain unconscious (the child reaches their goal without knowing how they proceeded) (Piaget, 1974).

students the ability to identify effective solutions. By age, the young university student is in a delicate phase of the life cycle—a particularly stressful developmental time, full of changes and critical situations, which can become a source of stress and occasionally trigger true identity disorders (Gore, 2008). The student goes through what is referred to as a transitional phase (Cassidy and Trew, 2004), in which social relationships (with family, peers, and educational figures), sometimes physical living contexts (e.g., change of city), and their identity within these are redefined (Oyserman and Destin, 2010; Tateo et al., 2018). In general, the student in difficulty experiences more or less severe forms of discomfort, capable of affecting the educational path and, more generally, life. They may experience difficulty tolerating frustration in waiting to see their goals (exams, graduation, self-actualization, and autonomy) realized. They may find themselves in situations where they experience dissatisfaction due to a series of frustrated needs that create great tension, fatigue, and sometimes disorientation; experience decision-making difficulties, tending to disperse energies that are not productively finalized (e.g., not knowing which exams to schedule and dispersing themselves in non-functional parallel activities, or scheduling too many exams at once); tend to lose confidence and self-esteem; use little of, or in a dysfunctional way, the coping strategies available to deal constructively with commitments, obstacles, and stressful situations; complain of difficulties in social–relational adjustment in the university context (related to confidence and insecurity and fears because of confrontation and competition), but also of re-adaptation in the friend and family context; present difficulties in concentration and commitment, related to a state of tension, worry, and fear of disappointing loved ones; feel the weight of family and social expectations, often experiencing a sense of emotional impotence (fear of not being recognized and loved unconditionally) and loneliness; and experience feelings of guilt and fear of not being "up to the task," questioning the course of study choice undertaken (slows, postpones, or avoids to the point of stalemate) and one's identity as a student (Marsico et al., 2015; Savarese et al., 2016, 2019b).

OBJECTIVES AND PARTICIPANTS

This study, structured on qualitative and descriptive research, assumes that the reflective activity promoted by narrative elicitation techniques supports processes of awareness in university students. A reflexive return of one's experience in order to know it (and recognize it), appropriate it, use it as a knowledge base to refine one's actions, understand difficulties and activate resilience and coping skills (Vermersch, 2004; Iannaccone and Cattaruzza, 2015; Savarese et al., 2019b). Narrative, as a dialectic between what was expected and what was, appears to be a valuable tool *not so much for solving problems, but for finding them* (Bruner, 2002). Piaget (1974) asserted that *grasp of consciousness* can occur under the pressure of the failures and obstacles that the subject may encounter when trying to pursue the goals that motivate them (Piaget, 1974; Vermersch, 2006). The research presented herein is part of a framework aimed at promoting student well-being, and the primary objective is to create the conditions that allow students to come into contact with their own experiences and become aware of them (*grasp of consciousness*).

Participants

In this paper will be presented the analysis of experiences related to two cases of students of the University of Salerno who, as a result of difficulties perceived during their studies, have turned to the University of Salerno's Needs Analysis Center (Sportello di Analisi dei Bisogni) of the "Office for the Right to Study" (Diritto allo Studio). The narratives of the experiences were elicited by an interview using the narrative and psycho-phenomenological approach (Bruner, 1986, 1995; Vermersch, 1994, 2012).

METHOD

The method involved narrative interviews (Bruner, 1986, 1995). The principles and techniques that guided the interviews[2] were inspired by elicitation interviews, a methodology that offers the opportunity to collect useful accounts of lived experience (Vermersch, 2012). The interviews were recorded with the consent of the students interviewed and were transcribed. The resulting texts were analyzed using a hermeneutic–interpretive approach to identify the significant elements of the narratives[3]. This interview type (Vermersch, 1994) represents a useful methodology for the construction and clarification of the cognitive resources and operational skills necessary for the implementation of reflective activities. This technique allows for the exploration of not only students' experiences, but also operates as a true formative activity. Reflective activity promotes consciousness-raising processes, which are the primary goal of this technique. Reflexive activity means: A "*set of cognitive acts through which the mind retraces certain situations experienced, in order to gain awareness of the patterns of intrapsychic and interpersonal functioning put in place, and to critically analyze and interpret the processes identified*" (Cesari Lusso et al., 2015). Through an elicitation interview, the student is guided toward the description (and nature) of the difficulty encountered; it becomes the object of reflection (a key element in helping to raise awareness in this regard). Guidance in verbalization builds on this *reflective return* (Vermersch, 1994).

In a more general framework of referring to the elicitation interview, the principles we selected and that guided the interview are (Cesari Lusso et al., 2015; Iannaccone et al., 2018):

1. Use of verbalization and active listening;
2. Inviting the student to describe concrete actions;
3. Inviting the student to narrate a specific situation;
4. Inviting the student to use concrete interactive dynamics and actions;
5. Helping the student reflect and promote self-awareness.

[2]The interviews were conducted by the first author, Monica Mollo, who was trained to conduct elicitation interviews in 2007 and 2008.

[3]The interviews were very long, so we present the most significant passages. The data in their entirety are available to researchers who may be interested.

The central aspect of such study is primarily to emphasize how certain forms of implicit knowledge influence and direct action, making certain aspects of it not directly accessible to consciousness (Vermersch, 1994). In our opinion, supporting the emergence of reflexive skills could represent an explanatory element of those aspects that are not entirely clear of human action by encouraging, in the subjects involved, an awareness of the way that individuals have to perceive, act, and look for reasons, meanings, and motivations of their acts (Cesari Lusso et al., 2015).

INTERVIEWS[4]

Preliminary Aspects

Before the beginning of the interview,[5] in order to create the deontological and technical conditions necessary to carry out the activity. A pre-interview was organized, where the students were informed about the nature of the meeting and the communicative contract was made explicit. In relation to the latter, the wording used during the interview was chosen according to the intended perlocutionary effect (Vermersch, 2007b). In reference to the elicitation technique, the term "*I propose to you if you agree*" was used as the initial wording, which aims to convey the message that the interviewee–interviewer relationship is symmetrical and synchronic.

First Interview

The first case analyzed concerns of a student named Francesca enrolled in the first year of her course (Master's degree in Professional Educators), who had been stuck in her studies for a year. Francesca, however, actively participated in the life of the university: She attended a workshop on the study method, performed voluntary community service at the Office for the Right to Study, and attended several training courses as a learning tutor for students with disabilities.

After the initial phase of communicative agreement, and considering that the interview aimed for complete verbalization and active listening, the student was asked to produce a narrative response to the question, "*What was your first experience with university like?*"

From the initial narrative, the student's naïve representation of the situation emerged; her insecurity emerged from the outset (turn 1):

1. Francesca: *Oh God (0.5) it's all new of course (.) then slowly I entered in the mechanism, but it was not so difficult (.) I have always done well at school. in the sense that I have always studied I liked it. the only difference was to prepare the exams in a short time (.) to organize the study to be within the time (.) then being a bit anxious the fact of going in front of the professor and remain silent (.) in silence (.) forget the information.*

In this phase of the interview, the student was asked to focus on a task (exam preparation). The purpose was to accompany the student toward a particular aspect of her experiential experience, in order to collect data on the interactive dynamics implemented and to help the student to self-inform about the various dimensions of her action. It is apparent from the initial narrative how the student's fears (turns 4, 5, and 6) affected her study and conditioned her actions. In particular, in turns 8 and 9, a kind of anticipatory anxiety emerged, related to a situation that the student had created in her mind (a future scenario) and to the image of the professor. It is as if the focus of attention, during the study, shifted from the exam to oneself. The irrational thought was fixed (turns 8, 9, and 11) and so powerful as to anticipate in a negative way the event of the exam, triggering reactions of intense anxiety and physical reactions (turns 19 and 21).

2. Francesca: *I got up I had breakfast (.) and then I started taking the slides (0.5) I remember that I started reading first and then after a first reading (.) I started underlining the things that I thought were most important to remember*
3. Interviewer: was there anything that caught your attention?
4. Francesca: *I was trying to understand what I was reading then after underlining I would start repeating what I had underlined to see a little bit if I remembered (.) and if I understood what I had read*
5. Interviewer: what was going on at that time?
6. Francesca: *as soon as I started to repeat, I seemed to remember (.) then 5 or 6 minutes went by and I forgot what I had read before.*
7. Interviewer: what were you thinking about in the 5/6 minutes?
8. Francesca: *I was thinking about the difficulty of the exam at the time of the exam*
9. Francesca: *nothing (.) I was imagining being in front of the professor (.) being afraid (.) difficulty speaking to expose content*
10. Interviewer: You told me, correct me if I'm wrong, I imagine being in front of the professor asking me questions and I freeze up. Do you ever change the scenario of the thoughts that come into your mind?
11. Francesca*: No (.) I always have a fixed thought.*

Lived Experience

The researcher rephrased what the student had verbalized up to that point. The goal was to help the student develop her narrative and focus the narrative on the day of the exam, an event she experienced and did not imagine. The student began by recounting her colleagues' exams:

[4]The interviews were transcribed in their entirety using a lightened version of the Jeffersonian system; in fact, only a few transcription codes were used, such as: (.) indicates a micropause; (0.5) indicates the duration of a pause expressed in tenths of a second; underlined letters or phrases indicate an expression of emphasis, the greater the underlined portion; the dot indicates the stopping point of tone (not necessarily the conclusion) (Jefferson, 1985).

[5]The interviews were conducted at the University of Salerno's Needs Analysis Center, a context already familiar to the students. The interviews took place in a silent environment without the presence of anyone other than the interviewee and the researcher. Students who took part in the research were given appointments at different times.

12. Interviewer: On the morning of the exam, did you focus on exposing and comparing yourself to them (ed. other students)?
13. *Francesca: I was afraid I was doing something wrong*
14. Interviewer: Did this happen to you for every colleague?
15. *Francesca: No (.) only some (.) for some questions*
16. Interviewer: How do you view those who responded differently?
17. *Francesca: I didn't make an evaluation of merit (.) maybe you will have had more time to prepare (.) definitely (.) better than me (.) probably*
18. Interviewer: What did this idea provoke in you?
19. *Francesca: It made me anxious*
20. Interviewer: what do you mean by anxiety?
21. *Francesca: I mean fear (.) stomach (0.5) feeling like vomiting (.) really wanting to run away.*

During the interview, it emerged that the emotional reaction of anxiety is social in nature; it was always linked to the (irrational) thought of possible failure in public.

The researcher rephrased what the student narrated again to allow her to focus on a specific experience (the moment of the exam) and to describe in retrospect and in detail its different components (Vermersch, 2007a):

22. Interviewer: We get to the time when you are called (ed. Professor), what happens?
23. Francesca: *I get asked the first question (.) I'm already on the ball at the first question*
24. Interviewer: can you tell me about that episode?
25. Francesca: *he asks me a question about chicken pox that I thought I knew (.) but there I get stuck*
26. Interviewer: can you tell me about this moment?
27. Francesca: *he asks me the question I just don't remember (.) I get confused with the bacteria*
28. Interviewer: what were you looking at?
29. Francesca: *the professor*
30. Interviewer: what were you seeing?
31. Francesca: *a person who didn't give me peace of mind that I don't feel comfortable with.*
32. Interviewer: what do you mean by not putting me at ease?
33. Francesca: *there is a person who looked at you with a look (.) not threatening (.) but hard stiff severe you know how to tell you (.) I know you don't know it so well I'll make you go on*
34. Interviewer: what happens to the next question?
35. Francesca: *I try to answer correctly I answer well enough. It was question and answer with no margin of explanation and then he asks me the third question I answer well the first part the second part the answer was a bit more confused*
36. Interviewer: how come?
37. Francesca: *because I knew that it didn't go well basically the exam i.e., I was aware that I didn't pass the exam*
38. Interviewer: what were your thoughts?
39. Francesca: *that I hadn't passed the exam*
40. Interviewer: how did the exam go?
41. Francesca: *I didn't pass the exam.*

In turns 33 and 37, it is possible to identify hidden implications in the student's statements related to the thought of failure (previously surfaced) and how this thought influenced the outcome of the exam.

The student, guided by the researcher, evoked another exam where anxiety (fear of judgment and public failure) emerged again. Also in this situation, the outcome of the exam was negative. In all likelihood, these experiences, related to fear of judgment, had the effect of lowering the student's self-esteem and self-efficacy:

42. Interviewer: what was going on at that time (.) give me an example
43. Francesca: *for example, the critique of judgment (.) I was confusing Kant's judgments*
44. Interviewer: what were you thinking about at that moment?
45. Francesca: *about the time that was little*
46. Interviewer: at the time so (.).
47. Francesca: *it was as if during these three exams I felt time flowing through me (.) I felt the breath on my neck.*

The non-inductive technical relaunches used by the researcher were inspired by some techniques used in elicitation interviews; in this specific case, they were used in order to facilitate the verbalization of the components of the action that usually remain implicit, such as a detailed chronology of the interaction; non-visible visible material actions (what he saw, what was said in his mind, thoughts, etc.); any judgments made about himself and the situation; and, above all, the explication of the underlying criteria (what do you mean by "."; how come?) (Vermersch, 1994; Cesari Lusso et al., 2015). Such techniques are necessary to bring out as many details as possible during narration.

First Awareness

In this stage, before the conclusion of the interview, the interviewer summarized and rephrased what the student had narrated; this was intended to allow her to become more aware of her work and to reflect on what, in the episodes recounted, was not working (Cesari Lusso et al., 2015).

In turns 49 and 51, the student began to reflect on how social and family expectations conditioned her actions. In contrast to what she stated at the beginning of the interview, she even went so far as to state that these expectations were most likely the source of her anxiety:

47. Francesca: *it scares me (ndr degree) because I see it as a challenging thing and from the experimental a professor a commission (.) everyone expects a job well done something important*
48. Interviewer: we always go back there, everyone expects.
49. Francesca: *and (0.5) so everybody expects that (.) I'm afraid of disappointing the expectations, I see it as something bigger than me (.) instead I say if I would have been satisfied (.) instead of always aiming to expect the maximum from myself*
50. Interviewer: satisfied?

51. Francesca: *because sometimes (.) maybe I need to take a step backwards (.) not to be satisfied, but to choose (.) I'm already working and studying, and since I took a long time to finish these three exams and (.) the work (.) I know that it takes me a long time, maybe I need to limit myself (.) to be satisfied (.) to do a normal compilative thesis instead of a stubborn one, because I wanted to do the experimental thesis, so (0.5) I think that maybe I was a bit anxious about that too.*

Another element connected to the block in studies was the thought of leaving the university, which is a transition that does not necessarily take the form of a critical and negative experience, but certainly involves a temporary disorientation and a psychological, identity, and social reorganization. In addition, the difficulty of controlling the emotional variables involved also emerged:

52. Interviewer: the idea of dropping out of college.
53. Francesca: *Yeah it's like I'm still attached (.) not graduating I'm here (.) it's been a family because I spent almost 3 years between civil service part-time.*

In closing, in turn 54 emerged, on an affective level, a feeling of pleasant amazement at the information that had emerged and the change in judgment about her actions. The first interview allowed the student to reach an initial *prise de conscience* that the block in her studies did not depend on her abilities, but on a state of tension and worry connected to the fear of disappointing expectations and leaving the university:

54. Francesca: *I feel better (.) a few things to think about (0.5) something you don't think about.*

According to Vermersch (1994), it is the asking of the question that causes one to adopt a reflective stance and creates awareness.

Second Interview

The second case analyzed concerns Giulio, a student enrolled on a degree course in Computer Science. He had been diagnosed with specific learning disorder (SLD) involving relational difficulties; these difficulties occur in different situations, such as examinations or new friendships.

Giulio received the diagnosis of SLD in his last years of secondary school; he had lived for a long time with an image of himself as a not very capable and deserving student. The recognition of his difficulties, which occurred with the certification, has allowed him to continue to invest in his studies, as evidenced by his enrollment at the university; however, his emotional–motivational experiences still appear to be characterized by a certain vulnerability, as reported by the psychologist who followed him at the University of Salerno's Needs Analysis Center (Sportello di Analisi dei Bisogni).

Lived Experience

According to the goals of the elicitation interview, the researcher guided the student toward the verbalization of concrete actions. The student's initial narrative appeared as a kind of mental vagueness. Through relays and rephrasing, the interviewer repeatedly helped the student stay in touch with the specific situation. In turn 2, two elements emerged: The belief that they will not pass the exam (despite the student claiming to have repeated well) and the thought of "blocking." The student in the narrative claimed to have blocked, but in evoking the image of the task, he remembered some questions as "not difficult" (he had repeated them previously). Despite this, the thought of blocking returned (turn 20):

1. Interviewer: enter the classroom
2. Giulio: *I think I repeated well and I wasn't passing.*
3. Interviewer: what is the first thing you remember seeing when you entered the classroom
4. Giulio: *I was one of the first ones*
5. Interviewer: your first thought
6. Giulio: *let's hope it goes well*
7. Interviewer: then what happens
8. Giulio: *it is the first time and I understood that I needed a separate form (.) but at that moment I couldn't do it so I thought (.) ok if I can't do it I will ask for the next time*
9. Interviewer: when did you think you needed a form?
10. Giulio*: when I started reading the questions*
11. Interviewer: so was there an earlier step (.) where you sat down?
12. Giulio: *in the second or third row*
13. Interviewer: next to you there was someone
14. Giulio: *a friend of mine who starts with M too, so we happened to be close by*
15. Interviewer: what were you thinking in that moment?
16. Giulio: *maybe in my opinion I can't do it completely*
17. Interviewer: before you even saw the assignment?
18. Giulio: *no because I started to do it then I got stuck.*
19. Interviewer: the sooner the time comes when they turn in the assignment, see the assignment what happens
20. Giulio: *the first two were not difficult* (.) *then I go to do the third one, the first two I had repeated a moment before, this made me feel a bit relaxed, I manage to do them, on the remaining ones I had doubts and from there I thought 'I have to take a form' otherwise I won't pass them, I asked for a form and additional time because I get stuck (.) so I take the sheet I take the additional time before opening the sheet I close my eyes and then I see everything and then I close my eyes and I repeat myself and then I go more quiet it takes here 20 minutes more in because after read*
21. Interviewer: you said one thing "I close my eyes."
22. Giulio: *I imagined how I had to do them.*
23. Interviewer: at what point did you decide to open your eyes again and continue
24. Giulio: *when I found the right image and when I'm sure of something, I'm relaxed, I have to remove the slightest doubt, otherwise there is always that uncertainty, it can be a bit compulsive (.) but if I'm not 100% sure of something, I don't do it.*

Vermersch (2006) pointed out that during the verbalization of an action, the beliefs that subjects hold can hinder description to the point that they fail to narrate the action itself. Here, the student was so convinced of "not passing the exam," of getting

stuck, that he kept repeating "next time" and "I can't," and did not even try to recall the situation experienced (exam) and as if he was subjectively present in the activity but absent as consciousness (Vermersch, 1994).

First Awareness

During the interview, an interesting element emerged from the student's account: Imagery (turns, 25, 27). The student reported, on more than one occasion, that before acting in any situation, he imagines the reaction people might have, evokes several "possible scenarios," and chooses the scenario where the other's reaction is one of approval. In the next example, he refers to editing a music video to show to friends:

25. Giulio: *I imagine two three times the reactions of the people in front of me*
26. Interviewer rephrases
27. Giulio: *Yes (.) I try to make a unique generation of different actions and reactions (.) that person doesn't like that part (.) but there is another part that he likes.*

In later turns, it emerged that the student's thoughts were always focused on others and the fear of getting stuck. During the interview, it is apparent that the student's difficulties were related a social anxiety:

28. Interviewer: How would you describe yourself?
29. Giulio: *a normal person, a bit shy*
30. Interviewer: in what sense?
31. Giulio: *I don't know how to approach myself (.) if there are some friends I start some conversations (.) I always manage to unlock myself*
32. Interviewer: how come?
33. Giulio: *I don't know*
34. Interviewer: when you meet someone new, you told me, even during exams you always need somehow to have the time.
35. Giulio: *I had an oral exam, the first time I couldn't speak, I was blocked (.) I knew the words in my mind (.) but the words didn't come out (.) the second time I was able to speak, it is the first approach*
36. Giulio: *I can see the answer even now I can't say it*
37. Interviewer: How do you feel in this circumstance?
38. Giulio: *a little tense and a little relaxed*
39. Interviewer: what makes you feel tense and what makes you feel relaxed?
40. Giulio: *the answers I have to give*
41. Interviewer: how do they make you feel tense?
42. Giulio: *I don't know how to say the answers*
43. Interviewer: do you think there should be a right way to answer?
44. Giulio: *no otherwise you are not natural*
45. Giulio: *let's say that I don't go out much only in the school environment*
46. Interviewer: when you meet a girl
47. Giulio: *I can't talk (.) if there is a friend, yes*
48. Interviewer: Is that what scares you even in the interview with me?
49. Giulio: *It is the reaction* (here he has an insight).

At this point (turn 49), the student had an insight; in the previous narrative, he appeared confused and his emotional condition seemed altered, but after "finding" the answer, the student seemed to relax and continued the narrative, adding more information and reaching initial awareness:

50. Interviewer: what scares you about the reaction
51. Giulio: *I am always positive (.) but when I have to talk I always think of the negative*
52. Interviewer: what is this negative?
53. Giulio: *I am annoying or disturbing and I ask useless questions (.) maybe.*

From the student's initial narrative, a verbal version emerged of a kind of negative naïve representation that the student had constructed of himself, in his studies and relationships. One obstacle to verbalization was the beliefs developed by the student:

54. Interviewer: Is it helping you (university, ed.)?
55. Giulio: *maybe because I am far from home (.) at first I was afraid but I saw that knowing other people, knowing other ways, I am more unblocked (.) I always say that thing but let's try (.) let's always try (.) in case I go back home*
56. Interviewer: (.) are you unblocked?
57. Giulio: *Yes (.) since I started university.*

The effect of this reflective work was to understand the true nature of his fears and that the reality was very different from what he had constructed in his mind. He thought he had difficulty relating, but he met new friends. The reflection work, in this case, most likely led the student toward greater self-awareness and a redefinition of his role in the context.

DISCUSSION

The process of awareness is not automatic; it requires reflective work and cognitive engagement. The elicitation interview by privileging the procedural dimension of the experience (the action as it was actually carried out, how it was experienced, and who carried it out) supports the student toward a greater reflective awareness of their own skills, difficulties, and distortions. Vermersch (2004) stated that the condition for the verbalization of a past experience is that it becomes reflexively conscious. In this way, it will be possible to describe the action and bring it to consciousness, which will allow to analyze its elements, to know it, and to activate strategies to manage the difficulties. As reflected in narrative n.1, this focus on action (preparing for the exam and taking the exam) allowed the student to understand how the irrational thought of failing was actually fueled by the fear of disappointing the expectations of others and leaving the university. The student, during the narrative, acknowledged that she has skills ("I study, I've always done well in school, I enjoy it"), yet the irrational thought of failure, constant throughout the action, impacted her to such an extent that it affected her study and the outcome of the exam. From the narrative, we can see how the guidance toward verbalizing two

lived experiences led the student toward some initial awareness. She was able to reflect on aspects of the performance of which she was unaware (expectations of others and transition) that influenced the performance and, in some cases, the outcome. Vermersch (2004) stated that there are several hurdles that must be overcome during elicitation, one of which is whether the person is truly willing to engage in a reflective process. In the second account, this element emerged clearly. The student's elaborate perception of himself in the university context was so ingrained that he did not attempt to recall the situation he experienced (he was subjectively present in the activity but absent as consciousness). In this case, the researcher guided the student toward evoking a lived experience through a series of questions ("where were you sitting?" "what were you seeing?" and who was next to you?"). Again, this allowed the influence that irrational thinking (getting stuck on the exam) has on action to emerge. Several times during the dialog, the researcher helped the student focus on the experience. Initial realizations emerged in the latter part of the account: Fear of others' judgment, the source of his irrational thinking, and a redefinition of the Self in context.

CONCLUSION

In this paper, we aimed to show how knowledge unconsciously embedded in a given action and connected to a given context can influence subjective and intersubjective actions. Through psychological processes of awareness—cognitive acts through which the mind retraces certain experienced situations—it is possible to critically analyze and interpret such knowledge. Awareness is not produced by virtue of an automatism, but by real cognitive work that consists of searching for the reasons, meanings, and motivations behind our actions. Awareness raising, in its dialogic dimension, implies a reflexive activity necessary to find a link between actions and the motivations behind them.

In the educational field, the reflective activity promoted by self-narrative can represent, in our opinion, a valuable tool for the promotion of resilience and coping skills; reinforce and promote a sense of self-efficacy in solving problems that may characterize the life of the university student; and at the same time, mitigate the fear experienced when confronted with unexpected situations and the difficulties of everyday life. The aim of this exploratory work was to help the students understand their own experiences with respect to the difficulties they encountered during their university career. The students were supported in a reflective activity that allowed them to acquire some awareness of their ways of thinking and acting in certain situations. In different parts of the interviews, subjective experiences of unique or specific situations emerged, with a description of procedural aspects and thoughts during their actions focused on throughout.

The results showed that the reflective activity, promoted by self-narration, offered students the opportunity to (re)live the experience by affecting their perception of themselves, their relationship with the context, and their emotional experience. Finally, the interviews showed that reflection on identity and social dimensions fosters in students processes of adaptation, as well as a more complete sense of belonging in the university context.

In conclusion, reflective activity promotes awareness processes that strengthen students'beliefs that everyday difficulties also represent a stimulus to enrich their emotional, intellectual, social, and operational resources (Cesari Lusso, 2005, 2010; Cesari Lusso et al., 2015).

"Perspective" notes on the students who participated in the interview:

Francesca successfully graduated in 2020, presenting an experimental thesis. She distinguished herself among the university's civil service volunteers for her commitment to the project and dedication to students with disabilities. She has shown great reliability in carrying out different activities, and has been noted for a cooperative style toward her colleagues.

Giulio is still completing his academic path; he takes more time in writing his exams (one to two exams per session), but he does this successfully, always achieving promotion. He followed a counseling path at the University Center and participated in a workshop for the "management of anxiety" promoted by the team of the Counseling Center.

Both students are satisfied—as reported to the psychologist at the "Analysis of Needs" desk—with the various extracurricular services offered by the university, considering them to be a solution for various personal difficulties.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

Ethical approval was not provided for this study on human participants because the study was conducted in accordance with the legislation of the Italian Code regarding the protection of personal data (Legislative Decree 196/2003); the participants were informed about the general purpose of the research, the anonymity of the answers, and the voluntary nature of participation and they signed an informed consent. There were no incentives given. This study was approved by the independent commission of the "Centro di Counseling psicologico" - University of Salerno (Italy). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MM, AI, and GS conceptualization, developed the proposal and research tool. GS and MM wrote the first draft with

inputs and comments from all other authors, conducted the statistical analysis. DD'E was supervision. All authors contributed significantly and agree with the content of the manuscript, read and agreed to the published version of the manuscript.

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ORIGINAL RESEARCH
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Development and Validation of Measure on Student-Teacher Relationship in the Indian Context

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The notion that the student-teacher relationship is quintessential for the holistic development and success of students has been well established through various research. A considerable number of studies have been conducted in western countries, and various scales have been developed to measure student-teacher relationship. These scales have been extended to various cultural contexts. However, few studies have been found to focus on the suitability and applicability of these scales and theories of student-teacher relationship in the Indian context. In the western context, most of the studies on the student-teacher relationship were based on the attachment theory. In the context of Indian culture, student-teacher relationship functions beyond the boundaries of attachment theory. It is well acknowledged that Indian culture differs vastly from other cultures. Given the uniqueness of Indian culture, the present study advocated that nature of student-teacher relationship in the Indian context is significantly different from western countries. There was a need to develop a scale for measuring student-teacher relationship in the Indian context. This study intended to construct a scale on student-teacher relationship in the Indian context. Standard procedure was followed in the process of scale construction. Results of the first study illustrated a four factor (dedication, trust, respect, and obedience) model of student-teacher relationship, and a second study confirmed this model and ensured reliability and validity of the scale.

Keywords: factor analysis, scale construction, India, education, culture, student-teacher relationship

INTRODUCTION

A vast amount of literature accounts for the role of student-teacher relationship in students' overall success. Many studies in educational settings have proved that student-teacher relationship plays a major role in academic achievement of student and their social and emotional development (Longobardi et al., 2021). Positive relationship between student and teacher is a significant predictor of students' success in academics (Ray et al., 2008; Longobardi et al., 2018). On the contrary, disturbed student-teacher relationship caused academic failure and obstructed social and emotional development of the students. Academic institutes who provided an affirmative class environment and worked on building healthy student-teacher relationships achieved more academic success than those institutes who gave less importance and effort to the student-teacher relationship (Birch and Ladd, 1997; Burchinal et al., 2002).

Positive student-teacher relationship provided a foundation for other functions of educational institutes to be carried out efficiently and motivated students to do well in their studies (Marzano, 2003). Hamre and Pianta (2001) also supported the idea that positive student-teacher relationship was a key factor for overall development of the students. Hallinan (2008) proposed that learning in educational settings was a multi-dimensional construct which includes social, cognitive, and psychological aspects. He further suggested that all dimensions of learning played a significant role in academic excellence. Other than these dimensions, the emotional dimension also has an important role in student-teacher interaction. Emotions are an essential element in teaching and learning process (Meyer and Turner, 2002). Therefore, the role of emotions cannot be ignored while discussing student-teacher relationship.

Theoretical Underpinning

Student-teacher relationship has been found to be crucial in the holistic development of students (Longobardi et al., 2016). It is imperative to understand the nature and meaning of the student-teacher relationship. There are some theoretical perspectives which needs to be discussed in order to understand the student-teacher relationship.

System perspective is one of the major perspective through which student-teacher relationship can be explained. The basic scheme of system theory relies on the idea that all aspects of the construct are connected to each other (Kiesler, 1996). Consequently, any variation in one aspect of the construct results in changes to other aspects of the construct. Moreover, this change may affect the first aspect retrospectively, and this process happens each time a variation is introduced (Wubbels and Levy, 1993). In the context of student-teacher relationship, the behavior of the teacher modifies the behavior of students and the subsequent behavior of the teachers gets affected by the behavior of students. Therefore, student-teacher relationship is not only determined by their own behavior but also by interaction (product) of their actual behaviors.

Another theory which helps to explain student-teacher relationship is known as "Attachment Theory." According to this theory, the teacher works as an alternative caregiver (Howes and Ritchie, 1999). The student-teacher relationship is an extension of a parent-child relationship (Davis, 2003). Pianta (2001) found that emotionally secure student-teacher relationship resulted in better attention and learning among students.

The system perspective and attachment theory both indicate the bidirectional and transactional nature of the student-teacher relationship. It becomes necessary to critically examine the behavior of both students and teachers and how the behavior of one modifies the behavior of the other.

Culture and Student Teacher Relationship

The growing influence of cognitive psychology resulted in a paradigm shift and brought more focus on cognitive processes (such as attention, memory, perception, thinking, intelligence, etc.). Initial focus was to understand the cognitive aspect of human behavior, but with the emergence of the concept of social cognition, few noticeable changes happened. An influential theme that surfaced was the role of culture in cognition.

Grant and Dweck (2001) have advocated that culture has some imprint on language, learning, motivation, and student performance. Every student has some pre-existing beliefs, ideas, attitudes, and social perceptions which are culture specific. Through the process of socialization, one learns how to behave in a particular situation and develops perception toward various social settings. Learning is shaped in accordance to culturally suitable behavior and attitudes (Markus et al., 1997; Tomasello, 2001; Li, 2003). Students having different cultural backgrounds will have different perceptions about education and teachers. Every culture has a unique perspective about the meaning of education, structure of educational institutes, curriculum, characteristics of student and teacher, and relationship between student and teacher. Cultural models of education emphasized that socio-cultural background gets reflected in school contexts (Fryberg and Markus, 2007). Major components in the cultural model of education involve meaning and purpose of education, characteristics of a good student and teacher, the nature of student-teacher relationship, relationship between students and classroom context, and teaching methodology. In the United States most of the educational institutions still work on the idea that learning demands self-sufficiency and free thinking (Tharp, 1994; Bruner, 1996). The role of teacher remains compressed to focus primarily on course components and guide students to acquire subject knowledge, which does not encourage a positive or trusting interpersonal relationship between student and teacher. In Japanese culture a trustworthy relationship is a requisite for good education (Tweed and Lehman, 2003). Lewis (1995) advocated that, according to Japanese philosophy, developing a union between student and teacher for achieving better education is essential. She further stated that "emphasis should be placed on the relationship of hearts, the nurturing of bonding between the teacher's and children's hearts" (p. 56). Fryberg and Markus (2007) found that American students believe that teachers should facilitate students to become independent thinkers, although students in India prefer teachers who make emotional bonding and trusting relationships with students. So, the cultural and social belonging of the students acts as a determining factor in shaping students' perception about teachers in particular and education in general.

Mostly theories and instruments in the field of educational psychology have been established in western countries. Various researchers from non-western countries have often voiced their concerns over applicability of these theories and instruments in their respective cultures. Enriquez (1977) pointed out that many educational theories and measuring instruments were not appropriate for non-western cultures. Test scores of a measure being validated in a different culture lacks applicability when it comes to other cultures. However, Hui and Triandis (1985) believed that if a measure has scalar equivalence, this problem may be fixed. Scalar equivalence refers to a measuring construct that has similar metrics across the cultures. They further stated that scalar equivalence is difficult to establish as it involves many steps such as conceptualization, construct operationalization, and item equivalence.

Measures of Student-Teacher Relationship

- Questionnaire for Teacher Interaction (QTI) developed by Wubbels et al. (1985) is a widely used questionnaire to measure student-teacher relationship. This measure taps student-teacher interaction on eight domains: leadership, helpful/friendly (helpfulness), understanding, student responsibility/freedom (freedom), uncertainty, dissatisfaction, admonishment, and strictness. The questionnaire measures various attributes of the teacher such as leadership, helpfulness, and others. However, this scale has no items related to students' attitude toward the student-teacher relationship. In the Indian context, the student-teacher relationship is completely different from the perspective of Wubbels et al. (1985) as teachers are treated beyond these eight dimensions.
- Another useful measure is Psychological Sense of School Membership Scale (PSSMS) developed by Goodenow (1993). This scale was developed to measure perceived relatedness and teacher support. PSSMS has a total of 18 items. The PSSM Scale aims to measure student's attitude toward the school and does not measure student-teacher relationship.
- Teacher-Pupil Rapport Scale is a renowned scale to measure student-teacher relationship. This scale was developed by Rabinowitz and Rosenbaum (1958). They defined teacher-pupil rapport as the generalized, conscious, subjective regard expressed by pupils for their teacher. This scale has four dimensions, Disorder, Halo, Supportive Behavior, and Traditionalism. This scale covers these four dimensions which have less relevance in the Indian context.
- Student Teacher Relationship Scale (STRS; Pianta, 2001) is designed to measure feelings of the teacher about his/her relationship with student, student-teacher interaction and student's attitude toward the teacher. This scale comprises three sub scales: conflict, closeness, and dependency. The first sub scale (conflict) has 12 items, second (closeness) has 11 items, and third (dependency) has five items. The scale is widely used in educational research and many authors have validated it in different cultural contexts.

Student-Teacher Relationship in India

Educational psychologists have emphasized that the teachers are the most important part of the education system, and the behavior of teachers determines the success of the education system. Students are another important part of the education system as students are not merely receiver, but they also play a significant role in functioning of the system.

Another important but somewhat neglected aspect of the education system is student-teacher relationship. Few educationists give less emphasis to student-teacher relationship than knowledge acquisition, pedagogy, and teaching aids. However, student-teacher relationship plays a decisive role in the success of an educational institute. Thus, the role of student-teacher relationship becomes more important in the context of Indian culture. The distinguished tradition of student-teacher relationship (Guru-Shishya Parampara) of India is well known. However, with modernization and changing scenario in education system, the Indian value system has undergone changes, but the deep-rooted tradition of regard and gratefulness toward teachers is profoundly observed in Indian society and culture. In view of this peculiar value system, it would be unfair to examine the student-teacher relationship through the lens of western theories and measure this relationship with instruments developed and validated in the western context. The nature of the student-teacher relationship in the Indian context has been discussed quite often, but no attempt was made to either conceptualize this construct or develop a measure. In view of these shortcomings and a need to develop a culture specific measure, the present study was designed for developing a unique and culturally appropriate instrument to measure student-teacher relationship in the Indian perspective.

STUDY ONE

The primary objective of the present study was to develop a scale on student-teacher relationship in the Indian context. To achieve this objective, extensive literature review was done and two focus group discussions were organized to learn from the experience of teachers and researchers. The purpose of the focus group discussion was to obtain practical experience along with theoretical understanding. Focus group discussion was pivotal in understanding the student-teacher relationship in the Indian context. Based on the review of literature and focus group discussions, an item pool was prepared. After thoroughly examining the items, a questionnaire was prepared which included a consent form and demographic details. The questionnaire was administered on the target sample. Obtained data were analyzed using appropriate statistical methods.

Methods

Focus Group Discussion

The first focus group discussion was comprised of eight researchers from the Department of Psychology, University of Allahabad, and the second group consisted of eight school teachers having teaching experience of more than 5 years. Important themes emerged in the focus group discussion such as dedication, devotion, respect, trust, humor, genuineness, subject expertise, obedience, positive interpersonal attachment, and emotional bonding. These themes were overlooked in existing measures. Out of these ten themes, only four were used for scale construction, i.e., devotion, trust, respect, and obedience. The reason for exclusion of other themes were (i) to avoid duplicity; (ii) to make the scale compact; and (iii) to avoid dimensions such as subject expertise. Few dimensions were found to be similar. Contents of the themes devotion and dedication were found overlapping, and devotion incorporated the idea of dedication. Thus, devotion was finalized as a key dimension. Similarly, the contents of positive interpersonal attachment and emotional bonding have already been covered in the dimensions of trust and respect.

TABLE 1 | Descriptive statistics of items and item-sum correlations.

Item	Mean	SD	Skewness	Kurtosis	ISC
Item 1	3.52	1.06	−0.35	−0.78	59**
Item 2	3.72	0.91	−0.84	0.54	0.60**
Item 3	3.61	1.10	−0.48	−0.63	0.64**
Item 4	3.56	0.92	−1.03	1.0	0.55**
Item 5	3.81	1.00	−0.83	0.32	0.60**
Item 6	3.57	1.03	−0.64	−0.10	0.61**
Item 7	3.53	1.10	−0.48	−0.41	0.67**
Item 8	3.65	1.00	−0.77	0.14	0.66**
Item 9	3.45	1.09	−0.31	−0.65	0.60**
Item 10	3.79	0.92	−0.68	0.26	0.65**
Item 11	3.75	0.87	−0.84	0.62	0.66**
Item 12	3.79	0.98	−0.69	0.03	0.69**
Item 13	3.86	0.72	−0.79	1.37	0.63**
Item 14	3.65	1.00	−0.43	−0.46	0.68**
Item 15	3.56	0.91	−0.41	−0.34	0.61**
Item 16	3.56	1.01	−0.26	−0.63	0.57**
Item 17	3.68	0.87	−0.93	0.71	0.69**
Item 18	3.61	0.93	−0.31	−0.47	0.69**
Item 19	3.48	1.14	−0.49	−0.64	0.57**
Item 20	3.67	0.77	−1.05	0.622	0.60**
Item 21	3.60	1.08	−0.40	−0.76	0.68**
Item 22	3.37	1.11	−0.73	−0.34	0.66**
Item 23	3.97	0.91	−0.65	−0.31	0.77**
Item 24	3.50	1.02	−0.54	−0.47	0.73**
Item 25	3.61	1.05	−0.46	−0.64	0.65**
Item 26	3.76	0.79	−0.76	0.35	0.65**
Item 27	3.73	0.87	−0.52	−0.33	0.65**
Item 28	3.31	0.91	−0.18	−0.35	0.68**
Item 29	3.43	1.03	−0.35	−0.70	0.58**
Item 30	3.64	0.82	−0.82	0.42	0.57**
Item 31	3.82	0.90	−0.46	−0.53	0.67**
Item 32	3.73	0.94	−1.14	0.98	0.66**
Item 33	3.70	0.93	−0.48	−0.59	0.64**
Item 34	3.61	0.83	−0.64	−0.02	0.63**
Item 35	3.72	1.00	−0.33	−0.94	0.68**

*ISC, item-total correlation; **p < 0.01.*

TABLE 2 | Details of multicollinearity analysis.

Variable	Tolerance	VIF
Item 1	0.451	2.216
Item 2	0.414	2.417
Item 3	0.349	2.864
Item 5	0.394	2.538
Item 6	0.391	2.559
Item 7	0.361	2.771
Item 8	0.341	2.931
Item 9	0.357	2.804
Item 10	0.462	2.163
Item 11	0.427	2.342
Item 12	0.416	2.406
Item 13	0.454	2.200
Item 14	0.433	2.310
Item 15	0.490	2.043
Item 16	0.479	2.086
Item 17	0.397	2.520
Item 18	0.390	2.562
Item 19	0.479	2.090
Item 21	0.360	2.777
Item 22	0.415	2.410
Item 23	0.338	2.955
Item 24	0.307	3.258
Item 25	0.451	2.218
Item 26	0.416	2.405
Item 27	0.337	2.966
Item 28	0.436	2.292
Item 29	0.513	1.949
Item 30	0.455	2.199
Item 31	0.418	2.390
Item 33	0.443	2.259
Item 34	0.470	2.126
Item 35	0.385	2.594

Eight researchers (D. Phil. Students from University of Allahabad, India) having expertise in the area of educational psychology, child development, and school psychology were selected for focus group discussion. This group included four male and four female researchers whose age ranged from 24 to 29. For the second focus group discussion eight school teachers working in various schools of the city (Prayagraj, India) were chosen. School teachers' (four male and four female) age ranged from 33 to 42 years and their teaching experience ranged from 5 to 12 years.

Operational Definition of Construct and Its Dimensions

Student-Teacher Relationship

Student-teacher relation refers to the emotional bonding between student and teacher which is shaped by unique cultural values and beliefs. The student-teacher relationship is characterized by the devotion of student toward teacher, trusting the teacher, showing respect, and following instructions of the teacher.

Devotion: Devotion comes from within while students feel real appreciation for the teacher. Devotion is a feeling of unconditional dedication and compassion toward the teacher.

Trust: Trust is a belief on the part of students that teachers can be counted on in difficult situations, and having faith that teacher's actions are directed only for the improvement and success of the student.

Respect: Respect is a feeling of students being grateful toward the teacher that results in a positive emotional bonding between student and teacher.

Obedience: Obedience is the tendency of students to follow instructions given by the teacher. The behavioral components of obedience are following instructions, giving importance to the words of teacher, and putting extra effort to complete the given task.

TABLE 3 | Principal component analysis of scale.

Variable	Factor one	Factor two	Factor three	Factor four	Extracted communality
Item 1	0.709				0.589
Item 2	0.731				0.606
Item 3	0.778				0.686
Item 5	0.775				0.665
Item 6	0.759				0.643
Item 7	0.753				0.671
Item 8	0.735				0.652
Item 9	0.791				0.674
Item 10			0.592		0.553
Item 11			0.663		0.611
Item 12			0.637		0.615
Item 13			0.680		0.587
Item 14			0.589		0.569
Item 15			0.689		0.587
Item 16			0.688		0.560
Item 17			0.658		0.620
Item 18			0.580		0.587
Item 19				0.751	0.660
Item 21				0.682	0.673
Item 22				0.672	0.637
Item 23				0.482	0.638
Item 24				0.671	0.713
Item 25				0.482	0.486
Item 26				0.469	0.572
Item 27		0.790			0.718
Item 28		0.506			0.528
Item 29		0.649			0.505
Item 30		0.654			0.524
Item 31		0.695			0.640
Item 33		0.688			0.608
Item 34		0.539			0.500
Item 35		0.683			0.646
Initial eigenvalue	13.721	2.986	1.594	1.222	
% of variance	17.780	15.759	15.714	11.760	
Cumulative % of variance	17.180	33.538	49.252	61.012	

Extraction Method, Principal component; Rotation Method, Varimax.

TABLE 4 | Reliability and validity of scale and correlation among dimensions.

S.N.	Dimension	CR	AVE	Devotion	Trust	Respect	Obedience
1	Devotion	0.91	0.59	***0.76***			
2	Trust	0.92	0.61	0.48**	***0.78***		
3	Respect	0.91	0.60	0.55**	0.53**	***0.77***	
4	Obedience	0.93	0.62	0.43**	0.47**	0.42**	***0.78***

*Highlighted values are square root of AVE of each dimension. Here ** means significant at 0.01 level.*

Generation of Item Pool

Item pool was prepared with reference to the concerned construct and its dimensions. Few negative items were included in the item pool. Edward's (1967) criterion was followed in the construction of items. Then item pool of each dimension was discussed with a group of researchers and teachers. Items which were found not suitable for particular dimension got modified or rejected. After completion of this exercise a scale of 35 items was finalized, which comprised four dimensions and each dimension having nine items, except the respect dimension which had eight items.

Preparation of the Questionnaire

A scale comprising of 35 items was prepared along with the consent form. Consent form included aim and short introduction of the study, instructions to fill the scale, and agreement of confidentiality. A demographic information form was attached to the scale. The participants were requested to choose a response that best represented their perception about each statement, on a five-point Likert-scale (from 1 = *strongly disagree* to 5 = *strongly agree*). The scale was finalized, which contained consent form and demographic details (a complete set of scale in given in **Supplementary Appendix A**).

Participants

Participants were selected from various departments of the University of Allahabad (Uttar Pradesh, India). Students from under-graduate and post-graduate courses were chosen for the study. Out of 500 students who were approached to fill the questionnaire, only 468 (male = 192, female = 276) participants completed the scale. Participants' age ranged from 17 to 26 years (Mean = 20.10, SD = 1.63).

Procedure

Permission for data collection was obtained from the Departmental Ethics Review Committee, Department of Psychology, University of Allahabad (India). Participants were approached and briefly informed about the purpose of the study and instructions were given to fill the questionnaire. After completion of the questionnaire participants were thanked for their valuable time and contribution in the study.

Results

Item Analysis

Item analysis is a set of procedures to investigate the distribution and normality of the data set. Mean, S.D., skewness, and kurtosis were used to examine the distribution of scores of every item. Items were accepted on the basis of fixed criteria on these distributional properties for mean (2–4), S.D. (0.7–1.3), skewness (+1 to −1), and kurtosis (+1 to −1). The item total correlation was used to check consistency of items with aggregate score. All the items were found appropriate on each criterion, except skewness. On the basis of skewness three items (item 4, item 20, item 32) were excluded; these items had a value of skewness more than +1. Details of item analysis are provided in **Table 1**.

Detecting Multivariate Outliers

After performing item analysis, multivariate outliers were examined. Cases that had Mahalanobis value more than chi-square value at the level of alpha 0.001 with the degree of freedom at 35 were removed. Six cases were found violating the criteria, so these cases were not included in further data analysis.

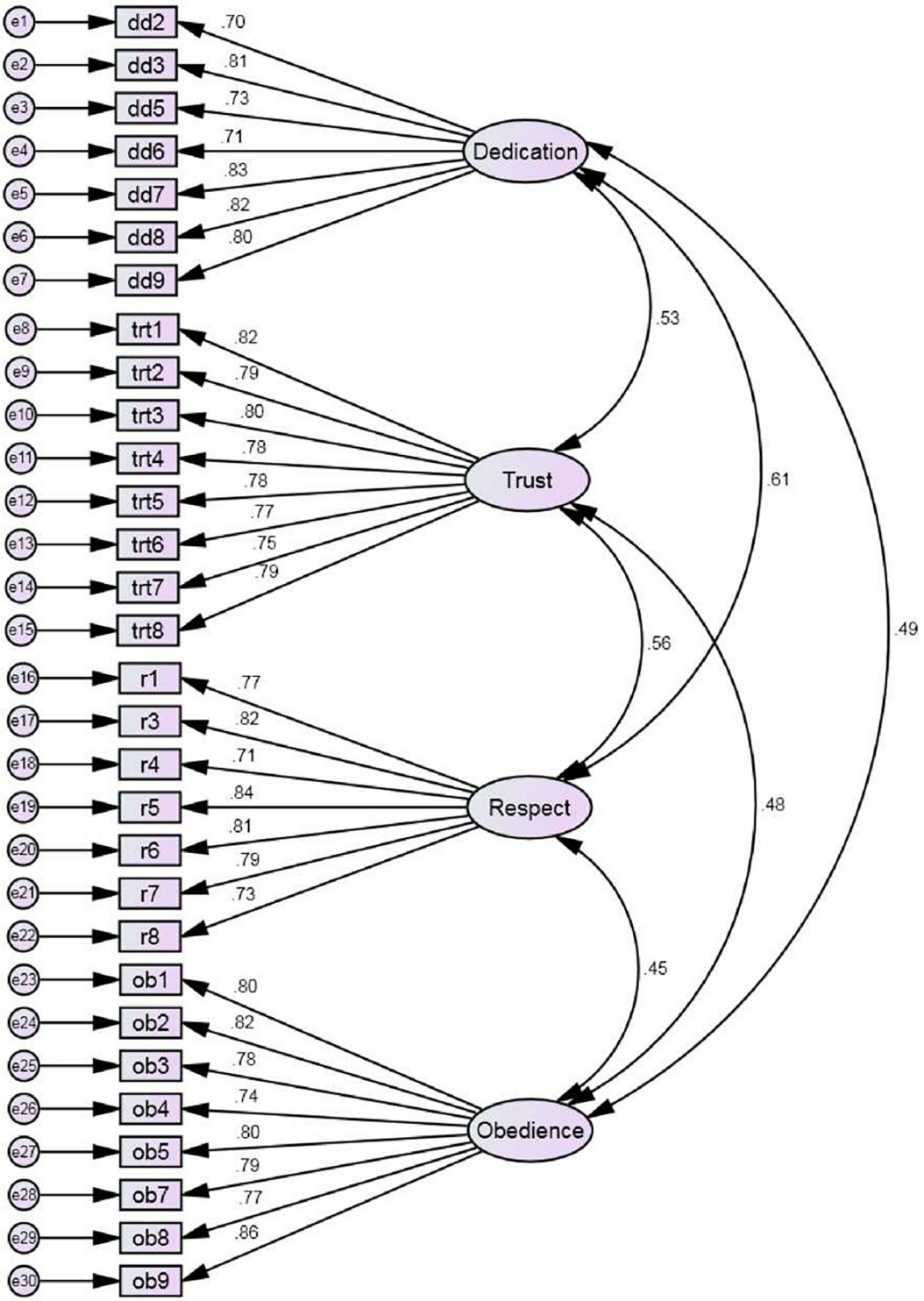

FIGURE 1 | Four factor measurement model of scale.

Detecting Multicollinearity

To examine multicollinearity, analysis was done which showed no multicollinearity issue, therefore each item was included in principal component analysis. Details of multicollinearity analysis are given in **Table 2**.

Principal Component Analysis

Items which had factor loading coefficient less than 0.40 were suppressed. PCA resulted in four factor model having eigenvalue 1.22.

Details of PCA with four factor model are exhibited in **Table 3**.

TABLE 5 | Presents the model fit statistics/indices of proposed model.

Model	Sample	Chi-square	df	CMIN/df	GFI	CFI	RMSEA	90% CI
A	192	607**	399	1.523	0.804	0.938	0.057	0.04, 0.06

*CMIN/df, a ratio of chi-square divided by the degrees of freedom; GFI, adjusted goodness-of-fit index; CFI, comparative fit index; RMSEA, root-mean-square error of approximation; 90% CI, confidence interval; **$p < 0.01$.*

STUDY TWO

The second study was planned to validate the four factor model of student-teacher relationship derived from study one. Confirmatory factor analysis was applied to establish the structural model, reliability, and validity of the scale of student teacher relationship in the Indian context.

Methods

Participants

Students from under-graduate and post-graduate courses from University of Allahabad (Uttar Pradesh, India) were approached for this study. Out of 250 questionnaires distributed, only 192 (male = 88, female = 104) participants completed the questionnaire. The participants age ranged from 17 to 25 years (Mean = 19.88, SD = 1.55).

Instrument

A self-developed scale on student-teacher relationship.

Procedure

Participants were approached and briefly informed about the purpose of study and instructions were given to complete the questionnaire. After obtaining responses, participants were thanked for their valuable time and contribution in the study.

Confirmatory Factor Analysis

Building on four factor model of student-teacher relationship, confirmatory factor analysis (CFA) was employed.

Results

Result of CFA showed that four factor model appropriately explained student-teacher relationship. Appropriateness of four factor model was established using various model fit indices, namely Chi-square statistics; root mean-square error of approximation (RMSEA); and goodness of fit index (GFI). Two items (item 1 and item 18) were excluded from further analysis as they had factor loading below 0.70.

The Chi-square value was found significant. Further GFI value was close to 0.9 which indicated good model fit. RMSEA was also found close to 0.05 level, which indicated good fit nature of four factor model. Also, 90% CI values further established that four factor model explained the construct comprehensively.

Validation of Measurement Model

Convergent Validity

Convergent validity can be measured through Average Variance Extracted and the outer factor loading of each item intended to measure a specific construct. Fornell and Larcker (1981) proposed following criteria to establish convergent validity. Outer loading of each measurement indicator should be greater than 0.70 and AVE score of each construct must exceed 0.50. The result of this study revealed that AVE score of each dimension was found more than 0.50 (**Table 4**) and outer factor loading of each item exceeded 0.70 (**Figure 1**). Thus, it can be concluded that scale has considerable convergent validity.

Discriminant Validity

Discriminant validity specifies that each dimension of the construct is notably different from other dimensions. Having discriminant validity means square root of AVE score of each dimension should be greater than the correlations among the dimensions of scale. Discriminant validity analysis (**Table 4**) showed that scale has adequate discriminant validity.

Composite Reliability

Table 4 represents the reliability analysis of scale which showed high reliability of this scale.

DISCUSSION

There is a growing concern over quality of higher education across the globe. The status of the education system has somewhat limited its focus on materialistic learning. There is a constant debate among the stakeholders about the direction and future of higher education. However, there seems a consensus among educationists and researchers about the necessity to promote value-based education system. Hamre and Pianta (2001) argued that student-teacher relationship plays an important role in the success of the higher education system. They explained that a positive relationship made an environment of trust where students looked forward to their teachers in difficult situations. They further argued that strong student-teacher relationship also helped students to make decent adjustments in other social settings. Moreover, developing countries like India have recognized the need to revitalize their education system to ensure greater economic development (Altbach and Selvaratnam, 1989).

The last few decades have witnessed a growing interest in conceptualizing and measuring the psychological aspects of learning in the classroom, especially in terms of student-teacher relationship (Fraser, 1998; Wubbels and Brekelmans, 1998). Plenty of studies have explained the importance of the student-teacher relationship for both students and teachers. Ben-Chaim and Zoller (2001) found that teachers who have good interpersonal relationship with students experience better job satisfaction. den Brok et al. (2004) found that good student-teacher relationship was associated with high motivation and academic success of students. Brekelmans et al. (2000) argued that strong student-teacher relationship laid the foundation for better student engagement in learning activities.

Few studies have been conducted on student-teacher relationship in the Indian context. The current study made an attempt to address this shortcoming and construct a valid and reliable measure for examining the student-teacher relationship specifically in an Indian context. Data was collected and various

statistical methods were employed to obtain factor structure of the scale, and it was further established through confirmatory factor analysis (**Table 5**). As a result, a scale consisting of 30 items (having four factor structure) intended to measure student-teacher relationship in the Indian context was finalized.

CONCLUSION

This study was designed to develop a measure on student-teacher relationship in the Indian context. A culturally appropriate scale dedicated to Indian context was developed to measure student-teacher relationship. Scale construction was completed while maintaining all the necessary steps and precautions to secure high reliability and validity of the scale. Results of study one and study two established the reliability and validity of the scale for student-teacher relationship in the Indian context. The present study contributed to the knowledge base in the field of education by developing a measure of student-teacher relationship in the Indian context. The findings of this study may be used while formulating educational policies for better functioning of educational institutes. This study will also be helpful in designing culturally appropriate strategies for the development of Indian education system. Further, this scale can also be used by researchers and educationists working in the area.

LIMITATIONS AND FUTURE RECOMMENDATIONS

The sample of the present study consisted of graduate and undergraduate university students. A more diversified sample set consisting of school level students may be studied to obtain further insight about the construct. Future research may include different educational settings for investigating student teacher relationship, as the functioning of institutes differs based on their nature and objectives. A comparative study across various educational settings (religious educational institutes/schools, government owned institutes/schools, and private institutes/schools) may be planned to understand the structure of student teacher relationship across different institutes.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

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

AUTHOR CONTRIBUTIONS

SY and NK designed the study and initiated the data collection process. AY and Naveen drafted the manuscript and initiated the data computation process. TT and TM helped in finalizing the manuscript draft and data computation process. All authors contributed to the article and approved the submitted version.

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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.2022.739704/full#supplementary-material

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Student–Teacher Relationship: Its Measurement and Effect on Students' Trait, Performance, and Wellbeing in Private College

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Student–teacher relationships (STRs) have been examined by many studies. However, an omission still exists, the existing scales are not appropriate for studying STRs in private colleges because of the special character of these schools. This paper presents the development and validation of Private-College Student–Teacher Relationship Scale (PCSTRS), the first instrument to evaluate student–teacher relationships (STRs) in private colleges. The PCSTRS has six dimensions: trust, interaction, intimacy, care, approval, and comfort. In our main study, the validity and reliability of the six-factor PCSTRS model were demonstrated. The result of internal consistency coefficient indicated the high reliability of the scale, and the result of concurrent validity indicated the significant correlational relationships between the PCSTRS with other STR measures. In supplementary study, the PCSTRS was administered to 360 participants to confirm the applicability of PCSTRS and investigate the relation of STRs and students' traits, performance, and wellbeing, as well as the differences between the private school and the public school in this relation; the analyses revealed that there were significant differences in trust, intimacy, and care between private and public colleges; positive correlations were found between STRs and self-esteem, self-efficacy, academic performance, extracurricular activity involvement, and subjective wellbeing. Present research firstly develops the PCSTRS, examined the reliability and validity, and provides the proposed nomological network among related constructs.

Keywords: private college, student–teacher relationship, validity and reliability testing, self-esteem, self-efficacy

INTRODUCTION

Education is the foundation of a country and has great significance to individuals and society. As an important research topic in the fields of pedagogy and psychology, STR not only reflects the life style of teachers and students, but also is a barometer of the whole education style. In the educational situations, STR plays a critical role for student outcomes, with the benefits

for academic achievement, positive affect, motivation, and traits (Eccles et al., 1993, p. 342; Gehlbach et al., 2016; Lavy and Naama-Ghanayim, 2020).

STR refers to "coordinated systems of transacting components, such that both teacher and student behaviors and characteristics inform these relationships" (Pianta, 1999, 2006, 2016; Ansari et al., 2020, p. 2). Arguing that STRs are more than just interactions, (Brinkworth et al. 2017, p. 2) defined them as "teachers' and students' aggregated and ongoing perceptions of one another, affect toward each other, and interactions over time; these perceptions are stored in memory and guide future interactions with the other party" (p. 2).

Although many studies have examined STRs, an omission has been found in terms of the suitability of measurements for different student groups. Given the characters of private colleges and universities, the existing scale is not appropriate for studying STRs in the context of private colleges (Yee and Fruchter, 1971; Pianta and Nimetz, 1991; Faith et al., 2018; Aboagye et al., 2019). Private college education is becoming increasingly common worldwide. For example, over six million Chinese students are pursuing full-time study (Liu, 2018). It is necessary, therefore, to develop a scale to accurately measure STRs in private colleges.

DIFFERENCES BETWEEN PRIVATE AND PUBLIC EDUCATION

The differences between private and public education have been widely studied in recent years (Liu, 2018; He, 2019; Connolly and Hughes-Stanton, 2020). In 2016, there were 417 private colleges in China, accounting for more than 30% of the country's undergraduate colleges. Whereas private education had started out as a useful supplement to public higher education, it has now become an important part of higher education in China. The government has strongly supported private education, aiming to popularize higher education and improve the human resources, especially skilled manpower, required by the job market. In light of this increased focus on private education, the situation of private colleges warrants further research attention (CHSI, 2017; Liu, 2018; He, 2019; Wu and Ji, 2020).

The first main difference between public and private colleges concerns the governance structure. Private schools are supervised by a board of directors and aim to generate profit (He, 2019). Teaching staff at private schools tend to have the following characteristics: (1) Imbalanced faculty structure; in private colleges, retired teachers and young teachers account for a large proportion. The former group may tend to have more traditional educational concepts, and there may be a generational ideological gap with the students. The latter, meanwhile, are energetic but have less professional experience, potentially resulting in a shortage of experienced, competent, professional teachers (Nie, 2019). (2) Part-time teachers are an integral part of the workforce. This type of temporary employment relationship can make it difficult for these teachers to fully devote themselves to maintaining good relationships with students (Nie, 2019). (3) The stability of the teaching staff is poor. As a result of factors related to capital investment and management level, there are high turnover rates among teachers, which poses obstacles to building stable STRs (Nie, 2019).

Furthermore, with increased private college enrollment, the source of private college students tends to be complex (Li, 2019). In recent years, private college students have shown the following characteristics: distinct personality, unclear learning goals, keenness to participate in club activities, high emphasis on self-value, pursuit of material enjoyment, strong rebellious psychology, and low dependence on teachers (Nie, 2019). Additionally, due to the expensive tuition, private schools tend to attract students from more affluent socioeconomic backgrounds, who may tend to view teachers as simply providers of education (Muzika et al., 2017).

In general, the organizational structure of private schools may lead to higher job insecurity and irresponsibility among teachers. Moreover, the particularities of enrollment can lead to low dependence of students on teachers (Muzika et al., 2017; Nie, 2019). Consequently, STRs in private colleges can be characterized by little communication, utilitarianism, and emotional indifference (Liu, 2018; Nie, 2019).

Due to the differences of private and public education, it is inappropriate to measure students in private colleges with the scale specially used for measuring students in public colleges. In addition, because of the rapidly increasing number of students and some outstanding problems in private colleges, it is necessary to study STRs there, thus we are supposed to develop a tool that is more relevant to the private colleges students from their perspective.

In light of the above, the present research aims to develop and validate the Private-College Student–Teacher Relationship Scale (PCSTRS). In main study 1, we develop a preliminary framework for STRs in private colleges through semi-structured interviews. In main study 2, our proposed six-factor model of STRs in private colleges is investigated through exploratory and confirmatory factor analyses. Furthermore, concurrent validity was examined by correlating the PCSTRS with other STR measures. In supplementary study, the PCSTRS is used to investigate STRs in private colleges and study the relationship between STRs and students' self-esteem, self-efficacy, performance, and wellbeing.

MAIN STUDY: DEVELOPMENT OF THE PRIVATE-COLLEGE STUDENT–TEACHER RELATIONSHIP SCALE

Main Study 1: Semi-Structured Interviews

Method

Participants

The convenience sampling method was used. We released the recruitment information of subjects on the social platform and collected 20 participants who volunteered to participate and signed the informed consent. Twenty participants from a private college in Southeastern China participated in face-to-face semi-structured interviews, including 9 males and 11 females. Data were collected from November to December 2019.

Procedures

In the semi-structured interviews, students were asked to recall their experiences with their teachers and describe the following as thoroughly as possible: current STRs, the main factors affecting STRs, their ideal STRs, and whether there were problems with current STRs. The semi-structured interview texts were coded by four psychology graduate students according to grounded theory and classified into different dimensions. In the coding process, four psychology graduate students ranked the importance of various aspects of the STRs according to the number of mentions in interviews.

Results

The results of the semi-structured interviews indicated that trust (character, emotion, and ability), initiative, communication, concern, and satisfaction were the aspects that should be included in STRs from the student's perspective. 112 questionnaire items were compiled based on these five aspects.

Main Study 2: Development of the PCSTRS

Method

Participants

The PCSTRS was tested using convenient sampling with the undergraduates at a private college in Southeastern China. Questionnaires were collected through an online platform which provides functions equivalent to Amazon Mechanical Turk and distributed through social platform. Participation in the study was voluntary for students and all participants provided informed consent. A total of 523 valid questionnaires were obtained (194 males and 329 females), including 90 freshmen (17.2%), 191 sophomores (36.5%), 155 juniors (29.6%), and 87 seniors (16.7%). Data were collected from November to December 2019.

Measures

Based on literature review and the semi-structured interview results, the proposed PCSTRS was graded at five levels. The higher the score, the better the STRs. To avoid fixed answering patterns, some items were graded in reverse.

Results

Item Analysis

Item analysis was carried out on the data. The statistical results of item discrimination showed that all items obtained significant levels ($p < 0.01$). Pearson's correlation was used to calculate the correlation between the scores of each item and the total score. The correlation coefficients were between 0.42 and 0.76.

Exploratory Factor Analysis

The 523 observations were randomly divided into two parts: one for exploratory factor analysis (EFA; $n = 262$) and one for confirmatory factor analysis (CFA; $n = 261$). SPSS 20.0 was used for EFA. The KMO value was found to be 0.93. Bartlett's test of sphericity showed that $\chi^2 = 4445.24$, $p < 0.001$, indicating that factor analysis was suitable (Floyd et al., 1995). **Figure 1** shows the scree plot. First, principal component analysis was performed. To get the model, the characteristic root of the factor needed to be larger than 1, and the percentage of factor interpretation variance needed to be higher than 3%; further, we considered the steep order test of the scree plot and the total interpretation variance ratio. According to those indicators, we got an 18-factor model, but this model was not ideal because it was loose. A stable structure was not explored. Second, the gradual elimination method was used to explore the structure, and the items and factors were selected based on the following criteria: (1) one item cannot have a factor load on more than two factors, (2) the item's factor load should exceed 0.4, (3) each factor cannot be less than three items, and (4) items that have very different meanings from other items of the same factor should be excluded.

After each item was removed, factor analysis was performed again using maximum orthogonal rotation. The results indicated that the six factors of our questionnaire had a clear structure and contained 29 items, which could explain 66.5% of the total variation. **Table 1** shows the EFA results.

Based on the factor analysis results and the implied meanings of items with high load values, the six factors were labeled as follows: F1 as trust, F2 as interaction, F3 as intimacy, F4 as care, F5 as approval, and F6 as comfort.

CFA

To verify the appropriateness of the six-factor model, 261 observations were analyzed using Amos 20.0 for CFA. Based on the results, six confirmatory fitting indexes of the six-factor model were obtained. The model was revised to obtain the final six-factor model for private college STRs. **Figure 2** shows the final model.

The CFA fitting indexes show that χ^2/df was lower than 5; NFI was close to 0.9; CFI, IFI, and TLI were higher than 0.9; and RMSEA was lower than 0.08. All fitting indexes were in accordance with the standard (Zhao et al., 2010; Filiz and Kaya, 2013), indicating that the model has good construction validity.

Reliability

The internal consistency (Cronbach's alpha) of the questionnaire was appropriate: 0.94 for the total and 0.80–0.96 for the six factors, indicating good internal consistency (Kristine et al., 2016).

Validity

The correlation method was used to estimate the validity of our questionnaire. The selected criterion was the revised Student–Teacher Relationship Scale (STRS) by Pianta and Nimetz (1991) and Qu et al. (2004). With the STRS score as the calibration standard, bivariate Pearson's product–moment correlation analysis was performed on our scale. The results showed that the developed scale was significantly correlated with the STRS ($r = 0.82$, $p < 0.001$). Moreover, the six factors of trust, interaction, intimacy, care, approval, and comfort were significantly correlated with the STRS, with correlation coefficients from 0.19 to 0.70. This shows that the criterion-related validity of our questionnaire was appropriate. According to CFA results, χ^2/df was lower than 5; NFI was close to 0.9; CFI, IFI, and

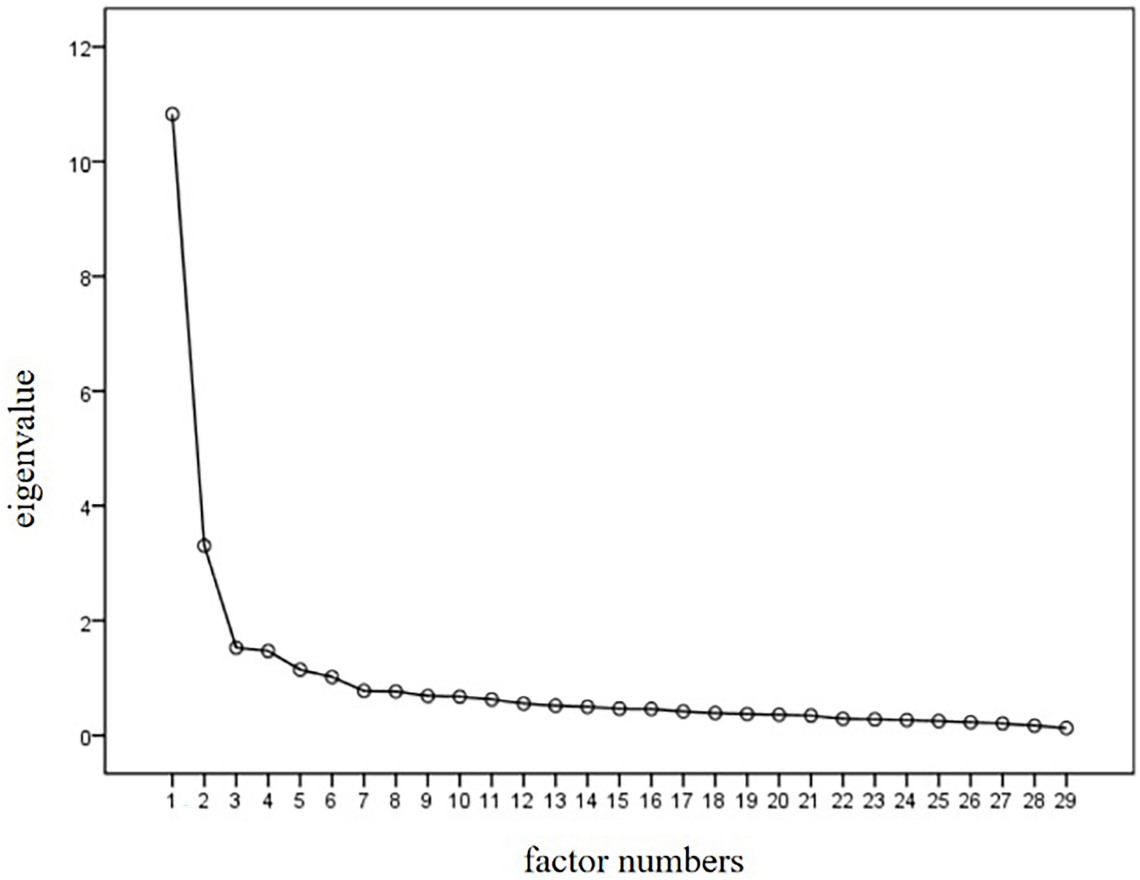

FIGURE 1 | The scree plot of CFA.

TLI were higher than 0.9; and RMSEA was lower than 0.08, indicating that the model has good construction validity.

Then, we retested our 29-item questionnaire using a broader range of participants from the same private school through convenience sampling, including 2953individuals (920 males, 1,539 females), and including 746 freshmen (30.3%), 614 sophomores (25%), 626 juniors (25.5%), and 473 seniors (19.2%). Cronbach's alpha was found to be 0.94. The results showed significant differences between males and females. Specifically, males had significantly higher STR scores (95.74 ± 17.69) than females (93.56 ± 16.96; $p < 0.05$, effect size of Cohen $d = 0.13$); they also scored higher in the dimensions of intimacy, care, comfort, and interaction. There were also significant differences in STRs by grade level. The STRs of junior students (97.70 ± 19.61) were significantly higher than those of freshmen (93.40 ± 16.95), sophomores (93.07 ± 15.92), and seniors (93.23 ± 15.52; $p < 0.05$). No significant differences were found between freshmen, sophomores, and seniors.

Discussion

This study developed the PCSTRS based on semi-structured interview results. Through EFA, we found that the items of questionnaire can be loaded on six dimensions as we theorized (i.e., trust, identity, intimacy, care, interaction, and comfort). The result showed that the scale had good reliability and validity. Using large-sample measurement, we found there were gender and grade differences in STRs in private colleges.

SUPPLEMENTARY STUDY: NOMOLOGICAL NETWORK OF STRs

This study had two major purposes. The first was to confirm the applicability of the developed scale to the private college student group. Therefore, we attempted to apply the scale developed in main study in a private school and public school to examine the differences in STRs between them. The second purpose was to investigate the relation of STRs and students' traits, performance, and wellbeing, as well as the differences between the private school and the public school in this relation.

Given the above-mentioned differences of public and private schools, we posit:

> *Hypothesis 1:* There are differences in STRs between private and public schools.

TABLE 1 | The results of factor analysis ($n = 262$, 29 items).

Items	F1	F2	F3	F4	F5	F6
I have confidence in the communication skills of most teachers	0.81					
I have confidence in the expressiveness of most teachers	0.81					
I believe that most of teachers have rich social experience	0.80					
I have confidence in the teaching ability of most teachers	0.80					
I believe that most of teachers have good judgment	0.79					
My relationship with my teachers is friendly and equal	0.79					
I have confidence in the organizational ability of most teachers	0.77					
I have confidence in the guidance of most teachers	0.77					
I believe that most teachers have a wealth of teaching knowledge	0.77					
I did not interact with my teachers in class		0.84				
My teachers seldom pay attention to me in class		0.82				
I do not have much contact with teachers outside class		0.69				
I have little contact with my teachers except when necessary		0.64				
We will invite our teachers to go out and play with us			0.73			
Teachers and we have a variety of daily communication activities (such as eating and traveling), closer our relationship			0.71			
I always want to be with my teachers, not be apart			0.64			
I will keep in touch with my teachers after graduation			0.61			
My teachers cared for me and helped me to relieve the pressure in my life or in my mind			0.43			
I know the character of most of my teachers				0.80		
When I was ill, my teachers will pay attention to me				0.71		
Our teachers often give us useful instructions both in emotional and psychological aspects				0.69		
I feel very close to my teachers				0.62		
It is troublesome to make an appointment with my teachers					0.74	
Teachers come to us only when they have something needed us to do					0.67	
In order to maintain their image in the eyes of students, teachers sometimes tell lies					0.67	
Our teachers seldom have a heart-to-heart talk with us					0.65	
I never feel constrained in my relationship with my teachers						0.71
When my teachers asked me questions in class, I was happy						0.70
I like to share my experience with my teachers						0.54
Explanatory variance (total 66.5%)	37.33	11.40	5.27	5.07	3.95	3.50

Effect of STRs on Students' Self-Esteem and Self-Efficacy

Self-esteem and self-efficacy are two major self-evaluative traits that have been studied widely in social psychology (Gecas and Viktor., 1989; Rosenberg et al., 1995; Burger et al., 2020) and educational psychology (Pandya, 2020). Self-esteem is considered as a core concept of individuals' feelings about themselves, reflecting their evaluations and perceptions of themselves (Rosenberg et al., 1995). People with high self-esteem like themselves and believe they have value and importance for others (Orth and Ulrich., 2017). And, self-efficacy is a judgment of one's capacity to achieve goals in the face of difficulty (Wang et al., 2001; Bandura et al., 2005). Students are more likely to achieve their goals when they believe they have the capacity to enact the behaviors needed to attain them.

Previous studies have revealed the positive effect of STRs on students' self-evaluative traits (Lavy and Naama-Ghanayim, 2020). Interaction, care, sensitivity, and emotional responsiveness on the part of teachers support students' positive self-evaluations, helping students feel more valuable, confident, and thus more likely to achieve goals (Carroll et al., 2009; Lavy and Naama-Ghanayim, 2020). We propose, therefore, that STRs will have a positive relationship with students' self-esteem and self-efficacy:

Hypothesis 2: A higher level of STRs will significantly predict a higher level of (a) self-esteem and (b) self-efficacy.

Effect of STRs on Students' Performance

Previous studies have shown that students with better STRs tend to do better in school, such as higher academic achievement and higher participation in social activities (Carroll et al., 2009; Gehlbach et al., 2016; Ansari et al., 2020; Cui et al., 2020). Many theories have been used to explain this association. According to social motivation theory, students with high social support from teachers will build strong motivational beliefs that will promote active learning engagement and effort (Furrer and Skinner, 2003; Cui et al., 2020, p. 2). Self-determination theory links STRs, motivational beliefs, and learning behaviors, suggesting that positive relationships serve as external sources of motivational adjustment that contribute to active learning behaviors (Deci and Ryan, 2008; Ryan, 2012; Cui et al., 2020, p. 2). Furthermore, students' perceptions of teachers in relational dimensions, such as fairness and high expectations, predicted students' goals, academic motivation, and ultimately academic performance (Wentzel, 2010; Gehlbach et al., 2016).

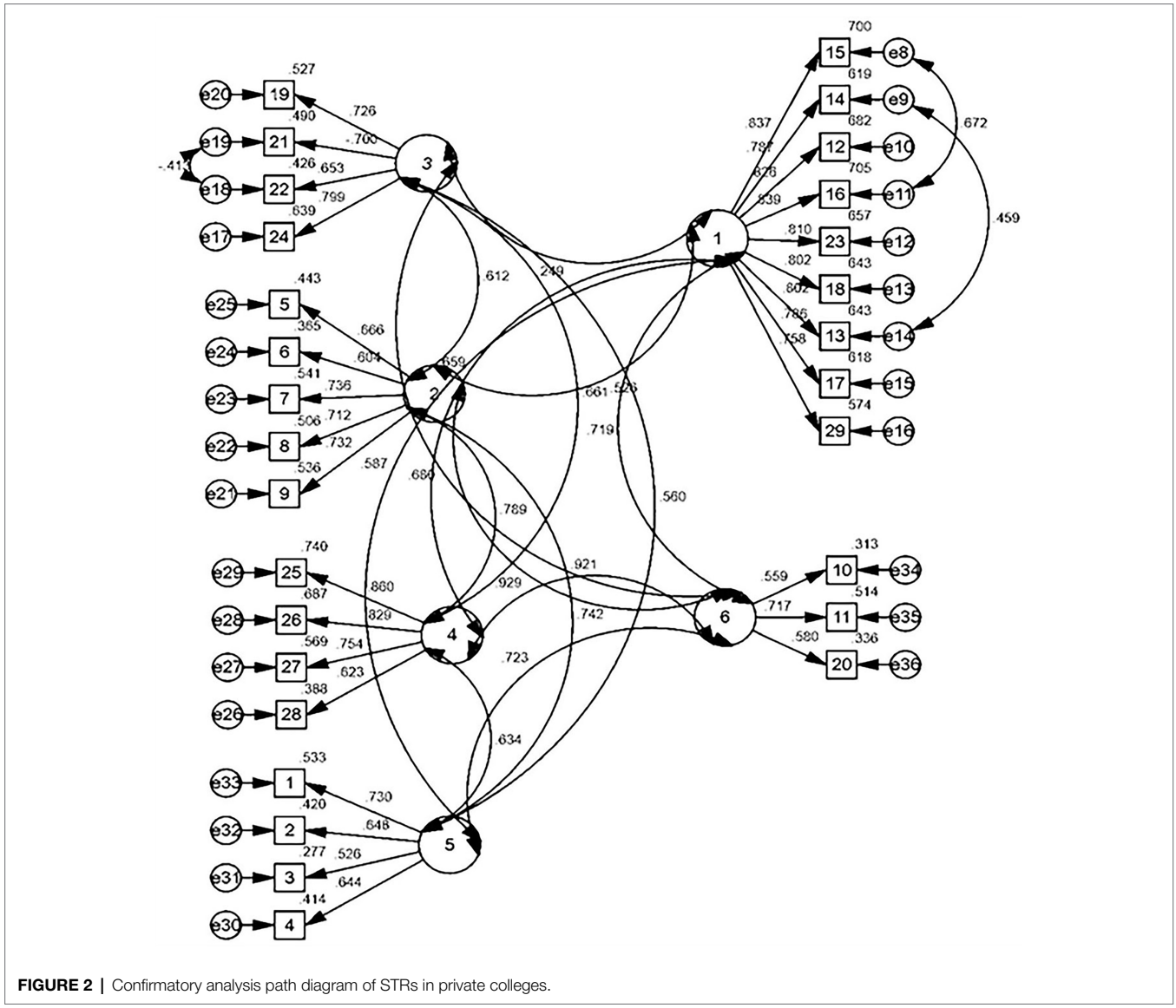

FIGURE 2 | Confirmatory analysis path diagram of STRs in private colleges.

In addition to academic motivation, interaction and intimacy between students and teachers can also affect students' extracurricular performance (Hess, 2018). Affirmation, support, and organized interaction provided by teachers—also known as teacher interactional quality—have beneficial effects on students' extracurricular participation (Roorda et al., 2011; Hess, 2018). Studies have found that an open classroom climate can nurture positive interpersonal STRs and then further strengthen students' willingness to cooperate, take responsibility, and share (Roorda et al., 2011; Manganelli et al., 2015). Thus, we posit:

> *Hypothesis 3:* A higher level of STRs will significantly predict a higher level of (a) academic performance and (b) extracurricular activity involvement.

Effect of STRs on Students' Wellbeing

Research in recent decades has consistently identified STRs as a key contributor to students' wellbeing (Koster et al., 2005; Poulou, 2020). Wellbeing is defined in different ways, typically including reference to individuals' happiness, life satisfaction, and positive affect (Campbell et al., 1976; Diener, 1984).

Researchers have suggested that care from others is a critical indicator of wellbeing (Noddings, 1984; Lavy and Naama-Ghanayim, 2020). Empirical studies have provided supporting evidence, showing that positive and stable interpersonal relationships are also important predictors of wellbeing (Seligman, 2011; Lavy and Naama-Ghanayim, 2020). Therefore, students with good, stable STRs are likely to feel more satisfied and happier, and their perception of being cared for mediates this relationship (Lavy and Naama-Ghanayim, 2020).

Apart from caring, the way in which teachers interact with students can affect students' emotional functioning and adaptability, which subsequently influence wellbeing (Mainhard et al., 2017). The more teachers interact with students, and

the better the interaction, the more students are willing to talk to teachers to deal with their negative emotions and overcome difficulties, which are conducive to happiness. Thus, we posit:

> *Hypothesis 4:* A higher level of STRs will significantly predict a higher level of subjective wellbeing.

As mentioned above, there are differences in STRs between private universities and public universities. Compare to public school, the particularities of enrollment and training mode lead to the different student traits, performance, positive affect in private schools. Given the difference of STRs and student outcomes, we posit:

> *Hypothesis 5:* There are differences in the relation of STRs and students' traits, performance, and wellbeing between private and public schools.

Method

Participants

The convenience sampling method was used. Questionnaires were collected through an online platform which provides functions equivalent to Amazon Mechanical Turk and distributed through social platform. Participation in the study was voluntary for students and all participants provided informed consent. The participants in supplementary study included 106 individuals (46 males, 60 females) from public colleges and 254 individuals (107 males, 147 females) from private colleges. Data were collected in November 2020.

Measures

Student–Teacher Relationships

This study used the PCSTRS, using five-point Likert scales (1 = strongly disagree to 5 = strongly agree). The students were asked to think of a teacher and answer questions. It is a 29-item questionnaire encompassing six dimensions: trust, interaction, intimacy, care, approval, and comfort. Cronbach's alpha was 0.91.

Self-Esteem

Self-esteem was assessed using Rosenberg et al.'s (1995) self-esteem scale (SES). It is a widely used 10-item self-report measure of self-esteem, rated from 1 = strongly disagree to 4 = strongly agree, with five reverse-scored items (items 3, 5, 8, 9, and 10). In this scale, a higher score indicates higher self-esteem. For the present sample, Cronbach's alpha was 0.77.

Self-Efficacy

Self-efficacy was measured using a revised version of the general self-efficacy scale (GESE; Zhang and Schwarzer, 1995). It is a self-report questionnaire with 10 items using four-point Likert scales (from 1 = "not at all true" to 4 = "definitely true"). In this study, Cronbach's alpha was 0.93.

Performance

Student performance included academic performance and extracurricular activity involvement. The former was assessed by three items: "I have done well in this course"; "In this course, I can finish my homework on time"; and "My overall performance in this course is very good" ($\alpha = 0.94$). The students were asked to think of the teacher mentioned above and answer the questions based on the lessons he/she taught. The latter was assessed by inviting students to rate their participation in extracurricular activities (e.g., club activity) in the previous semester from 1 (completely inactive) to 7 (completely active).

Subjective Wellbeing

Students' subjective wellbeing was measured using the subjective wellbeing index scale (WBIS) by Campbell et al. (1976) and Li and Zhao (2000). This is a self-report questionnaire using seven-point Likert scales. It is made up of two parts: index of general affect (eight items) and index of life satisfaction (one item). In this study, Cronbach's alpha was 0.84.

Results

In an attempt to empirically assess the potential problematic nature of common method variance in this research, Harman one-factor tests were conducted in our Study. The results suggested that common method variance does not appear to be a serious problem in this research, the variance explained by the first factor was 23.26%, less than 40%.

There were significant differences in the dimensions of trust ($t = 2.87$, $p < 0.001$, effect size of Cohen $d = 0.33$), intimacy ($t = -2.02$, $p = 0.04$, effect size of Cohen $d = 0.24$), and care ($t = -2.54$, $p = 0.01$, effect size of Cohen $d = 0.29$). Students' trust in teachers was significantly higher in the public college (35.24 ± 6.97) than in the private college (32.95 ± 6.85). Meanwhile, intimacy and care were significantly lower in the public college (12.09 ± 4.90; 11.41 ± 3.66) than in the private one (13.25 ± 4.97; 12.47 ± 3.61), consistent with Hypothesis 1.

Table 2 shows the descriptive statistics and correlation coefficients. **Table 3** shows the results of the regression analyses. After controlling for gender, age, and major, a higher level of STRs significantly predicted a higher level of self-esteem ($\beta = 0.17$, $p < 0.01$) and self-efficacy ($\beta = 0.22$, $p < 0.001$), consistent with Hypothesis 2. A higher level of STRs also significantly predicted a higher level of academic performance ($\beta = 0.34$, $p < 0.001$) and extracurricular activity involvement ($\beta = 0.25$, $p < 0.001$), consistent with Hypothesis 3. Lastly, a higher level of STRs significantly predicted a higher level of subjective wellbeing ($\beta = 0.12$, $p < 0.05$), consistent with Hypothesis 4. And the R^2 of STRs on performance was much higher than that of STRs on traits and subjective wellbeing.

When examining school type factor (private or public) as moderators of the relation between STRs and self-esteem, self-efficacy, academic performance, extracurricular activity involvement, subjective wellbeing, the interaction term between

TABLE 2 | Means, standard deviations, and correlations among variables.

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Trust	33.62	6.96	1										
2. Interaction	11.28	3.36	−0.07	1									
3. Intimacy	12.91	4.97	0.40***	0.03	1								
4. Care	12.16	3.65	0.47***	0.01	0.71***	1							
5. Approval	14.08	4.04	0.09	0.43***	−0.33***	−0.24***	1						
6. Comfort	9.28	2.66	0.60***	0.07	0.78***	0.71***	−0.16**	1					
7 Total	93.33	15.72	0.79***	0.32***	0.71***	0.73***	0.20***	0.82***	1				
8. Self-esteem	27.99	4.00	0.26***	0.13*	−0.09	−0.09	0.30***	0.03	0.17**	1			
9. Self-efficacy	27.56	5.41	0.19***	−0.11*	0.30***	0.27***	−0.19***	0.32***	0.23***	0.34***	1		
10. Academic	16.80	3.35	0.41***	−0.04	0.21***	0.21***	0.01	0.29***	0.34***	0.30***	0.29***	1	
11. Activity	5.19	1.60	0.11*	0.07	0.30***	0.27***	−0.13*	0.33***	0.24***	0.01	0.21***	0.26***	1
12. Wellbeing	8.74	2.53	0.16**	0.09	−0.02	0.01	0.17**	0.03	0.13*	0.29***	0.05	0.19***	0.04

n = 360; academic = academic performance; activity = extracurricular activity involvement; wellbeing = subjective wellbeing. *p < 0.05; **p < 0.01; and ***p < 0.001.

TABLE 3 | Results of regression analysis on trait.

	Trait							
	Self-esteem		Self-esteem		Self-efficacy		Self-efficacy	
	β	*SE*	*β*	*SE*	*β*	*SE*	*β*	*SE*
Gender	0.13*	0.05	0.13*	0.05	−0.08	0.05	−0.06	0.05
Grade	−0.03	0.06	−0.03	0.06	−0.01	0.06	−0.01	0.06
Major	0.06	0.05	0.06	0.05	−0.05	0.06	−0.06	0.05
School type	0.19**	0.06	0.19**	0.06	−0.03	0.07	−0.03	0.06
STRs	0.17**	0.05	0.17**	0.05	0.22***	0.05	0.24***	0.05
School type * STRs			−0.01	0.05			−0.09	0.05
R^2	0.06		0.08		0.05		0.07	

n = 360. In school type, 1 = public college, 0 = private college. *p < 0.05; **p < 0.01; and ***p < 0.001.

TABLE 4 | Results of regression analysis for subjective wellbeing.

	Subjective wellbeing		Subjective wellbeing	
	β	*SE*	*β*	*SE*
Gender	0.12*	0.05	0.10	0.05
Grade	−0.01	0.07	−0.01	0.06
Major	−0.02	0.06	−0.01	0.06
School type	0.16*	0.07	0.16*	0.07
STRs	0.12*	0.05	0.10	0.05
School type * STRs			0.10*	0.05
R^2	0.04		0.06	

*p < 0.05.

STRs and school type has a significant predictive effect on subjective wellbeing ($\beta = 0.10$, $SE = 0.05$, $p < 0.05$) and has a marginal significant predictive effect on self-efficacy ($\beta = -0.09$, $SE = 0.05$, $p = 0.07$; see **Tables 3**, **4**), supporting hypothesis 5. A higher level of STRs significantly predicted a higher level of self-efficacy in private school ($\beta = 0.30$, $SE = 0.07$, $p < 0.001$) than in public school ($\beta = 0.10$, $SE = 0.08$, $p > 0.05$) marginally. The interaction is illustrated in **Figure 3**. A higher level of STRs significantly predicted a higher level of subjective wellbeing in public school ($\beta = 0.25$, $SE = 0.08$, $p < 0.05$) than in private school ($\beta = 0.03$, $SE = 0.07$, $p > 0.05$). The interaction is illustrated in **Figure 4**. And, school type did not significantly moderate the relation between STRs and self-esteem ($\beta = -0.01$, $SE = 0.05$, $p > 0.05$), academic performance ($\beta = 0.02$, $SE = 0.05$, $p > 0.05$), extracurricular activity involvement ($\beta = 0.001$, $SE = 0.05$, $p > 0.05$; see **Tables 3**, **5**).

Discussion

In this study, by further applying the PCSTRS developed in main study, we provided evidence for the effect of STRs on students' self-esteem, self-efficacy, performance, and subjective wellbeing. The results were similar to those of previous studies (Hess, 2018; Myrberg et al., 2019; Lavy and Naama-Ghanayim, 2020; Poulou, 2020). Comparing the STR results between a public and private college, we found differences between them in the dimensions of trust, intimacy, and care.

GENERAL DISCUSSION

The purpose of this paper is to develop a scale to measure STRs in private colleges, and to study the nomological network of STRs by investigating the relation of STRs and student

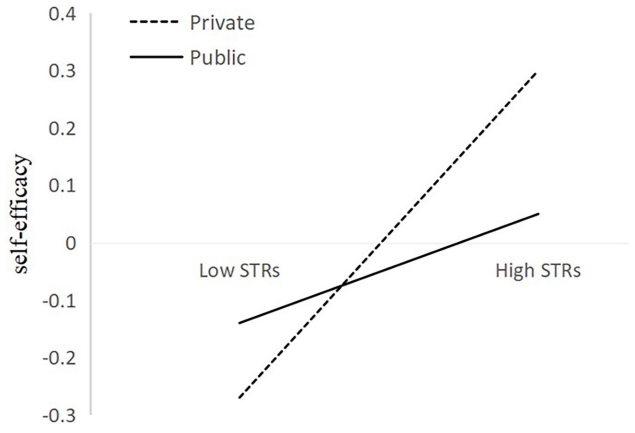

FIGURE 3 | Self-efficacy predicted from STRs and moderating variables.

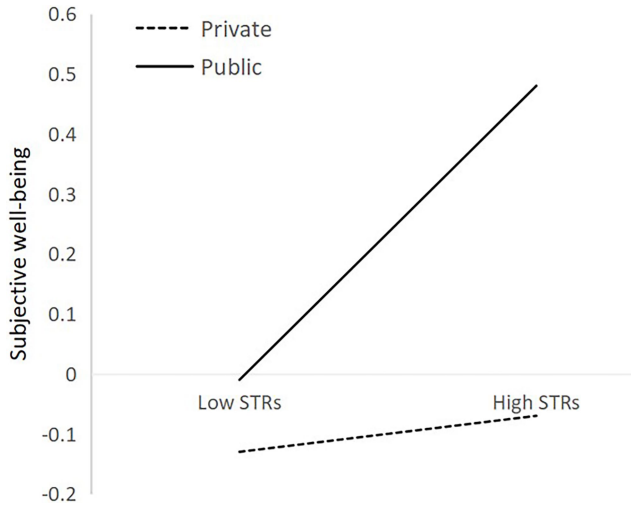

FIGURE 4 | Subjective well-being predicted from STRs and moderating variables.

outcomes, as well as the difference of this relation in private and public colleges. The 29-item PCSTRS developed in this research was found to have adequate psychometric properties. The six-factor dimensionality of the PCSTRS was developed and verified in main study. A high level of internal consistency was demonstrated on all subscales ($\alpha s > 0.79$). With STRS scores as the calibration standard, the reliability of the PCSTRS was demonstrated in main study. Furthermore, we used this scale in supplementary study to analyze the differences between a private college and public college and identified a positive effect on students' traits, performance, and wellbeing. The practical significance of this paper is to provide a feasible tool for studying the relationship between teachers and students in private colleges.

The particularity of STRs in private colleges was the rationale for developing a new measurement tool (Liu, 2018; He, 2019; Nie, 2019). Through EFA, we found that our PCSTRS had more dimensions than previous STR scales, including trust and interaction. We proposed that because teachers at private colleges are mainly retired teachers or young teachers, compared to public colleges, there may be differences in their specializations (Nie, 2019), teaching styles, and management abilities. Therefore, the factors of trust and approval were considered dimensions potentially worth measuring. The results confirmed that students in the public college had significantly higher trust in their teachers than those in the private college. Then, given the poor stability of teaching staff, we proposed that the interactions between students and teachers in the private college would be unique. As anticipated, the dimension of interaction also appeared in our results. In addition, this scale was developed based on the perspective of students in the private college, which can better reflect the characteristics of STRs in private schools.

In the application of our scale, we found differences by gender and grade in private college STRs, which were similar to the findings of previous studies. Men's evaluations of STRs were significantly higher than those of women; this could be related to men's more optimistic perceptions of relationships and positive attitudes in interpersonal communication (Fu et al., 2019). However, some have noted that STRs differences are also related to the personalities of individual students and teachers (Wang, 2019). Furthermore, the differences in grade can be largely explained by the degree of familiarity and interaction between students and teachers. Since sophomore and junior students have more curriculum tasks, they have more opportunities to have contact with their teachers and are more likely to maintain good relationships. This accords with the exposure theory of interpersonal communication.

We also found that STRs had a positive effect on students' self-esteem, self-efficacy, performance, and wellbeing; this, too, is consistent with previous studies (Hess, 2018; Myrberg et al., 2019; Lavy and Naama-Ghanayim, 2020; Poulou, 2020). The support, interaction, guidance, and care provided by teachers can effectively promote students' self-esteem and self-efficacy (Lavy and Naama-Ghanayim, 2020), make them feel more valuable and confident about achieving their goals (Carroll et al., 2009), improve their performance (Roorda et al., 2011; Hess, 2018; Lavy and Naama-Ghanayim, 2020; Shen et al., 2020), and increase their satisfaction and happiness (Poulou, 2020). In addition, we found that STRs were a better predictor of performance than subjective wellbeing and traits. Our results, however, suggested that the relation of STRs and students' traits as well as wellbeing differs between public and private colleges. Specifically, although private college students reported higher scores for intimacy and care than public college students, STRs in private colleges could not promote students' wellbeing. The reason could be that students in private colleges have more diverse sources of happiness (Songlin, 2018; Li, 2019; Nie, 2019), and their happiness does not mainly depend on the STR. They have rich entertainment and social activities, which all can boost their satisfaction and happiness

TABLE 5 | Results of regression analysis for performance.

	Performance							
	Academic performance		Academic performance		Extracurricular activity involvement		Extracurricular activity involvement	
	β	*SE*	*β*	*SE*	*β*	*SE*	*β*	*SE*
Gender	−0.01	0.05	−0.02	0.05	−0.09	0.05	−0.09	0.05
Grade	0.03	0.06	0.03	0.06	−0.12*	0.06	−0.12*	0.06
Major	0.03	0.05	0.03	0.05	0.07	0.05	0.07	0.05
School type	−0.07	0.06	−0.07	0.06	−0.24***	0.06	−0.24***	0.06
STRs	0.34***	0.05	0.34***	0.05	0.25***	0.05	0.25***	0.05
School type * STRs			0.02	0.05			0.001	0.05
R^2	0.11		0.12		0.17		0.18	

*$p < 0.05$ and ***$p < 0.001$.

(Songlin, 2018; Li, 2019; Nie, 2019), so the effect of teachers' care and support on their wellbeing is not obvious. It is also worth noting that the STR in private colleges has a stronger tendency to predict self-efficacy than in public colleges. Self-efficacy is a judgment of one's capacity to achieve goals in the face of difficulty (Wang et al., 2001; Bandura et al., 2005). First, generally speaking, private colleges in China have lower requirements for students' admission scores and personal attributes than public colleges. Therefore, public college students might already have relatively stable cognitive attributes (He, 2019). Secondly, in contrast to public colleges, teachers at private schools offer students more care and support and pay more attention to students' inner demands. In addition, the intimacy between students and teachers is significantly higher there. These characteristics of the STR may make private school students feel more empowered and more confident that they can overcome difficulties. However, student–teacher interactions at public colleges tend to be more focused on learning and academic guidance, with less attention paid to students' personal feelings; this is an important mechanism affecting the above-mentioned individual self-efficacy. This is a complicated issue that warrants further investigation, as it may be important for revealing the effects of differences between private and public education on students, including psychological and behavioral aspects.

Limitations and Outlook

This study has some limitations. First, the indicators used for the reliability and validity test were slightly unitary, for instance, the reliability is not discussed at the content level. It is necessary, therefore, to verify the validity of the PCSTRS using various indicators. Second, the data compiled for the scale came only from one school. Thus, the sample was not sufficiently representative, and the scale will need to be verified using a broader sample in the future. In addition, the case study could be further supplemented to clarify the characteristics of STRs in private colleges and better elucidate the functions and shortcomings of the scale.

CONCLUSION

The 29-item Private-College Student-Teacher Relationship Scale (PCSTRS) developed in this research was found to have good reliability and validity. Through the investigation of STR's nomological network, this study revealed that there were significant differences in STRs between private and public colleges, as well as the significant positive relations between STRs and self-esteem, self-efficacy, academic performance, extracurricular activity involvement, and subjective wellbeing. Furthermore, the relations between STRs and self-efficacy, wellbeing were moderated by school type (private or public). In particular, STRs were more strongly linked to students' self-efficacy in private school than public school. In contrast, the positive correlation between STRs and subjective wellbeing was stronger among public school than private school. Present research firstly develops the PCSTRS, examined the reliability and validity, and studies the differences caused by school-running mode.

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 Department of Applied Psychology, School of Humanities and Social Sciences, Fuzhou University. The patients/participants provided their written informed consent to participate in this study. Informed consent was obtained from all individual participants included in the study.

AUTHOR CONTRIBUTIONS

LB and SC developed the study concept. Testing and data collection were performed by ZL and LL. ZL and WW drafted

the manuscript, and JZ provided critical revisions. LB and ZL: These authors contributed equally to this work. On behalf of all authors, the corresponding author states that there is no conflict of interest. All authors contributed to the article and approved the submitted version.

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The Role of Emotions in Classroom Conflict Management. Case Studies Geared Towards Improving Teacher Training

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The purpose of this paper is twofold: firstly, to explore the emotional aspects underlying classroom conflict management, and secondly, to apply these notions to the contrasted analysis of two case studies. Our findings underscore the importance of examining teachers' emotional regulation to better understand their performance when dealing with conflicts that affect classroom climate. In the final section, we make suggestions for introducing this perspective into initial teacher training through the use of Virtual Reality, a scenario that would allow pre-service teachers to experiment, record and reflect on affective and attitudinal issues that are decisive for effective classroom conflict management.

Keywords: classroom climate, emotion, secondary school, conflict resolution, teacher training, virtual reality

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INTRODUCTION

Today's society is characterized by a multiplicity of changes. The educational context is no stranger to this situation; as a reflection of society, changes in classroom composition and newly emerging forms of interaction can affect the climate of coexistence, since there is an issue that permeates educational settings as a social and inevitable condition in human relations: school conflict.

Despite the undoubted importance of teachers commanding the competence to manage classroom climate, according to recent reports pre-service teachers in Spain feel dissatisfied with the theoretical nature of training in this area and also consider the practical training they have received to be deficient (López et al., 2017; Özen and Yildirim, 2020). According to the TALIS report (OECD, 2020), less than half (40%) of Spanish teachers reported feeling prepared to manage a class. This study also reveals that Spanish teachers spend the longest time trying to maintain order in class. Likewise, a recent study on satisfaction with the training received by students of the Official Master's degree in Teaching in Secondary Schools, at four major Spanish universities, revealed that the competence that pre-service teachers perceive as lacking the most is precisely that related to knowledge of classroom interaction and communication strategies and skills to promote coexistence, address disruptive behaviors and manage conflict in the classroom. At the end of the master's degree, only 34% of respondents provided the highest rating, although this is an improvement compared to the 19.8% that had done so at the beginning (Sarcedo-Gorgoso et al., 2020).

Conflict management competence is frequently assessed through self-report questionnaires that inquire about preferred coping patterns without taking into account the communicative situations

in which conflict takes place or the emotional and attitudinal variables underlying the decisions made by teachers to deal with it (Galtung, 2000; Jones, 2000). Thus, in terms of both the training and assessment of this competence, it seems necessary to design realistic learning scenarios in which teachers can experiment and reflect on their ability to manage the classroom climate in authentic communicative situations.

Research Objectives

The purpose of this study is twofold: firstly, based on the literature, to identify the affective and attitudinal factors linked to the origins and management of classroom conflicts; secondly, from a qualitative-phenomenological approach, through case analysis, to integrate theory and practice to illustrate the contribution of this approach to a better understanding of the factors involved in the dynamics of classroom conflict in secondary school.

We believe that this analysis will provide conceptual and methodological bases for the design of teacher training actions in a scenario that promotes, on the one hand, awareness of behaviors in the face of conflict events and, on the other hand, the possibility of practicing more effective alternatives for classroom climate management. Based on the results that will be presented, at the end of the article ideas will be suggested to elaborate an experiential and experimental training proposal, through Immersive Virtual Reality (IVR).

THEORETICAL BACKGROUND

In this section we will begin by clarifying the definition of conflict in the educational setting. We will focus on various emotional and attitudinal factors that determine classroom conflict and its management. We will then proceed with a review of the literature that will help identify possible patterns of behavior that are usually displayed when dealing with conflicts.

Conflict as a Communicative Experience

A widely held conception describes conflict as "an expressed struggle between at least two interdependent parties who perceive incompatible goals, scarce resources, and interference from the other party in achieving their goals" (Hocker and Wilmot, 2014, p.13). Giving greater weight to affective-motivational variables, conflict has also been described as a subjective experience: "To recognize that we are in conflict is to acknowledge that we have been triggered emotionally" (Jones, 2000, p. 91).

Aligned with the latter perspective, in this article we understand conflict as a particular type of communication, defined by Luhmann (1982) as an expressed contradiction that blocks communicative processes. By blocking communication, classroom conflicts infringe upon interpersonal relationships and can give rise to disruptive events (misbehaviors or critical incidents) that hinder the development of teaching (e.g., Bingham et al., 2009; Tripp, 2012). In the present study, these events are considered conflict situations, initiated by students that can dramatically affect the classroom climate.

We share the ecological approach to classroom climate proposed by Doyle (2006), understood as a communicative context with characteristic purposes, dimensions, features and processes, whose particularity has consequences for the behavior of occupants of that setting. From an ecological perspective, "management is a complex enterprise because order is jointly accomplished by teachers and students and because a large number of immediate circumstances affect the nature of orderliness, the need for intervention, and the consequences of particular teacher and student actions" (Doyle, 2006, p.100).

From this standpoint, there are several important dimensions of classrooms climate that are already in place when teachers and students arrive at the classroom door. These include Multidimensionality—a large quantity of events and tasks in classrooms takes place; many people, with different preferences and abilities must use a restricted supply of resources to accomplish a broad range of social and personal objectives; Simultaneity—many things happen at once in classrooms. While helping an individual student during seatwork, for instance, a teacher must monitor the rest of the class, acknowledge other requests for assistance, handle interruptions, and keep track of time; Immediacy—there is a rapid pace of classroom events; Unpredictability—classroom events often take unexpected turns, events are jointly produced and thus it is often difficult to anticipate how an activity will go on a particular day with a particular group of students; Publicness—classrooms are public places and events, especially those involving the teacher, are often witnessed by a large portion of the students; History—classes meet for 5 days a week for several months and thus accumulate a common set of experiences, routines, and norms, which provide a foundation for conducting activities for the rest of the term or year. All these factors combine to create demands and pressures on participants as activities are played out in these environments. These demands and pressures are placed especially on teachers who carry professional adult responsibility for planning and monitoring classroom activities. Ecologically, these pressures and demands are the origins of the task of classroom management. In most instances, therefore, teachers have little leisure time to reflect before acting (Doyle, 2006).

In addition, management demands are systematically related to the types of activities used in the classroom (Garrett, 2008; Wilkinson et al., 2020). Student work involvement or engagement is higher in teacher-led, externally paced activities than in self-paced activities. Involvement is also especially low during activities in which there are prolonged presentations. Thus, according to Doyle (2006), "the key to a teacher's success in management appears to be his or her (a) understanding of the likely configuration of events in a classroom, and (b) skill in monitoring and guiding activities in light of this information" (p.116). Therefore, the effectiveness of classroom conflict management cannot be defined solely by stereotypical behavior patterns as traditional teacher education often suggests. Successful classroom management also involves aspects of the affective-attitudinal dimension that allow recognizing when and how to act to face conflict events in immediate circumstances (Evertson and Poole, 2008).

Attitude is an important concept to understand human behavior. More relevant to the present concerns is what this controversy regarding the attitude-behavior relation implies for a definition of attitude. Allport (1935), in his influential chapter for the Handbook of Social Psychology, defines attitude as "a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (p. 810). Beginning with these early tracings of the attitude concept, a large number of definitions have been offered.

Like many psychological variables, attitude is considered a hypothetical or latent variable, rather than an immediately observable variable (Fazio, 2007). From this view, Green (1954) argued that "the concept of attitude does not refer to any one specific act or response of an individual, but is an abstraction from a large number of related acts or responses" (p. 335). Zanna and Rempel's (1988) formulation added that "the attitude may be based on appraisals of the attributes that characterize the object, as in expectancy-value frameworks" (p. 608). According to this view, any such automatic activation of the attitude is viewed as playing a critical role in the process by which an attitude may exert influence on information processing, judgment, and behavior. Indeed, from its outset, this theoretical conceptualization of attitudes has been embodied within a model attempting to specify the process(es) by which attitudes "guide" behavior (Fazio, 2007). This definition may help understand how attitudes can explain the strategies that teachers use to regulate the emotional experiences that are activated during the management of classroom conflict. These attitudinal aspects seem linked to actions that teachers take to create an environment that supports and facilitates both academic and social-emotional Learning (Emmer and Stough, 2001).

Emotion regulation refers to "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275). The regulation of emotion is defined predominantly in terms of the conscious or volitional self-regulation of emotion. In other words, emotion regulation means the capability to manage the emotional experiences and expressions (Gross, 2002). As stated Evertson and Poole (2008), in relational interactions trust is a key component of an effective classroom. "Despite the best laid plans, student misbehavior will occur. Reactions to this misbehavior require careful planning to ensure a teacher's responses are productive" (p.136).

The Role of Emotions in the Origin and Management of Classroom Conflict

As Ekman (1985) and Damásio (1999) have convincingly demonstrated, the behavioral element of emotion is projected in the forms of expression of subjective emotional experience (facial expressions, tone of voice, gestures and body postures) that we communicate intentionally or unintentionally. Considering this primary condition, when conflicting events occur during interactions with students, some physiological changes and verbal and non-verbal emotional expressions will occur that will be consciously perceived by teachers and observed by their students. These signals trigger in both certain modes of action (Sutton, 2004; Keller and Becker, 2020).

Following Lazarus (1991), the emotional activation—tendency toward action—that we experience when facing conflicts could be caused by an incongruence with expectations or by the occurrence of an unforeseen event. This activation, in turn, instigates a personal interpretation (*appraisals*) of the communicative situation, which determines the qualities of the emotions that are projected, and these will affect the strategy implemented to manage the conflict. For example, a student's defiant behavior can be appraised, with different resultant teacher emotional responses, as a threat to a teacher's authority or as a sign of a student being over-challenged by the work task. Variations in appraisals occur because situations can be interpreted in different ways as a result of personal characteristics, social history and cultural expectations (Schutz et al., 2007).

Academic emotions refer to a set of emotions that are experienced by students and teacher in learning or teaching situations (Pekrun, 2006). They are short-lived and intense active states that arise in response to a particular stimulus. Academic emotional valence refers to whether the stimulus is pleasant or unpleasant, while academic emotional arousal describes the academic emotional intensity that a stimulus can cause. Based on this classification, emotions can be divided into four groups: positive arousal emotions (e.g., enjoyment, pride), positive emotions (e.g., enthusiasm, interest), passive arousal emotions (e.g., anger, anxiety), and negative emotions (e.g., frustration, depression) (Pekrun, 2006).

Emotional experiences were found to emerge during teacher judgments regarding perceived success (Schutz et al., 2007). Thus, teachers may experience happiness when an instructional objective is met or students follow directions, and pride comes when students excel or eclipse their peers or give a response or fulfill some tasks that teachers did not expect them to complete. They report frustration when students cannot grasp a concept; anger with misbehavior, disappointment with lack of effort, and anxiety when competence is challenged (Sutton et al., 2009; Cubukcu, 2013). These emotions often arise from management and disciplinary classroom interactions, and teachers report that they try to regulate these emotions frequently because they believe it helps them achieve their goals (Sutton, 2004).

Guilt is an unpleasant feeling due to the nature of caring and feeling responsible for students, and it is commonly felt by teachers who perceive they could not do what they were supposed to do and led to disappointment in others (van Veen and Lasky, 2005). Frustration and anger arise from several sources related to thwarted goals, including students' misbehavior and violation of rules (Cubukcu, 2013). Teachers also become angry when they believe that students' poor academic work is due to controllable factors, such as laziness or inattention.

Many teachers report that their anger and frustration lead to changes in their classroom behaviors and coping strategies. Intrusive thoughts make it difficult for them to concentrate on what they are doing before the emotion episode, and that students are the immediate target of the anger and frustration (Sutton, 2007).

Positive emotions such as joy, enthusiasm, gratitude, admiration, interest, satisfaction, optimism, and others lead to proactive attitudes that foster conciliation and collaboration (Montes et al., 2014). It has also been observed that, in critical situations, the activation of positive emotional states allows consideration and elaboration of plans for future action (Lyubomirsky et al., 2005), while the use of predominantly reactive strategies has been associated with teachers' stress and emotional exhaustion (Clunies-Ross et al., 2008; Tsouloupas et al., 2010; Pedditzi et al., 2021).

Negative emotions, such as fear, anger, sadness, and guilt, are associated with reactive/adaptive behaviors that are activated in response to immediate events (Frijda, 1986; Sutton, 2007). Conflicts that emerge in teacher-student interactions are a source of these types of emotions. For example, Oplatka and Iglan (2020) found that primary and secondary school teachers reported experiencing some form of fear in interactions with their students during lessons. Two coping strategies emerged in the interviewees' accounts, ranging from passive strategies that avoid directly confronting the source of the fear (e.g., emotional disengagement) to more active strategies that target the source of the fear (e.g., peer involvement, humor, etc.).

Positive and negative emotions are important activators of the attitudes that guide behavior, since a positive mood can facilitate creative, holistic and more flexible problem solving, whereas negative emotions can promote a more rigid and analytical way of thinking (Rockladge and Fazio, 2018). Deactivation emotions, such as boredom, disappointment, sadness or despair are detrimental to any deep treatment of information related to the teaching task, whilst relaxation and relief can reduce the attention (Pekrun and Schutz, 2007). As Emmer and Stough (2001) emphasize, from an ecological perspective on teaching, classroom management can be defined as any of the actions that teachers perform to maintain student attention, and through this, to create an environment that fosters both academic and social-emotional development.

Several studies (von Gilsa and Zapf, 2013; Taxer and Gross, 2018; Chang, 2020) showed that surface acting (e.g., hiding anger and fear) is significantly linked to emotional exhaustion, depersonalization, and inefficacy. Conversely, the teacher's emotional authenticity fosters adaptive emotional reactions in students that is higher levels of enjoyment and lower levels of anger and anxiety (Keller and Becker, 2020).

In relation to anger, Chang and Taxer (2020) found that this attitude leads teachers to employ punitive strategies, especially when students' misbehavior is seen as intentional and controllable. Although they may be effective in the short term, teachers' coercive behaviors have been linked to the existence of escalating disruption-coercion-disruption loops (Martínez et al., 2020).

In contrast, as corroborated by Chang and Taxer (2020) in their study on emotion regulation strategies in response to classroom misbehavior, teachers who typically reappraise have the least negative affective experiences in the context of student misbehavior and are less likely to suppress their in-the-moment negative emotions. The prevalent premise of 'Don't show them!' (Sutton, 2004, p. 379) when it comes to teachers regulating their negative emotions is to be welcomed because of the emotional contagion processes (Keller and Becker, 2020, p.13). These results are also consistent with several studies that have found that engaging in emotional perspective-taking allows teachers to react appropriately to disruptive behavior (Evertson and Weinstein, 2006; Barr, 2011). Similarly, teachers who expressed close relationships with disruptive students also described emotional perspective-taking, empathy, and emotion regulation (McGrath and Van Bergen, 2019). These characteristics are likely to be particularly helpful when forming relationships with disruptive students by guiding effective classroom management (Garner, 2010) and supporting a positive classroom climate (Jennings and Greenberg, 2009).

Conflict Management Strategies From the Emotional Perspective

In order to assess the strategies that teachers use to manage classroom conflict, one of the most widespread models in educational research is the "Rahim" Model of Conflict Management (Rahim, 1983). This model describes conflict and negotiation processes by referring to two basic dimensions: concern for self (i.e., the degree to which they aim to address their own concern in conflict management processes) and concern for others (i.e., the degree to which individuals try to address the concern of the other party involved in a conflict).

On the basis of different combinations of these two dimensions, five strategies for managing interpersonal conflict in the teacher-student relationship have been distinguished: (1) *Integration* (e.g., reasoning with the student inside or outside the classroom; involving the student in individual and group settings to discuss the behavior that causes the potential conflict event); (2) *Compromise* (e.g., reasoning and discussing issues and problems with the student and/or with the whole class to explore new possible solutions and ways of dealing with the individual and relational difficulties that arose); (3) *Obliging* (for example, deliberately ignoring interruptions or minor infractions); (4) *Avoidance* (e.g., delaying discussion and confrontation about individual and relational difficulties that arose; sending student to see the principal); and, finally, imposing and authoritarian strategies, such as (5) *Domination* (e.g., issuing a verbal reprimand; asking the student to leave class; imposing sanctions) (Morris-Rothschild and Brassard, 2006; Montes et al., 2014; Doğan, 2016; Claessens et al., 2017).

However, according to Galtung (2000), identifying behavior is not enough for effective conflict management. Conflict transformation requires attention to three interrelated elements, which the author called the "triadic model." In this model, Galtung places the following three elements in a pyramid shape: (A) underlying *attitudes* of all the parties involved in the conflict toward the conflict issue; (B) overt *behavior* in relation to the conflict and interaction with the opponent; and (C) the *conflict* itself, which Galtung calls 'contradiction.'

In short, identifying the role of emotions seems essential to better understand the nature of conflict. Emotional processing in all its complexity—including the components of emotional expression through verbal behaviors, the transparency of

emotional states that are projected in non-verbal language (facial expressions, tone of voice and body posture) and the appraisal of emotional experiences driven by emotional arousal—provide clues to the choices teachers make when managing classroom conflict. The key is to recognize the inevitability of emotions in the face of conflict and to view them as a tool for managing conflict, rather than as an obstacle or something to avoid. The question is how this approach can be used to help teachers to better manage classroom conflict.

METHOD

In order to meet the empirical objective of this research, we considered it appropriate to adopt a qualitative-phenomenological approach based on the study of contrasting cases. According to Miles and Hueberman (1994) by looking at a range of similar and contrasting cases, we can understand a single-case finding, grounding it by specifying how and where and, if possible, why it behaves as it does.

Context of the Study and Case Selection

We selected two cases elaborated by pre-service teachers, based on the systematic and reflective recording of reported classroom interactions in secondary schools. Case elaboration and analysis is a practical task required in the first internship period, linked to the module Psychopedagogical and Social Training of the Master's degree in Teaching in Secondary School at the Universitat Autònoma de Barcelona [UAB], (2021).

Students do their internships in educational establishments under the supervision of a school mentor and a university practicum tutor, who will guide them in this first contact with the professional world in the field of education. **Figure 1** shows the design of the process followed at UAB, including the learning activity on which this study is based.

During their first internships pre-service teachers should become familiar with the classroom dynamics and curriculum requirements of a particular class. They should pay special attention to the classroom dynamics of one of the observed groups, to the role of the teacher and to the teaching resources available. Previously, before the first internship period, students (pre-service teachers) are expected to participate actively in the guided activities (workshops, practicum seminars) and supervised activities (group and individual tutorials) offered in this master's degree with the objective to help them prepare for their internship.

Specifically, the work assigned to pre-service teachers in the first stage (Block 1) consisted of carrying out a participant observation in a classroom (step 1, shown in **Figure 1**) during the first internship period (step 2). The observations were carried out simultaneously by two or three students who were at the same educational establishment. Educational establishments must be part of the school network promoted by the Department of Education of the Catalan Government. Priority will be given to schools and institutions with a skills-based curriculum aligned with the kind of teaching proposals promoted in this master's degree. The pre-service teachers were asked to produce a reflective description of the development of the lesson they observed in the form of a narrative essay (step 3).

The essay is structured into four sections. The first section consists of a description of the context in which the observed activity takes place, making reference to the characteristics that may influence everyday life, teaching and learning and a brief presentation of the pupils in the classroom, focusing on their learning processes, and of the teacher, focusing on his/her teaching processes, as well as a description of the educational spaces (e.g., classroom organization). The second section describes the *organization of the observed activity* (topic, general competences and objectives, methodology, resources, organization of the space, etc.). The third section details the observations during the *development of the activity*. Finally, the preservice teacher is required to write a *reflection* on the observed students' prospects of future development in the adolescent stage. Given the interpretative nature of this section, its content has not been included in the analysis presented in this paper.

Supplementary Appendix 1 shows the observation guidelines, in the form of guiding questions, which are given to pre-service teachers to help them record the required evidence during the first internship period. They must actively engage in the tasks set by their school mentors. They also need to collect evidence of the work done at their host school/educational establishment both to include in their portfolios and to have sufficient data for the educational proposal that pre-service teachers will need to design and implement in their next internship period (steps 4, 5, and 6, shown in **Figure 1**). Pre-service teachers' performance at the host school and the quality of their essay will be also taken into account to assess this first block. The narrative essay with the recorded observations is assessed by the student's academic tutor at the university. This assessment takes into account the quality of the evidence presented, as well as the student's argumentation of his/her interpretation. School mentors will assess the preservice teachers' behavior in this first internship period. To pass the course students are also expected to display a professional attitude and professional skills such as respect, cooperation, punctuality and active listening and participation. In any case, students are expected to respect the deontological ethics of the teaching profession.

The first and second authors of this paper have been teaching this module for several years. For this study, we selected two essays that narrate classes observed in state schools located in the metropolitan area of Barcelona, which has high percentages of immigrant and working-class population. The class groups were made up of boys and girls of this social profile, between 15 and 16 years of age, in the 4th year of the 2nd education cycle—the last level of Compulsory Secondary Education in Spain. In both cases, the lessons developed a contemporary history topic and were taught by teachers (all female) who were experienced in the subject matter. The difference between the two cases was the methodology used to teach the content and to manage the disruptive events that occurred during the class (please, see **Supplementary Material** with translation of the observation records: Case A and Case B).

The schools, students and teachers who supported the pre-service teachers during their placements where these

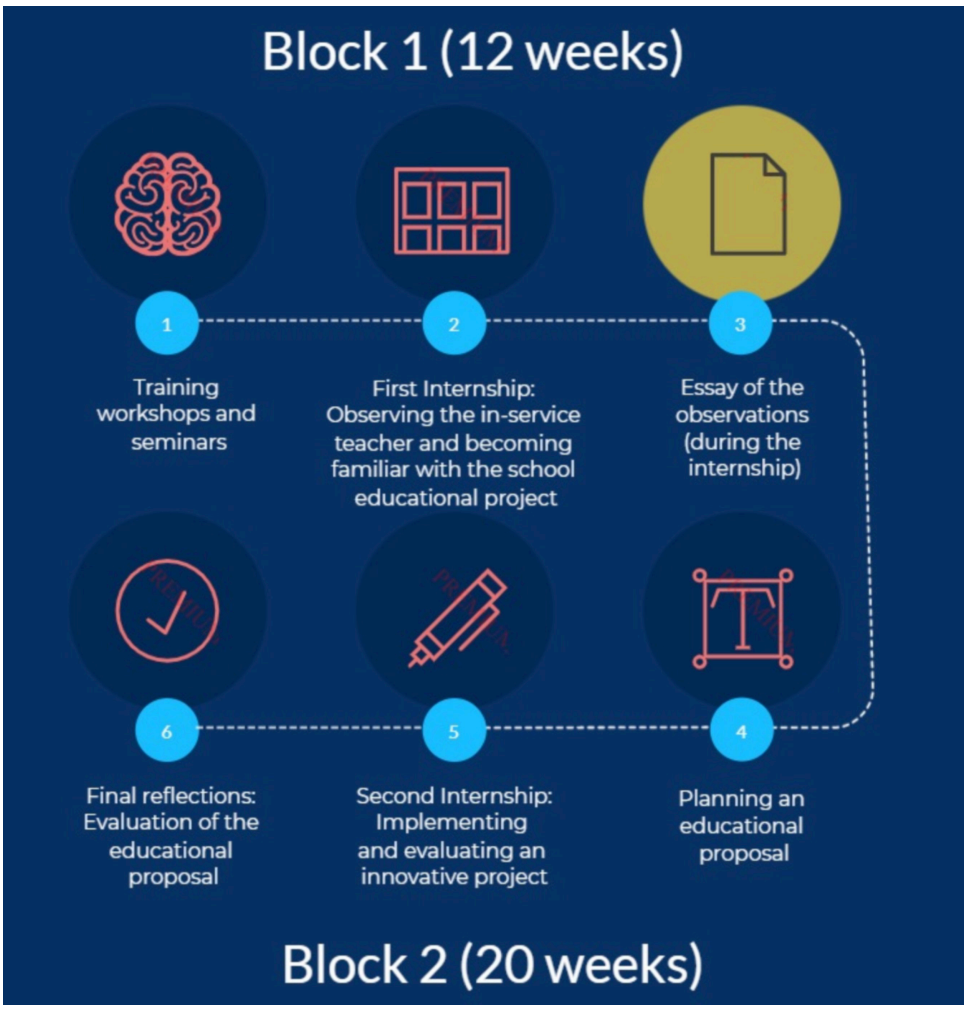

FIGURE 1 | Practicum process in the Master's degree in Teaching in Secondary School at the UAB.

observations were made were informed of the prospect of having evidence of their work published for academic purposes and anonymously, thereby gaining their explicit consent.

Procedures and Data Analysis Processes

In this study we adopted the ecological approach to classroom climate, through which classroom activity during a lesson is conceived as a behavior setting composed of interactive segments. In simple terms, following Doyle (2006), the easiest way to understand the concept of segments is to think of them as a set of classroom "chronicles" or narrative records. "A classroom chronicle is a reasonably complete description of the behavior stream [...] that contains information about scene coordinates (i.e., the participants, physical arrangements, props, and time) and a running account of action sequences within scenes (p. 100)."

Accordingly, we began our analysis by delimiting the segments of the classes reported in the two case studies. The segmentation was established based on changes in the following dimensions: (a) patterns for arranging participants, (b) resources used or sources of information, (c) roles and responsibilities for carrying out immediate actions, and (d) rules of appropriateness (i.e., the types of behaviors that are allowed and disapproved). According to Doyle (2006), a change in one or more of these dimensions represents a potential change in the nature of the situation in which students and teacher work. Two segments were delineated in Case A and six in Case B (see **Figures 2**, **3**).

Summative Content Analysis

In the first stage, we conducted a summative analysis of both cases. Summative analysis offers the opportunity to embrace the research subject while involving teams of co-researchers. Whereas the principal researcher has overall accountability for the study, the co-researcher takes on a commitment to be fully involved in all analysis sessions. By doing so, co-researchers must be aware of the importance of the collaborative aspect of the method and of developing a negotiated understanding of a text (Rapport, 2010). Thus, to ensure internal agreement,

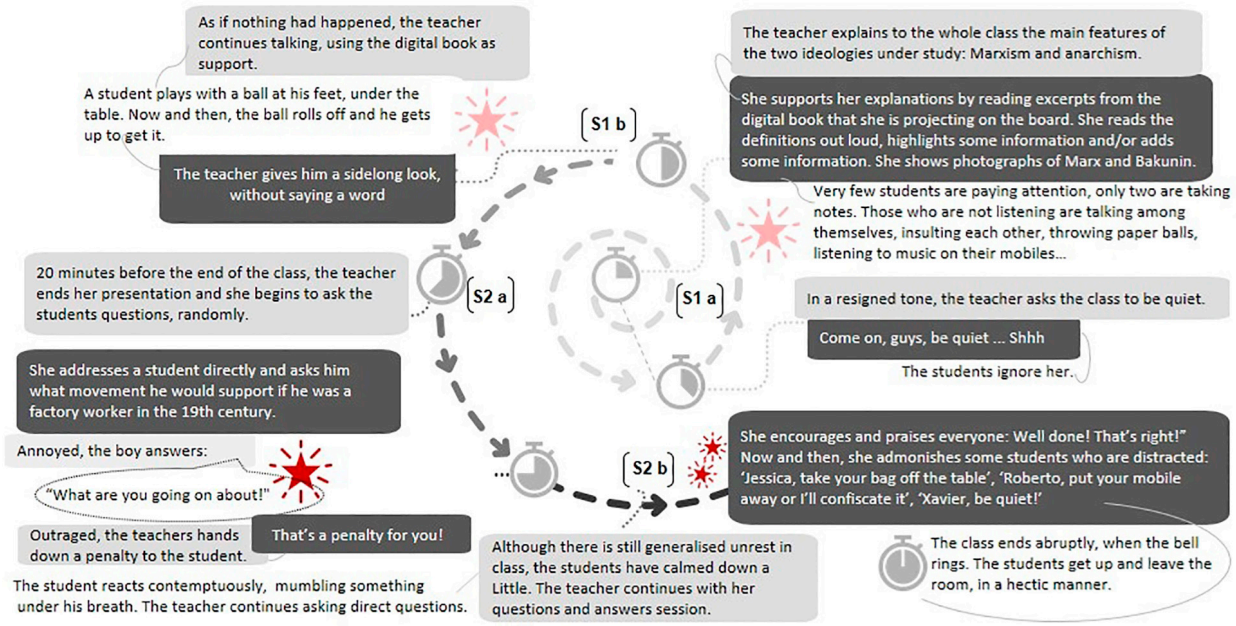

FIGURE 2 | Causal network: Case A 'The tale of the digital book.'

decisions regarding collapsing and combining categories were conferred with the second author (an associate professor in educational psychology). Coding discrepancies were discussed and agreements about coding and modifications to the coding scheme were reached to mediate ambiguity in the coding scheme going forward.

In a second stage, seeking in-depth understanding and explanation, we identified in each of the delimited segments the dimensions of the triadic model proposed by Galtung (2000): (A) underlying affects and attitudes toward the conflict issue; (B) teacher behavior toward the conflict and his/her interaction with the student(s) giving rise to the conflict situation; and (C) the conflict itself, which consists of the "contradiction" perceived by the teacher. At this stage, following the cross-case analysis procedure outlined by Miles and Hueberman (1994), we used an analysis strategy geared toward transcendent themes and categories. Specifically, we implemented a summative content analysis (Rapport, 2010), which is based on definitions derived from the literature review. **Table 1** summarizes the delimited categories and their corresponding indicators. The cases are then presented, followed by the corresponding analysis.

FINDINGS

Following the analytical strategy described above, in this section we will now present the most salient findings from the analysis of the case studies. We will start from the summary produced in the first stage of the analysis and then present a more detailed analysis, derived from the categorization of the content in the second stage of the study.

Undertaking Summative Analysis

The summative analysis began with a written summary produced by the researchers and which was written in response to the raw material provided by the narrative account (essay) of the two lessons observed by the pre-service teachers during their placements. The aim of this first stage of the analysis was to agree on a condensed, but rigorous, text that would allow the researchers to begin to consider what might be the essential content of each case, highlighting the affective motivational aspects present in the narrative accounts. The agreed texts are shown in **Boxes 1**, **2**.

In this first analysis, we can clearly see two opposing cases in terms of how the lessons were conducted and conflicts managed. The teacher in "Case A" monopolized the class. She adopted the teacher-centered classroom paradigm, in which management is a form of oversight and students are allowed limited responsibilities. The classroom interaction followed the specific pattern of teacher initiates a question, student responds and teacher evaluates the response (Trigwell et al., 1999). In a reactive manner, the teacher occasionally stopped at the most critical incidents, calling for order from a position of power that left no room for negotiation. In contrast, the teacher in "Case B" made strategic use of different discursive resources, both to present the content and to manage disruptive behaviors during the lesson. She adopted the learner-centered paradigm (Reigeluth et al., 2017), facilitating collaborative and self-regulated learning, and providing authentic learning experiences, such as how to understand historical events through enquiry into the life of a person relevant to the community. She used varied instructional methods; transitions were taught and managed well. When she gave students control of the

TABLE 1 | Topics, categories, and indicators that guided the summative case analysis.

Topics	Categories		Indicators
Emotional experience during the conflict	Teacher emotions		Positive emotions (e.g., happiness, enthusiasm, interest. . .. . .) Positive arousal emotions (e.g., enjoyment, pride) Negative emotions (e.g., disappointment, frustration, guilt) Negative arousal emotions (e.g., anger, anxiety) Deactivation emotions (e.g., boredom, sadness, despair)
	Attitudes		Open, flexible, empathetic (i.e., leaner-centered classrooms). Closed, rigid attitudes centered on self-interest (i.e., academically focused classrooms)
Behavior in the face of conflict *(Coping strategy)*	Active orientation	Domination	Use of position of power, verbal domination, perseverance; making confrontational statements (e.g., overt rejection; involves the administration, aggressive questions, humiliates, . . .)
		Collaboration	Open communication to explore the disagreement, identify underlying concerns and look for alternatives to satisfy each party's interests (e.g., clarifies the situations by listening to a student, asking additional questions. . .).
		Compromise	Reasoning and discussing issues and problems with the student and/or the whole class in order to explore new possible solutions and ways to deal with the perceived relational difficulties (e.g., tell a student that you will talk to him after class . . .).
	Passive Orientation	Avoidance	Denying the existence of conflict, avoiding it or avoiding certain issues; making non-committal and/or irrelevant statements, etc. (e.g., make a joke, take no comment, do not speak on the subject . . .).
		Obliging	Acting kindly or altruistically, meeting the other person's demands despite preferring not to do it (e.g., apologies, make a compromise, propose compensation...)

Source: own construction based on the literature review (Rahim, 1983; Ellis and McClintock, 1993; Lyubomirsky et al., 2005; Morris-Rothschild and Brassard, 2006; Pekrun, 2006; Clunies-Ross et al., 2008; Evertson and Poole, 2008; Sutton et al., 2009; Costas et al., 2010; Cubukcu, 2013; Montes et al., 2014; Doğan, 2016; Ciuladiene and Kairiene, 2017; Claessens et al., 2017; Chang and Taxer, 2020).

BOX 1 | Key aspects of summative analysis of Case A "The tale of the digital book."
Two segments were delimited in this class, and the main difference between them was only the class organizational pattern. The first segment, which took up three thirds of class time, consisted of an expository monolog by the teacher, who supported her explanations by reading excerpts from the digital book, which she had projected on the classroom board. Multiple disruptive events occurred throughout the lesson, forcing the teacher to stop her talk to try to regain attention, unsuccessfully.
Fifteen minutes before the end of the class, the teacher promoted student participation in the construction of knowledge. She is the one who initiated the interactions, following the question-answer instructional scheme. The most critical incidents occurred during this second segment of the lesson.
Seen globally, the conflict events escalated as the lesson progressed, from more or less explicit student's lack of interest during the first segment to open confrontation in the teacher's interactions with the students. In dealing with conflicts, she implemented predominantly reactive and punitive strategies. She yelled angrily at students who "misbehaved" and deliberately embarrassed students who were disrupting the class. In terms of emotions, frustration and anger prevailed throughout the class.

BOX 2 | Key aspects of summative analysis of Case B "The tale of the local parish priest."
In this lesson, six segments were delimited. During the first two segments, the teacher introduced the topic, managing to capture the students' attention. She presented the lesson content linking it to the life story of a parish priest who worked in a parish very close to the school. Up to this point, no potential conflict events were identified.
From the third segment onwards, the teacher transferred the responsibility for learning to the students. Students worked in pairs while the teacher walked around the classroom to offer individual and timely help.
By focusing her attention on the needs of some student pairs, the teacher missed other potential conflict situations, for example: a fight between two students in segment three; the group being called to evacuate the class, in segment four, due to a false fire alarm, activated by some students in the class; two students' lack of interest in the task, as they were caught using the Internet for unrelated purposes; and some students' apathy when asked to contribute to the collaborative construction of knowledge. These events affected the classroom climate, causing disruptions and disturbances. When the teacher noticed this, she stopped the class and was proactive; she proposed preventive and conciliatory measures that appealed to collaboration; competent communication with all students was observed, reprimands/corrective statements were issued in a non-threatening manner.
This teacher maintained close relationships with her students from start to finish; she was energetic, enthusiastic and empathetic.

learning activity (cooperative work, in pairs), she exercised her authority in a democratic climate, being sensitive to the students' needs and interests.

Going Into Details: Summative Content Analysis

In order to gain a deeper understanding of the management of conflicts that affect classroom climate, in the second stage of our study a more detailed analysis of both cases was carried out, based on the triadic model proposed by Galtung (2000). In this analysis, we explored the role that the affective-attitudinal component may be playing in the decisions taken by both teachers to manage the conflict events that occurred during class (Please see **Supplementarty Appendix 2** for an example of this first codification in an interactive segment in both cases). We were interested, on the one hand, in identifying the contents related to each of the categories that make up the model, and on the other hand, in identifying a possible causal relationship between them (causal network).

Case A "The Tale of the Digital Book"

Figure 2 shows the causal network suggested by the detailed analysis of Case A. Specifically, a spiral format represents the interactions between the teacher and the students in the two segments (S) identified in the analysis of this lesson. As previously noted, following the ecological classroom approach, the segments were delimited based on changes in the four dimensions suggested by Doyle (2006): (a) patterns for arranging participants (e.g., expository format focusing on teacher presentation to the whole class vs. supervision of group work); (b) resources used or sources of information (e.g., books vs. computers); (c) roles and responsibilities for carrying out immediate actions (e.g., individual vs. collaborative work); and (d) 'rules of appropriateness,' i.e., the types of behaviors that are allowed and disapproved (e.g., speaking vs. keeping quiet). The letters *a* and *b* in S1 and S2 indicate slight variations in the format of interactions, caused by disruptions.

We will now present the agreed content regarding all aspects of the communicative situation in which conflicts arose in Case A, according to the dimensions of the triadic model proposed by Galtung (2000). We will focus specifically on the teacher's emotional experience (attitudes and affects) and her behavior in terms of conflict management (contradictions).

Contradictions

In all the segments delimited, conflict situations of disinterest, disruption, distraction and rebellion arose due to contradictions between the teacher's expectations with regard to monitoring the class and participation.

Attitudes and Affects

In most conflict situations, the teacher acted reactively, apparently driven by frustration, tension, anger and irritation caused by the contradictions experienced. Frustration arose, for example, when she observed that very few students were actually listening to her. When a student played with a ball (Segment 1b), she responded with a glare, a reactive gesture full of anger. She also showed frustration when another student retorted "What are you going on about!" (Segment 2a). At the end of the class, she acted with indifference in front of a class that was getting agitated by her continuous reprimands. At this point, the teacher had lost control of a class that ended up collapsing due to multiple and successive conflicts that prevented her from moving forward.

Behavior in the Face of Conflict

To deal with conflicts in this class, the teacher mostly adopted a domineering style, accompanied by a rigid attitude, centered on personal interest and protected by the teaching role exercised in an autocratic manner. Occasionally, she managed to regain control in a coercive manner, imposing sanctions on the student who responded evasively and contemptuously to her invitation to enter the historical scenario that she tried to transfer from the digital book to the figurative experience (segment 2a). From this position, the strategies used to deal with the inevitable class disruption led to blocking conflicts, which remained latent and eventually escalated, causing the class to collapse just as it was supposed to end. According to Galtung's (2000) theoretical model, in this case the teacher opted for resolution actions. Instead of engaging in dialog to transform the communicative situation, she only managed critical conflicts, with specific, reactive and punitive actions. Poor class management led to an abrupt closure, with no time to point out the continuation of the didactic unit, in front of a class that was eagerly awaiting the moment to escape from the classroom.

Case B "The Tale of the Local Parish Priest"

The results of the analysis of Case B are presented below. **Figure 3** shows the causal network suggested by the in-depth analysis, focusing on the lesson development, which in this case ran through six segments (S).

As in the previous case, following a detailed analysis of the dynamics of the communicative situations throughout the lesson in Case B, we will now summarize the agreed content regarding conflict management, following the triadic model proposed by Galtung (2000).

Contradictions

In this class, potentially conflict situations, associated with distraction and disinterested behavior, arose from segment three onwards, when the class organization changed (students began to work in pairs).

Affect and Attitudes

Unlike Case A, in this case the teacher made time to deal with all the conflicts that occurred, even those that were latent in the last two segments. In all situations she acted proactively, displaying an attitude that was open to dialog and willingness to collaborate. In general, she was able to show empathy and regulate her emotions at all times, even when the most disruptive incident involving the whole class occurred: the false fire alarm (incident alluded to in the fourth segment). At this point, she explicitly showed her anger and openly condemned what happened, in a reactive manner, asserting her authority. Having negotiated with the students, she resumed her lesson and was able to reinstate the cooperation climate needed to achieve the educational aims.

Behavior in the Face of Conflict

In conflict situations, this teacher mainly adopted non-confrontational strategies, such as seeking compromise and being obliging/accommodating. For example, in segment three—when the false fire alarm went off after students' complicity—and in segment six, when faced with students' apathy when asked to contribute to the collaborative work requested of the whole group. In both situations, the teacher used persuasive strategies, discussed the issue with the students to explore new possible solutions and ways of dealing with individual and/or relational difficulties that could lead to further conflict. In the fifth segment, she offered personalized help to the students, explored with them alternatives to solve difficulties that might be limiting their effective participation. These strategies made it possible to successfully overcome conflicts, even in the most critical situation, when the false fire alarm went off. At the end of the

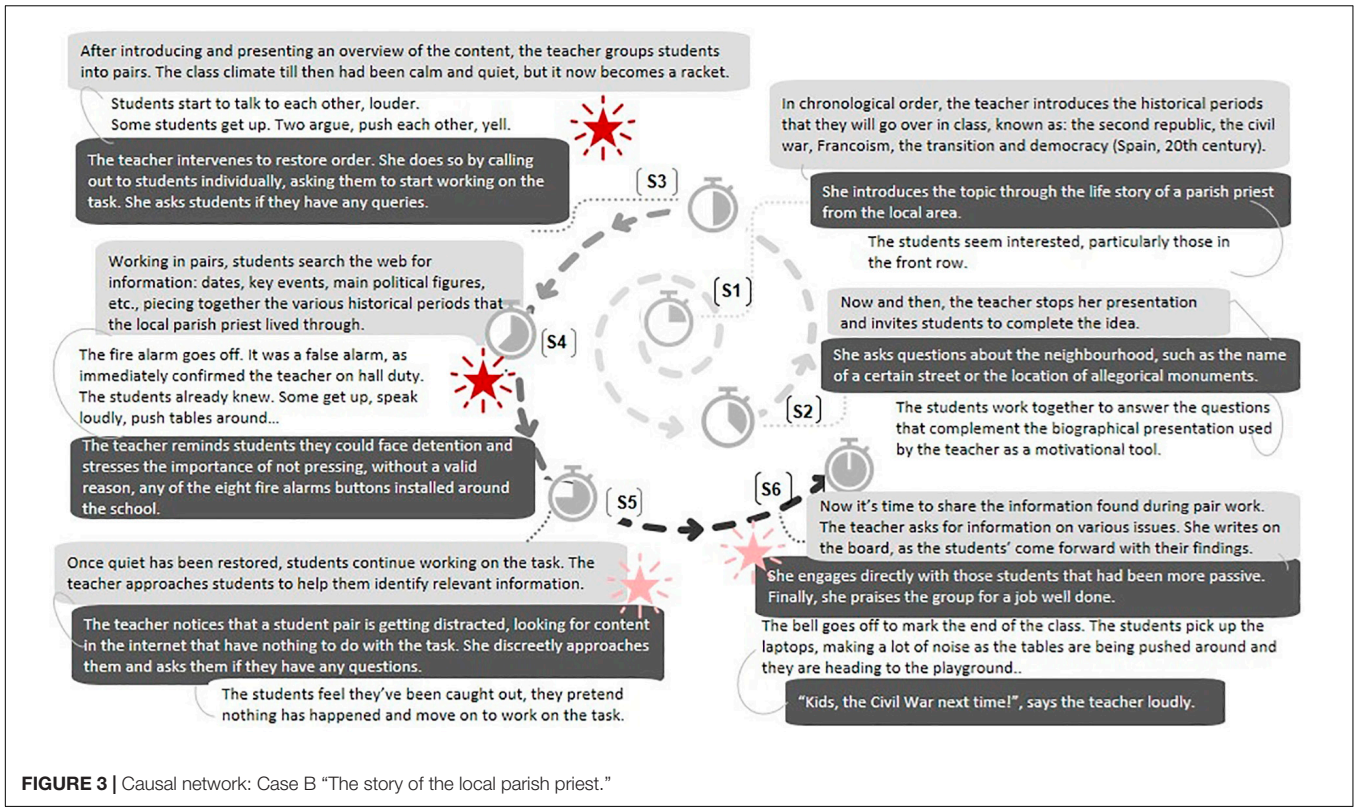

FIGURE 3 | Causal network: Case B "The story of the local parish priest."

lesson, the teacher left the way open for the next lesson with a motivational message: "Kids, the Civil War next time!".

DISCUSSION

This paper set out to meet two main objectives. First, to apply the theoretical foundations linking emotion and conflict processes to the educational context. Additionally, by contrasting case studies, we wanted to illustrate the contribution of this approach to a better understanding of all the elements present in the dynamics of classroom conflict and its management.

Three Essential Ideas for Understanding Classroom Conflict From an Emotional Perspective

We will now discuss the premises backed up by our study, based on the empirical findings presented in the previous section.

Firstly, conflict can be understood as a communicated contradiction that can block communicative processes (Luhmann, 1982), depending on the emotional experience it promotes (Jones, 2000). This idea is furthered by Galtung (2000), whose theory has shown that for conflict transformation it is not enough to focus on behavioral elements, such as coping patterns. Galtung insists on the need to identify the non-visible elements in a conflict situation, such as the attitudes of all parties toward the conflict issue, as well as to discover the origin of the contradictions that cause it. As pointed out in the introduction, usually only one or two parts of the triad are addressed in teacher training, such as the contradiction (the conflict itself) and the behaviors displayed by the opponents. What is largely ignored are the motives and attitudes underlying the reaction to the conflict. As suggested by Fazio (2007), in order to understand the role that attitudes play in determining behavior, it is important to look at the process, motivations and affective experiences involved. "In particular, negative attitudes promote avoidance behavior. In contrast, a positive attitude encourages approach behavior, which creates the possibility of information gain and a more nuanced understanding of the object" (Rockladge and Fazio, 2018, p. 517).

Secondly, and in relation to the above, regarding we would like to highlight the role of emotions in the origin and management of conflict. As Jones (2000) notes, we know that we have entered a conflict because we get the feeling that something is not going well. This perception is linked to the imminent involuntary emotional expressions that are activated when we face in tense situations such as an interpersonal conflict. In classroom interactions, these verbal and non-verbal expressions are not only consciously perceived by teachers, but they are also observed by their students (Keller and Becker, 2020) and they result in ways of action that are more or less geared toward resolution, depending on the nuances of emotional activation that takes place in the interactions surrounding conflict management (Lazarus, 1984; Chang and Taxer, 2020). Our results are in in line with previous reports that showed these emotional experiences often arise from management and disciplinary classroom interactions, and teachers report that they try to regulate these emotions frequently because they believe

it helps them achieve their goals (Sutton, 2004; van Veen and Lasky, 2005; Schutz et al., 2007; Sutton et al., 2009; Cubukcu, 2013).

Thus, positive affective states lead to proactive responses (Montes et al., 2014), while negative affective states are linked to reactive responses ranging from dominance to avoidance (Oplatka and Iglan, 2020), as observed in the analysis of Case A. This notion fits in with the ecological approach to classroom climate. From this perspective, according to Doyle (2006), successful classroom management also involves aspects of the affective-attitudinal dimension, which is manifested in the way the teacher organizes and monitors the different events that make up the lesson. In this sense, the decisions teachers make determine when and how they act to deal with conflict events, with the immediacy that classroom climate management demands. In our study, the differences between the pedagogical approaches used by the two teachers help to understand the greater or lesser difficulty they had in managing the classroom. The amount of time teachers spend organizing and directing students, interacting with individual students, and dealing with inappropriate and disruptive behavior is linked to the type of activity and the physical arrangements of the setting (Doyle, 2006). Studies suggest that the greater the amount of student choice and mobility and the greater the complexity of the social scene, the greater the need for overt monitoring and managing actions by teachers (Garrett, 2008; Wilkinson et al., 2020). Positive teacher-student relationships are seen as the very core of effective classroom management, as confirmed in our analysis of Case B. In contrast, as found in Case A, the external reward and punishment strategies are not seen as optimal for promoting academic and social emotional growth and self-regulated behavior (Evertson and Weinstein, 2006; Evertson and Poole, 2008).

Finally, the third premise that our study ratifies complements the two previous ones and leads us to understand conflict management strategies from an emotional perspective. In this regard, we find the reinterpretation of the Dual Concern Model (Rahim, 1983) convincing. This approach states that people choose different ways, different strategies, to manage conflicts based on two primary motivations or interests: concern for self and concern for others. In classroom climate management, this notion is linked to the pedagogical approach that the teacher uses to develop the lesson, which may be centered around the teacher's authority to impose what and how to learn (Trigwell et al., 1999) or on the students' interest and abilities to construct knowledge, guided by the teacher (Reigeluth et al., 2017). Teachers regarded the use of an effective teaching method as a prerequisite to cope with inappropriate behaviors while managing their classes (Martínez et al., 2020; Özen and Yildirim, 2020). The first approach, a teacher-centered classroom, as evidenced in Case A "The tale of a digital book," leads to reactive strategies geared toward resolution and characterized by domination or avoidance; the second approach, student-centered learning, as observed in Case B "The tale of the local parish priest," results in proactive strategies based on dialog, such as the integration of viewpoints and compromise with new ways of acting to overcome conflict, in the short and long term.

Classroom Conflict Dynamics Through the Prism of Galtung's Triadic Model

Our second objective, of a practical nature, was to apply the theory to the analysis of two different cases of classroom conflict management in a lower secondary school. The results of this analysis allowed us to identify the role that the affective-attitudinal component may be playing in the decisions taken by the teachers in both cases to manage the conflict events that occurred in class.

Beginning with the interpretable aspects, such as the contradictions that cause conflicts, in our study we found that the conflicts were mostly non-violent, disruptive events that affected the classroom climate and occurred occasionally when teachers' expectations regarding class monitoring and student participation failed (Evans et al., 2019).

In relation to the affective-attitudinal component, as Galtung (2000) argues, the appraisal of emotional experiences driven by emotional arousal allows us to understand the decisions the teachers made to manage classroom conflicts. Thus, in Case A, we found causal relationships between attitudes of anger and frustration and coping strategies based on domination (repeated verbal reprimands or the imposition of sanctions) or avoidance (delaying the discussion or intentionally ignoring the confrontation). This link is consistent with findings from similar studies mentioned in the literature review (Pérez-Fuentes, 2011; Chang and Taxer, 2020).

We also found that the use of predominantly reactive or surface acting strategies (e.g., hiding anger and fear), such as those observed in the teacher in Case A, can lead to teacher stress and emotional exhaustion (Clunies-Ross et al., 2008; Tsouloupas et al., 2010; von Gilsa and Zapf, 2013; Chang, 2020; Pedditzi et al., 2021).

On the contrary, emotional perspective-taking, empathy, and emotion regulation would have allowed the teacher in Case A to establish a constructive dialog with the students involved in the conflict communicative situations, leading to a more effective classroom climate management, as demonstrated by several studies cited previously (Jennings and Greenberg, 2009; Garner, 2010; McGrath and Van Bergen, 2019).

These notions were confirmed in the study of Case B. The teacher's attitudes to conflict events denoted enthusiasm and empathy, which led to the use of collaborative strategies such as engagement (reasoning and discussing issues and problems with the student and/or the whole class to explore possible new solutions and ways of dealing with the individual and relational difficulties that arose) and integration (involving students in reasoning about the causes of the potential conflict event), even including being indulging, a compliant coping style with the other party, such as deliberately ignoring disruptions or minor infractions. Similar links were found by Montes et al. (2014) in a study based on self-referrals. Moreover, as also noted by Lyubomirsky et al. (2005), these strategies prevented the escalation of conflicts and enabled the teacher in Case B to timely

transform the attitudes and behavior of students involved in the conflict events that emerged during class.

In summary, in line with arguments by Galtung (2000) and Jones and Bodtker (2001), in this study we have corroborated that a full appreciation of the elements presents in the conflict communicative situations that emerge during class facilitates their understanding. Understanding regulation in terms of conscious or volitive self-regulation (Gross, 1998, 2002), becoming aware of emotional experiences will help teachers to regulate their emotions during conflict management. In particular, identifying affective and attitudinal states and the nature of the strategies that are implemented to manage conflict could contribute to the re-evaluation necessary to change one's own emotional experience—a process without which complex and effective conflict resolution is not possible—and this would consequently lead to better classroom climate management by teachers (Evertson and Poole, 2008).

CONCLUSION

This study allowed us to draw at least the following conclusions.

Firstly, we believe that exploring the affective attitudinal aspects underlying classroom conflicts presents opportunities for teachers to learn how to manage them productively, but this is not enough. Successful classroom management also involves cognitive dimensions such as understanding and interpretation, skills that are necessary to recognize when and how to act to deal with conflict events in the classroom (Sutton, 2004; Chang and Taxer, 2020).

Secondly, and linked to the above, based on the ecological approach to classroom climate (Doyle, 2006), our study provides evidence that confirm the teachers' actions in highly taxing situations involve making immediate decisions. In this regard, teachers require training to recognize the affective cues that trigger various reactive and ineffective automatic response patterns, and to become proactive in implementing strategies to reduce the impact of these triggers, thereby increasing their sense of efficacy (Evertson and Poole, 2008; Zee and Koomen, 2016).

Finally, given that emotions are considered inseparable from the educational context in which they emerge, paying attention to explanations of significant emotional experiences after they have occurred can help teachers identify and characterize emotionally relevant "courses of action" developed in the classroom for classroom climate management (Marsick and Sauquet, 2000; Evans et al., 2019).

The present study has some limitations and, accordingly, we suggest additional directions for future research. The data analyzed in this paper come from the reported observations of interactions in two secondary school classrooms performed by preservice teachers in their first contact with an educational institution. Although guided, consensual and supervised, the written narratives may be incomplete and may even contain interpretive biases. Future studies may expand the sample of cases, including a wider variety of disciplines and socio-educational contexts. In addition, it would be interesting to complement the observational records with interviews with students and teachers in order to investigate the experiences and motivations underlying the emotional experiences provoked by classroom conflicts. These options would minimize the high level of inference created by the analysis of reported narratives by 3rd parties, as well as make an ethical commitment to the participants, whose voices remain absent in this work.

Other data sources, such as descriptions of conflict cases reported by in-service teachers, could provide more authentic content. Expert teachers with academic standing ("good teachers"), teacher trainers and educational counselors could also provide information on the characteristics of the most common conflict situations in lower secondary schools, possible causes and ideas about more and less appropriate coping strategies.

A Future (and Futuristic) Proposal for Teacher Training

Taking into account the practical and ethical limitations of simulating classroom conflict, we intend to explore, as an immediate line of research after this study, how immersive Virtual Reality (VR) training could improve teachers' communicative competence through challenging and personalized virtual scenarios, while providing accurate information about which emotions are involved (positively or negatively) in classroom conflict management in a safe environment.

Before discussing the reasons why we consider the use of VR in this scenario, we should recall the concept of the magic circle, introduced by Johan Huizinga in his book Homo Ludens (Huizinga, 2002), which is a key concept in game studies. The magic circle is an imaginary place in which what happens inside the circle has no consequences outside the circle. Within the circle, the rules of the game apply. It is a safe place where one can fail without fear of affecting "real life."

Virtual Reality is a perfect example of the magic circle, a place where you can "get it wrong" and repeat it as many times as you want. VR places the user inside a 3D artificial world in which he/she can interact with the environment as if it was real, allowing the creation of realistic scenarios (Ke et al., 2020). These realistic scenarios could place the teacher in an authentic classroom situation in which it would be essential to interact with a group of students (represented in avatars) and make multiple decisions immediately to achieve a classroom climate favorable to the achievement of educational goals (Doyle, 2006). This would be an ideal scenario to implement the much-needed practical training, in which teachers can experiment and reflect on their ability to manage the classroom climate.

The three distinguishing features of VR are "Interaction-Immersion-Imagination." These characteristics are believed to facilitate experience specific and contextualized learning while increasing student motivation and commitment (Ke et al., 2020). Nonetheless, probably the biggest advantage of VR is that it allows users to embody learning experiences in such a way that it produces intense and real emotional sensations (Stavroulia et al., 2019). This feature helps teachers feel they are learning within a real environment, from an ecological learning perspective that enhances and fosters the transfer of

knowledge, professional skills, and real-life management models. Only in a realistic environment can the users face the fear that newly qualified teachers experience when facing students (Oplatka and Iglan, 2020).

Based on the results obtained in this study, we find three very powerful reasons to favor VR for the training of future teachers. First, the communication blocks that occurs during a conflict can be realistically recreated in the virtual environment so that future teachers can learn to unblock them. Second, in order to recognize conflict, there must be a feeling that something is not right (Jones, 2000), which can only come about through direct experience. The possibility of recreating realistic environments can make it possible for the user to get such a feeling. Third, through effective feedback to the user, virtual reality allows the training of the most effective communication strategies depending on the type of conflict generated. For example, a situation could be simulated in which, after having driven the teacher to anger, he or she is taught to practice strategies other than domination or avoidance.

Regarding this last point, it is worth highlighting the capacity of current technologies for emotion detection, as studies in other fields, such as medicine, have shown (Kazemitabar et al., 2021). As noted in the introduction, the behavioral element of emotion is projected in facial expressions, tone of voice, gestures and body postures. If we add to these the content of the message or even the user's biometric measurements (such as heart rate, skin conductance or pupil size), machine learning techniques can allow us to detect the emotions felt by the user in real time. For example, we could tell if the future teacher is angry and adapt the simulation to this situation accordingly.

The use of virtual simulations is increasingly seen as an opportunity to provide pre-service teachers with unique opportunities to experience examples of classroom life in a controlled and structured manner (McGarr, 2021). However, we believe that, in addition to VR, the Virtual Learning Environment (VLE) must incorporate technologies capable of detecting users' emotions. In the VLE, rather than mechanically executing an actual sequence of instructional events, learning involves dynamic and complex interpersonal interaction skills. Thus, the experiences provided by VR learning can foster reflective and critical learning about effective classroom climate management.

Future research should also aim to examine the short- and long-term outcomes associated with emotionally generated conflict management approaches in a variety of conflict situations to be presented in context. Detailed observations of classroom interactions, such as those described in this study, will allow the creation of the algorithms responsible for modeling the behavior of the avatars that will form part of the virtual world. In this regard, it is important to carry out a broader study of recurrent critical incidents in secondary school classrooms, which can be provided by the pre-service teachers themselves and by expert teachers. Otherwise, a virtual classroom would be created where students would not present realistic behaviors, the virtual world would not be credible to the user and disengagement would occur. Moreover, VR simulated cases for performance analysis in a playful learning context do not compromise assessment and reputation. This can be very enriching for teachers, who often lament the theoretical nature of their training and ineffective practical approaches, where they have no opportunity for self-reflection or obtaining constructive feedback on their own performances.

DATA AVAILABILITY STATEMENT

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

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.818431/full#supplementary-material

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Daytime Sleepiness and Prosocial Behaviors in Kindergarten: The Mediating Role of Student-Teacher Relationships Quality

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High sleep quality is an important indicator of children's development as well as their good health. The aim of this study was to examine the relationship between excessive daytime sleepiness (EDS) and prosocial behaviors in kindergarten-aged children, as well as exploring the possible mediating role of the teacher-student relationship underlying them. Participants included 60 teachers aged from 23 to 62 (M = 47.9, SD = 9.73) in Italy who completed the student-teacher relationship scale, the daytime sleepiness questionnaire, and the strength and difficulties questionnaire. The children who were rated by teachers were 936 kindergarten children aged from 3 to 6 (M = 4.20, SD = 0.91). The results showed that children's daytime sleepiness significantly predicted all three dimensions of the student-teacher relationship. Specifically, children's EDS negatively predicted closeness and positively predicted conflict and dependence, and furthermore, these three dimensions of the relationship significantly predicted children's prosocial behaviors. For older children in our sample, their EDS was more significantly and positively associated with conflict in their relationship with teachers. Our data seem to support the importance of good teacher-student relationship quality in promoting a child's positive social adjustment, especially in children with behavioral difficulties. Our data also suggest the importance of evaluating the quality of the student-teacher relationship as well as the sleep quality in the children's daytime sleepiness.

Keywords: student-teacher relationship, prosocial behavior, sleep problems, daytime sleepiness, kindergartner

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INTRODUCTION

Excessive Daytime Sleepiness and Social Functioning in Kindergarten

High sleep quality is an important indicator of children's development as well as their good health, and kindergarten-aged children are particularly vulnerable to the effects of low sleep quality (Alfano et al., 2009; Aronen et al., 2009). Several longitudinal and cross-sectional studies show that poor sleep quality tends to decrease quality of life, resulting associated with behavioral difficulties, such as externalizing and internalizing behaviors (Williamson et al., 2020), poor academic performance (Cook et al., 2020), and physical illness, such as obesity (Fatima et al., 2016). It is estimated that almost 40% of children during in kindergartner develop some sleep-related problems; however, it

is difficult to estimate the prevalence of sleep disorders in pediatrics because there are different definitions and a variety of assessment tools used to diagnose sleep disorders at this stage of development (Wang et al., 2016).

Excessive daytime sleepiness (i.e., the tendency to fall asleep during the day) is considered a possible indicator of sleep disturbance and it can affect children's positive adjustment in kindergarten; it is associated with poor academic performance and emotional and behavioral difficulties (Reynaud et al., 2018). In particular, poor sleep quality might be detrimental to children's adaptation to the school environment by affecting their social competence, such as their prosocial behaviors.

In kindergarten, children with more prosocial behaviors present themselves as cooperative and socially responsible; they are inclined to help other children in need. Prosocial behaviors help children adjust to the school context in kindergarten, considering that more developed social competences tend to be linked with greater peer acceptance, more positive interpersonal relationships, and better academic performance (Hamre and Pianta, 2001). Several authors highlighted the importance of promoting prosocial behaviors in children (Eisenberg, 2014; Laguna et al., 2020) and are researching possible risk factors that may hinder the development of prosocial behaviors in early childhood (Malti and Dys, 2018; Memmott-Elison et al., 2020).

Sleep disorders, including excessive daytime sleepiness (EDS), appear to reduce prosocial behaviors among children in kindergarten ages. Some studies on preschool children found a positive association between sleep duration and social skills (Vaughn et al., 2015). In addition, specifically for kindergarten-aged children, some research highlights a negative association between low sleep quality (including EDS) and prosocial behavior (Horiuchi et al., 2020). This research also tends to report an association between poor sleep quality and a variety of behavioral difficulties, including externalizing disorders (Astill et al., 2012; Reynaud et al., 2018) and internalizing disorders (Astill et al., 2012), aggressive behavior, oppositive behavior, impulsivity, hyperactivity, and attention disorders (Reynaud et al., 2018). These behaviors tend to be negatively related to prosocial behaviors in children and lead to poor self-regulation capacity in adolescents (Memmott-Elison et al., 2020).

Some evidence suggests that sleep disorders in children can also increase emotional and behavioral dysregulation levels, which negatively contributing to the child's social adjustment (Williams et al., 2017), while having a relatively high level of the ability to regulate themselves is necessary for the children to maintain and achieve positive and effective social interactions. Children with poor regulation skills tend to find it more difficult to engage in positive relationships with peers, family members and teachers; they also appear to be aggressive and show a few social skills (Williams et al., 2017). In the peer group, children with relatively poor self-regulation tend to be ostracized and rejected by their peers, and this increases distress and negative interactions among them, helping to inhibit the development of prosocial behaviors (Sette et al., 2013). This indicates the potential harmful influence of poor sleep quality on kindergarten-aged children's prosocial behaviors development. Coincided with this, some previous studies highlight that sleep disorders in kindergarten can affect the social and emotional development of the children, with consequences for adolescence and adulthood (Wang et al., 2016).

Prosocial Behavior and the Quality of Student-Teachers Relationships

Prosocial behavior tends to develop more easily in children experiencing warm, responsive, supportive, and sensitive relationships with significant adults, including teachers (Longobardi et al., 2020). The teacher is a significant emotional and relational references for the child (Quaglia et al., 2013), and a positive teacher-student relationship tends to promote good psychological adjustment in children (Longobardi et al., 2016a,b, 2019a). In particular, for most Italian children, kindergarten is the first significant social experience outside of the family context. Teachers provide important emotional support for children and help them to adapt to this new social context (Sette et al., 2013; Longobardi et al., 2019b); they serve as adaptive relational models (Quaglia et al., 2013; Longobardi et al., 2020) for the children because generally they stay at school 3 years (3–6 years) with the same teacher for several hours a day on weekdays (Sette et al., 2013).

According to attachment theorists (Bowlby, 1969/1982, Bowlby, 1973), the teacher can be an *ad hoc* figure for developing attachment within the child, who can use the teacher as a safe base to explore the school environment and to seek protection in case of need (Verschueren and Koomen, 2012). Through the relationship with the teacher, the child can internalize positive relational models, which makes the teacher-student relationship so important, as it could affect the child's social competences into the future (Bowlby, 1969/1982). The research on the teacher-student relationship shows three kind of dimensions: closeness, conflict, and dependence (Birch and Ladd, 1997; Pianta, 2001; Longobardi et al., 2019b). Closeness reflects a supportive relationship, characterized by affection and open communication, while a conflict-oriented teacher-child relationship is characterized by discordant interactions and a lack of rapport between the teacher and the child (Birch and Ladd, 1997). Dependence, less studied than the other dimensions, refers to the degree of overreliance of the child on the teacher and the extent to which the child displays clinginess and possessiveness toward the teacher (Sabol and Pianta, 2012; Verschueren and Koomen, 2020). A positive teacher-student relationship tends to be characterized by low conflict and dependence and high levels of closeness, and research suggests it is associated with higher levels of prosocial behaviors in children in both kindergartner-aged children (Palermo et al., 2007; Sette et al., 2013) and school-aged children (Longobardi et al., 2020; Zendarski et al., 2020). Overall, these data seem to indicate that in a positive relationship, which characterized by affection, closeness and respect, the child could internalize a positive and prosocial relational model that could help them in their relationships with others, including adults and their peers (Wentzel, 2002; Quaglia et al., 2013). A positive teacher-student relationship helps the child to develop self-regulation, thus promoting an adequate modulation of emotions and inhibiting inappropriate behaviors;

in this way, socially adaptive behaviors of the child are improved, resulting in greater social competence (Ferreira et al., 2020).

In addition, teachers mediate relationships in the class; they encourage positive behaviors, discourage deviant behaviors, and promote the learning of prosocial behaviors, creating a positive relationship between peers and a more positive class climate (Hamre and Pianta, 2001; Gastaldi et al., 2015; Longobardi et al., 2019a, 2020). However, it is possible that teachers may establish a more positive relationship with prosocial children, precisely because of their improved willingness to have a relationship and their temperamental characteristics (Birch and Ladd, 1997). This suggests a possible bi-directionality between relationship quality and socioemotional outcomes. Some evidence, however, suggests a negative association between both conflictual student-teacher relationships (Mitchell-Copeland et al., 1997; Pasta et al., 2013; Skalická et al., 2015; Marengo et al., 2018) and dependency (Sette et al., 2013; Roorda et al., 2020) and prosocial behaviors in children. Children who have conflicts with their teacher tend to report more externalizing behaviors and are more likely to be rejected by their peers, contributing to poor social adjustment in these children. Similarly, children with a high level of dependency tend to have internalizing symptoms, engage in fewer classroom activities and social interactions, and to be more rejected by peers (Sette et al., 2013; Berchiatti et al., 2020; Ferreira et al., 2020), thus potentially inhibiting the development of social competences.

The Mediating Role of Quality of Student-Teacher Relationships

No previous study has examined the role of the teacher-student relationship on prosocial behaviors in kindergarten-aged children with ESD. Sleep disorders and their effects on the daily functioning of the child could affect the quality of the relationship with adults (Holdaway and Becker, 2018), including teachers. Behavioral problems and poor academic performance may result from a child's poor sleep quality. To the best of our knowledge, only one study conducted among school-aged children has explored the possible relationship between sleep disorder and the quality of student-teachers relationships (Holdaway and Becker, 2018). Holdaway and Becker (2018) identified an association between poor sleep quality and conflicts between students and teachers, particularly between EDS and having a poor relationship with the teacher. According to Holdaway and Becker (2018), children with EDS feel tired and demotivated; they are less motivated to engage in social interactions or to volunteer to participate in class activities. More generally, emotional and behavioral regulation difficulties and academic performance difficulties associated with poor sleep quality and daytime sleepiness could, therefore, affect the quality of the teacher-student relationship, which, in turn, could predict outcomes related to the development of prosocial behaviors in children.

Aim of the Study

The purpose of this research is to extend our knowledge on the relationship between EDS and prosocial behavior in kindergarten-aged children. In particular, we explore the relationship between EDS and the quality of the teacher-student relationship; we also consider whether the quality of the teacher-student relationship could further mediate the relationship between daytime sleepiness and prosocial behavior. In particular, we expect EDS to be negatively related to prosocial behavior and this relationship would be mediated by the dimensions of teacher-student relationship. Specifically, we hypothesize that EDS is negatively associated with a close student-teacher relationship and that closeness positively correlates with prosocial behavior. In addition, we expect EDS to be positively related to teacher-student relationships characterized by conflict and dependence, leading to a decrease in prosocial behaviors among kindergarten-aged children (**Figure 1**).

According with Holdaway and Becker (2018), we test the moderating role of age. The authors found in a sample of school-age children that sleep problems and a conflictual student-teacher relationships is significant only for young children due to the inability to regulate itself. Furthermore, the authors found that age moderates the relationship only in reference to the total score of sleep problems, and not of daytime sleepiness. Of course, this age-moderating aspect has not yet been adequately investigated in the literature, and some research suggests that daytime sleepiness tends to increase with age (Liu et al., 2019), and this may have an effect on student-teacher relationship quality in kindergarten. Finally, we believe that the study of EDS in kindergarten children is important, considering that there are few studies on EDS in preschool-aged children, probably due to methodological difficulties, such as the lower availability of psychometrically valid instruments for this developmental period (Sen and Spruyt, 2020).

MATERIALS AND METHODS

Participants

Participants were 936 kindergarten children aged from 3 to 6 (M = 4.20, SD = 0.91). These children were recruited from 14 kindergartens located in northwestern Italy. There were 456 (48.7%) female children. Most of the children were recognized as Italian (n = 869, 92.8%), while the rest were the first or second wave immigrants (n = 67, 7.2%). In addition, 60 Italian teachers participated in this research, all of whom were females and spend 8 h per day in a classroom. The average age of the teachers was 47.9 (SD = 9.73, Min = 23, Max = 62).

The teachers of the 936 kindergarten children were recruited online through an online survey because of the current coronavirus (COVID-19) pandemic. After reading the research presentation, the participants (teachers) gave their informed consent by clicking "I accept." and also the parents/legal guardians of kindergarten children were asked to sign written informed consent forms describing the nature and objective of the study. Once they accepted, teachers could begin filling out the anonymous questionnaire. Participation in the study was anonymous and unpaid. The research protocol complies with the 1964 Declaration of Helsinki and the rules of the Italian Association of Psychology (AIP) and was approved by the Ethics Committee of the University of Turin.

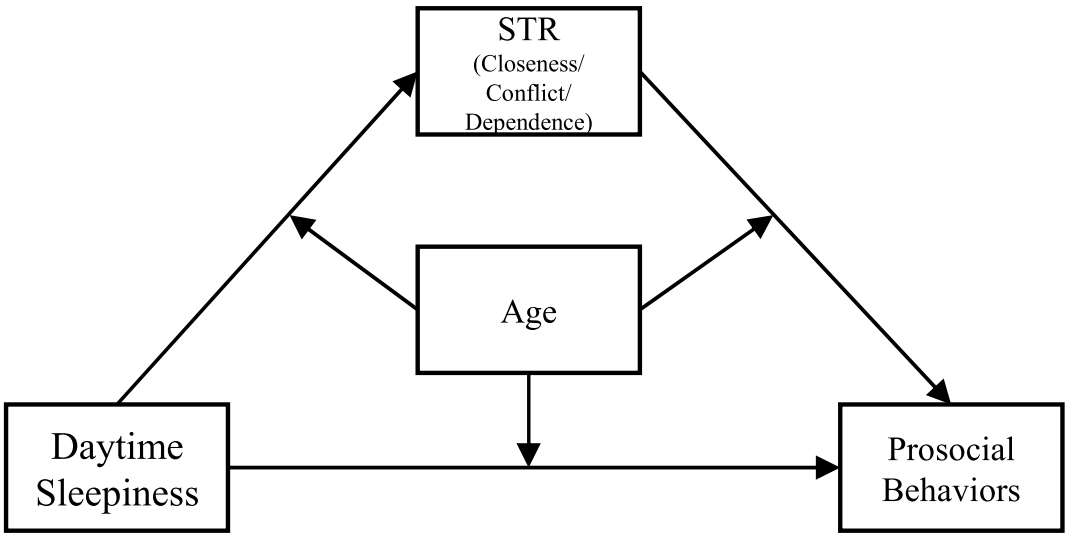

FIGURE 1 | The hypothesized moderated mediation model. STR, student-teacher relationship.

Measures

Socio-Demographic Characteristics

Teachers completed a questionnaire inquiring about their age, gender, and education level. Also, were asked to report age, gender and nationality of their kindergartner children.

Daytime Sleepiness

A short scale consisting of ten items, the Teacher's Daytime Sleepiness Questionnaire (TDSQ, Shahid et al., 2011), was used to measure the children's daytime sleepiness in schools from the perspective of their teachers. Sample items of this scale are "How often does this child have trouble staying awake in the morning?" and "How often does this child disrupt school activities because of sleepiness?" Teachers were asked to rate the frequency of such behavior among their students on a 3-point Likert-type scale (1 = *Never or rarely*, 2 = *Sometimes*, and 3 = *Usually*). The final score was the sum of all the ten items, with higher scores indicating more daytime sleepiness problems in school context for the child. For the current sample, the Cronbach's alpha coefficient was 0.76.

Student-Teacher Relationship

The 22-item student-teacher relationship scale (STRS, Fraire et al., 2013) was used, which include three subscales: closeness (eight items, e.g., "I share an affectionate, warm relationship with this child"); conflict (10 items, e.g., "This child and I always seem to be struggling with each other"); and dependence (four items, e.g., "This child is overly dependent on me"). Teachers rated much they agreed with each item on a 5-point Likert-type scale (1 = *Definitely not applies*, 5 = *Definitely applies*). The dimension score was the average of all the items belonging to each dimension, respectively, with a higher score indicating more closeness, conflict, and dependence in the student-teacher relationship. For the current sample, the Cronbach's alpha coefficients for closeness (α = 0.88), conflict (α = 0.89), and dependence (α = 0.72) were all satisfactory.

Prosocial Behaviors

The subscale of prosocial behaviors in the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997) was used to measure the children's prosocial behaviors. There are five-item subscales in the SDQ: (1) *hyperactivity* (e.g., "Easily distracted, concentration wanders"); (2) *peer relation problems* (e.g., "Gets along better with adults than with other children"); (3) *emotional symptoms* (e.g., "Nervous or clingy in new situations, easily loses confidence"); (4) *behavioral problems* (e.g., "Often lies or cheats"); and (5) *Prosocial behaviors* (e.g., "Shares readily with other children, for example toys, treats, pencils"). Teachers were required to rate each item on the 3-point Likert-type subscale (0 = *Not true*, 1 = *Somewhat true*, and 2 = *Certainly true*). The final score was the sum of the all the five items in the *prosocial behaviors* subscale, with a range of 0–10. For the current sample, the Cronbach's alpha coefficient was 0.84.

Data Analysis

The SPSS 22.0 (IBM Corp., Armonk, NY, United States) was used to conduct all the data analyses. First, the descriptive and correlative statics for all the studied and controlled variables were calculated. Second, the PROCESS macro (Model 4, Hayes, 2018) was adapted to explore the mediating role of the student-teacher relationship between children's daytime sleepiness and prosocial behaviors. Third, the potential moderating role of children's age in the mediation model of the second step was examined by adapting the PROCESS macro (Model 59, Hayes, 2018). All the continuous variables were standardized. If the 95% confidence intervals, which were estimated by using the 5,000 bias-corrected bootstrapped samples from the original data, do not include zero, the mediation effects and the moderation effects exist. Finally, the

essence of the possible moderating effects of age was explored by applying the simple slope test.

RESULTS

Descriptive Analysis Results

The descriptive and correlative analysis results are presented in **Table 1**. Most of the variables of interests were significantly correlated with one another. Specifically, children's daytime sleepiness was negatively correlated with closeness ($r = -0.35$, $p < 0.001$) and prosocial behaviors ($r = -0.46$, $p < 0.001$) and positively associated with conflict ($r = 0.48$, $p < 0.001$) and dependence ($r = 0.34$, $p < 0.001$). Prosocial behaviors were correlated with all the three dimensions of the student-teacher relationship (closeness: $r = 0.55$, $p < 0.001$; conflict: $r = -0.45$, $p < 0.001$; dependence: $r = -0.21$, $p < 0.001$). Conflict was negatively correlated with closeness ($r = -0.39$, $p < 0.001$), while it was positively correlated with dependence ($r = 0.40$, $p < 0.001$).

In addition, boys had more daytime sleepiness problems ($r = -0.17$, $p < 0.001$) and more conflicts with their teachers ($r = -0.13$, $p < 0.001$) than girls, while girls had a closer relationship with their teachers ($r = 0.17$, $p < 0.001$) and exhibited more prosocial behaviors ($r = 0.18$, $p < 0.001$). Younger children had more daytime sleepiness problems ($r = -0.31$, $p < 0.001$), and they were more dependent on their teachers ($r = -0.09$, $p < 0.01$), while older children had a closer relationship with teachers ($r = 0.12$, $p < 0.001$) and exhibited more prosocial behaviors ($r = 0.27$, $p < 0.001$).

The Mediating Effects of the Student-Teacher Relationship

The PROCESS macro (Model 4) was used to analyze the mediating role of student-teacher relationship in terms of the relationship between children's daytime sleepiness and prosocial behaviors. As illustrated in **Figure 2**, children's daytime sleepiness significantly predicted all three dimensions of the student-teacher relationship. Specifically, children's daytime sleepiness negatively predicted closeness ($B = -0.33$, $p < 0.001$) and positively predicted conflict ($B = 0.47$, $p < 0.001$) and dependence ($B = 0.35$, $p < 0.001$); furthermore, these three dimensions of the relationship significantly predicted the children's prosocial behaviors. At the same time, the residual direct relationship between children's daytime sleepiness and their prosocial behaviors remained significant ($B = -0.20$, $p < 0.001$). These results indicated that the three dimensions of the student-teacher relationship acted as partial mediators between the children's daytime sleepiness and their prosocial behaviors.

The bootstrap procedure was applied to generate the 95% confidence intervals (95% CI) for all the indirect effects of the student-teacher relationship between the children's daytime sleepiness and their prosocial behaviors. The indirect effect of daytime sleepiness on the prosocial behaviors mediated by closeness, conflict, and dependence were, respectively, estimated at −0.1331 (95% CI: −0.1697∼−0.1020), −0.0782 (95% CI: −0.1162∼−0.0446), and −0.0219 (95% CI: −0.0433∼−0.0029). All the 95% CIs did not include zero, which indicates that children's daytime sleepiness significantly exerted indirect effects on prosocial behaviors *via* all three dimensions of the student-teacher relationship.

The Moderating Effect of Age

To further explore age differences in the mediating model, the PROCESS macro (Model 59) was used to analyze the moderating effects of children's age in both the residential direct effect and the indirect effects between daytime sleepiness and prosocial behaviors. The parameters were estimated in four regression models. In Model 1 to Model 3, the moderating roles of age in the first part of the mediation path between daytime sleepiness and prosocial behaviors were examined. In Model 4, the moderating roles of age in the second part of the mediation path, as well as in the residential direct path, were estimated.

Table 2 illustrates the analysis results. In Model 1 to Model 3 (the first part of the mediation path), daytime sleepiness significantly predicted closeness ($B = -0.32$, $p < 0.001$), conflict ($B = 0.54$, $p < 0.001$), and dependence ($B = 0.36$, $p < 0.001$), while the interaction of daytime sleepiness and age only predicted the conflict dimension of the student-teacher relationship ($B = 0.12$, $p < 0.001$). In Model 4 (the second part of the mediation path and the residential direct path), closeness ($B = 0.39$, $p < 0.001$), conflict ($B = -0.19$, $p < 0.001$), and dependence ($B = -0.06$, $p < 0.05$) still significantly predicted children's prosocial behaviors, and the residential direct path remained significant ($B = -0.15$, $p < 0.001$), while none of the interactions between age and the student-teacher relationship or between age and daytime sleepiness were significant. The second part of the mediation path and the residential direct path were not moderated by age.

To further analyze the moderating effect of age between daytime sleepiness and conflict, a simple slope test was conducted (See **Figure 3**). The results indicated that for older children (1 *SD* above the mean), their daytime sleepiness was significantly and positively associated with conflict in their relationship with their teachers ($B_{simple} = 0.64$, $SE = 0.05$, $p < 0.001$). For younger children (1 *SD* below the mean), the relationship between daytime sleepiness and conflict was also positive and significant ($B_{simple} = 0.39$, $SE = 0.04$, $p < 0.001$), but this association was weaker than in older children. This result emphasized that the adverse impact of daytime sleepiness on enhancing conflicts in the student-teacher relationship was stronger for the older children.

DISCUSSION

The aim of our research is to extend knowledge about the relationship between EDS and prosocial behaviors of children in kindergarten, as well as exploring the possible mediating effects of the teacher-student relationship quality. Previous research examined school-age sleep disorders within clinical populations, with parents reporting their children's sleep disorders (Astill et al., 2012). In the current research, we employed the teacher as a reference to estimate EDS in kindergarten. We selected EDS as an indicator of sleep quality, not only because it

TABLE 1 | Means, standard deviations, and correlations of the variables (N = 936).

Variables	1	2	3	4	5	6	7
1. Gender	–						
2. Age	−0.02	–					
3. Daytime sleepiness	−0.17***	−0.31***	–				
4. Closeness	0.17***	0.12***	−0.35***	–			
5. Conflict	−0.13***	−0.06	0.48***	−0.39***	–		
6. Dependence	−0.01	−0.09**	0.34***	−0.04	0.40***	–	
7. Prosocial behaviors	0.18***	0.27***	−0.46***	0.55***	−0.45***	−0.21***	–
M	1.49	4.20	11.92	4.15	1.35	1.57	7.04
SD	0.50	0.91	2.47	0.80	0.61	0.76	2.64

Gender was coded as 1 = male, 2 = female.
***p < 0.01, ***p < 0.001.*

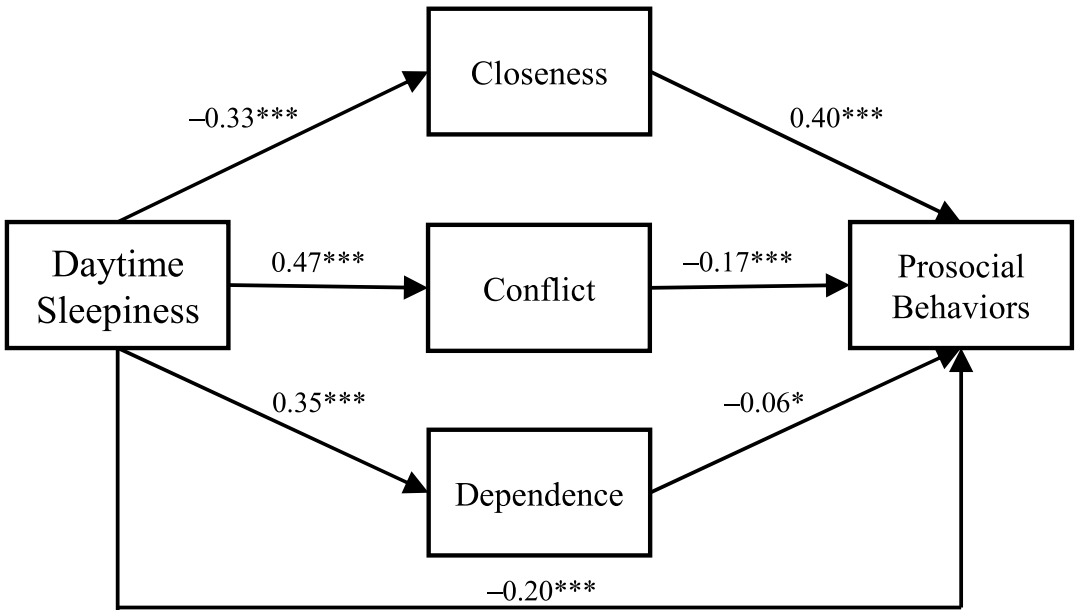

FIGURE 2 | The mediating role of student-teacher relationship between daytime sleepiness and prosocial behaviors. Children's gender was included as control variables, but not presented for simplicity. *$p < 0.05$, ***$p < 0.001$.

can be conceptualized as a consequence of sleep disorders but also because it is an easily observable behavior in the school context (Holdaway and Becker, 2018). In addition, EDS was more associated with school functioning than other sleep disorders (Dewald et al., 2010). Therefore, studying daytime sleepiness and its impact on children's other behaviors (e.g., prosocial behaviors), as well as the mediating and moderating mechanisms in this relationship, might help us better understand children's behaviors in school context and further help us develop some possible intervention programs. Our study shows that males are more at risk of EDS, but the literature on gender distinctions regarding sleep disorders, especially at this age, appears incomplete and contradictory (Yalçıntaş-Sezgin and Ulus, 2019). Females report more prosocial behavior and enjoy a better quality relationship with their teacher than boys. These results are in accordance with the literature that seems to indicate in females a greater propensity to exhibit prosocial behavior and to have a better relationship with their teachers. These gender differences may be related to cultural aspects that lead girls to develop greater emotion and behavior regulation skills (Hamre and Pianta, 2001; Horn et al., 2020).

The data from the present study suggest that a negative correlation between EDS and prosocial behaviors in children and identify the possible mediating role of the quality of the teacher-student relationship. In this regard, our research supports a direct and indirect association between daytime sleepiness and prosocial behavior. These results are also in line with previous research showing that poor sleep quality tends to be associated with a decrease in prosocial behavior in children (da Silva et al., 2020; Horiuchi et al., 2020). This finding could be due to the fact that children with sleep disorders, and daytime sleepiness in particular, tend to present emotional and behavioral dysregulation, which could, therefore, negatively affect the child's social adjustment and result in greater rejection and exclusion

TABLE 2 | Testing the moderated mediating effect of daytime sleepiness on prosocial behaviors.

	Model 1 (Closeness)			Model 2 (Conflict)			Model 3 (Dependence)			Model 4 (Prosocial behaviors)		
Predictors	***B***	***SE***	**95% CI**	***B***	***SE***	**95% CI**	***B***	***SE***	**95% CI**	***B***	***SE***	**95% CI**
Children's gender	0.22**	0.06	[0.10, 0.35]	−0.08	0.06	[−0.20, 0.03]	0.11	0.06	[−0.01, 0.23]	0.13*	0.05	[0.03, 0.23]
Children's age	0.03	0.03	[−0.04, 0.09]	0.11***	0.03	[0.05, 0.17]	0.02	0.03	[−0.05, 0.08]	0.16***	0.03	[0.11, 0.22]
Daytime sleepiness	−0.32***	0.03	[−0.39, −0.25]	0.54***	0.03	[0.48, 0.17]	0.36***	0.04	[0.27, 0.42]	−0.15***	0.03	[−0.21, −0.08]
Daytime sleepiness × Age	0.01	0.03	[−0.06, 0.07]	0.12***	0.03	[0.05, 0.18]	0.01	0.03	[−0.06, 0.08]	−0.01	0.03	[−0.07, 0.06]
Closeness										0.39***	0.03	[0.33, 0.45]
Conflict										−0.19***	0.03	[−0.25, −0.13]
Dependence										−0.06*	0.03	[−0.11, −0.01]
Closeness × Age										−0.01	0.03	[−0.07, 0.05]
Conflict × Age										−0.02	0.03	[−0.09, 0.04]
Dependence × Age										0.03	0.03	[−0.03, 0.08]
R^2	0.14			0.25			0.11			0.43		
F	36.83***			77.76***			30.67***			71.09***		

N = 936.
Gender was coded as 1 = male, 2 = female.
Every column is a regression model, and the outcome variable at the top of each column was predicted by its model. All the continuous variables were standardized.
*$p < 0.05$, **$p < 0.001$.

from their peers, thus inhibiting social interactions and the development of prosocial behavior (Palermo et al., 2007; Sette et al., 2013). However, we must also keep in mind here that our study is a cross-sectional study and therefore it is not possible to draw conclusions about linear causal relationships between variables. For example, if it is true that poor sleep quality tends to be associated with a decline in prosocial behavior, then it is also true that there is evidence that sleep problems and aggressive behavior share similarities from a genetic perspective. In this sense, poor sleep may not be the cause of aggressive behavior, but rather appears to be a reflection of shared genes (Madrid-Valero et al., 2019). In addition, some studies find that children who exhibit less prosocial behavior tend to be less monitored by their parents in a number of activities that potentially affect sleep quality, such as media consumption (Gentile et al., 2014). Therefore, further studies are needed to clarify the relationship between prosocial behaviors and sleep quality.

Kindergarten-aged children are in a developmental stage that is important for developing prosocial behaviors, and the literature indicates that children tend to develop more prosocial behavior in relational contexts that are characterized by support, emotional closeness, and sensitivity (Longobardi et al., 2020). In this regard, literature suggests that sleep disorders tend to affect the quality of relationships that children have with adults, including teachers (Holdaway and Becker, 2018). Our data seem to support this position, indicating a negative association between EDS and closeness in teacher student-relationships and a positive association between EDS and both conflict and dependency in teacher-child relationships.

These results concur with what Holdaway and Becker (2018) found in a sample of school-aged children. Overall, it can be argued that children with poor sleep quality have a worse relationship with their teacher. It is, therefore, possible that children with EDS tend to present themselves as demotivated, tired, socially unresponsive, and less inclined to take part in class activities, resulting in a relationship with their teacher that is perceived as less close. In addition, children with EDS tend to have poorer academic results and may present aggressive and externalize symptoms in interactions with their teacher, resulting in a teacher-student relationship characterized by more conflicts.

Our study considers the dependence dimensions of the teacher-student relationship, which was not evaluated by Holdaway and Becker (2018) study in school-aged children. Our data show a positive relationship between EDS and dependence in teacher-student relationships. For this result, one possible explanation is that difficulties in academic performance and poor motivation to interact socially and participate in class activities may require the child to have more support from their teacher, who could understand the negative relationship to stem from the child's lack of autonomy.

We must point out, however, that our study took a cross-sectional approach and therefore it is not possible to infer a causal relationship from our data. Along these lines, some findings from studies on the relationship between sleep quality and relationship quality with parents suggest a bidirectional relationship between the two constructs (Kelly and El-Sheikh, 2011), and this could also apply to the relationship with the teacher. For example, it

is possible that a relationship with the teacher that is perceived as less close and more conflictual is a source of stress and worry for the child, thus increasing rumination or distress, which may affect sleep quality and ultimately EDS. Further studies are needed to understand the direction of causality between EDS and the quality of the teacher-student relationship and what mechanisms are involved.

Finally, our study found that the quality of the teacher-student relationship quality may act as a mediator in the relationship between EDS and prosocial behaviors in kindergarten-aged children. In particular, EDS seems to negatively affect prosocial behavior through a relationship with the teacher that is characterized by dependence and conflict, while closeness seems to shield the negative effects of daytime sleepiness by predicting more prosocial behaviors. The teacher plays an important role in favoring the processes of social and psychological adjustment of the child in the school context (Quaglia et al., 2013; Gastaldi et al., 2015; Longobardi et al., 2019a). Within a supporting relationship, characterized by closeness and respect for the needs of the child, the teacher can stimulate the emotional and behavioral regulation of the child and transmit more positive relational models, which are characterized by prosocial behaviors and low aggression (Wentzel, 2002; Quaglia et al., 2013).

In contrast, sleep disorders and their effects on the daily functioning of the child could contribute to a poorer teacher-student relationship, thus hindering the development of social skills and prosocial behaviors among children. In this regard, EDS can be associated with behavioral difficulties, such as oppositive behaviors, aggressive conduct, and hyperactivity, which tend to be associated with a more conflictual relationship with the teacher. Thus, in turn, this increases the child's distress and does not facilitate the good social adjustment of the child in the class context, thus leading to fewer prosocial behaviors. In addition, children with EDS may present themselves as tired and socially unresponsive; they may also have internalizing disorders (Astill et al., 2012; Reynaud et al., 2018) and difficulties in a cognitive performance (Dewald et al., 2010), thus demonstrating less autonomy and making the student appear more dependent on the teacher. Children with much dependency on the teacher tend to present internalizing symptoms and avoid class activities, which results in greater rejection by their peers and prevents students from having more social interactions. In this way, a greater dependence on the teacher could hinder the child's social adjustment and affect the development of their social skills (Sette et al., 2013; Ferreira et al., 2020).

Finally, Holdaway and Becker (2018) found age had a moderating effect, indicating that in school-aged children sleep problems are significantly associated with conflictual student-teacher relationships, but only for younger children. According to the authors, this is due to the fact that older children tend to be more skilled in self-regulation and the teacher seems to be less exposed to sleepiness than older children. However, the moderating function of gender has been found only for the total score of the sleep problem and not for specific domains, such as daytime sleepiness. We wanted to test the moderating effect of age in our sample as well. Our data show that age moderates the relationship between EDS but only in terms of conflict and the

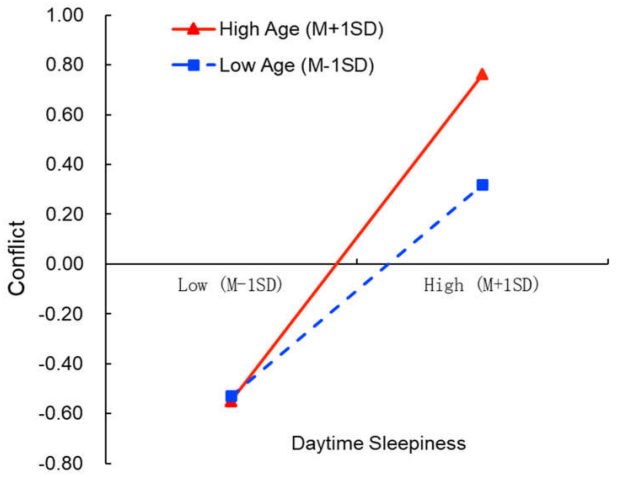

FIGURE 3 | Age moderated the relationship between daytime sleepiness and conflict.

student-teacher relationship. This association is significant and positive in both young and older children. However, it is much stronger in older than young children.

This result deserves more attention in future research. The fact that younger children are less skilled in self-regulation than school-aged children could probably explain why the association between EDS and conflict was positive in both groups in our sample. However, the fact that the association is stronger in older children seems to contradict the findings of Holdaway and Becker (2018). Some methodological features may explain this difference, and, indeed, our research is based on a large sample of kindergarten children, while Holdaway and Becker (2018) investigated a narrower sample of aged-children schools, with a longer timeframe considered in the age of the sample. However, some studies suggest that EDS tends to grow with age (Liu et al., 2019), and this may explain why in older children, the association between EDS and conflictual relationships with teachers is stronger.

Our study has strengths and limitations. In terms of strengths, our study seeks to expand our knowledge of EDS and its relationship to prosocial behavior and the quality of student-teacher relationships in an under-researched sample. In addition, we recruited a relatively large sample of kindergarten students, and teachers were included as informants related to EDS. Despite the contribution our findings make to the literature, caution must be exercised in interpreting our data, and the limitations of the research must be carefully considered. Indeed, the cross-sectional approach we used precludes expressing our findings in terms of linear causality. Future studies should therefore adopt a longitudinal/experimental approach to examine longitudinal/causal relationships between these constructs. In addition, we used EDS as an indicator of poor sleep quality, which is readily observable in the preschool context. However, our study does not directly measure sleep quality or sleep disturbance. Therefore, future studies could incorporate appropriate instruments to directly measure these

variables. More generally, we should note that ESD is a difficult symptom to assess objectively in pediatric populations, particularly in preschool children. In addition, future research could include more sleep-quality informants (teachers and parents together, for example) and could make comparisons on the relationship between the constructs investigated at different ages (e.g., comparing kindergarten-aged children with school-aged children, both preadolescents and adolescents).

CONCLUSION

In conclusion, our data extend knowledge about the relationship between EDS and prosocial behaviors in kindergarten-aged children, identifying the possible mediating role of on the teacher-student relationship quality. In particular, EDS could negatively affect this relationship, resulting in fewer possibilities for the children to develop adequate social competences. Our data also seem to support the importance of a positive teacher-student relationship in promoting the social adjustment of the child, especially in children with behavioral difficulties.

In addition, our research could also have practical implications. In fact, our data suggest the importance of evaluating sleep quality in children with low prosocial behaviors in kindergarten as well as soliciting specific assessments and implementing psychological interventions. Moreover, it is important to evaluate the social functioning of children who have EDS and to work with teachers in the school context in order to observe the relationship with their students and stimulate more adaptive social behaviors.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

ETHICS STATEMENT

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

AUTHOR CONTRIBUTIONS

CL, SL, and MF were involved with the design and interpretation of this work as well as writing the manuscript. CL and MF were involved in the acquisition of the data. SL and MF analyzed the data and contributed to the writing of the manuscript. CL supervised all phase of research. All authors contributed to the article and approved the submitted version.

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Three Decades of Research on Individual Teacher-Child Relationships: A Chronological Review of Prominent Attachment-Based Themes

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Attachment theory has played a prominent role in the study of affective relationships between teachers and individual children in school settings. This review synthesizes three decades of attachment-based research on teacher-child relationships roughly covering the period between 1992 and 2022. Five key themes were discussed: (1) conceptualization and assessment, (2) secure base and autonomous exploration, (3) safe haven and self-regulation, (4) attachment history and relationship (dis)continuity, and (5) teacher sensitivity and mentalization. Following a narrative review approach, a selection of pivotal research studies was made and chronologically presented to illustrate research developments per theme. The results indicated that the conceptualization and assessment of teacher-child relationships holds largely, but not completely, across different developmental phases, cultural contexts, measurement methods, and informants. In addition, research confirmed the role of the secure base and safe haven functions of teacher-child relationships in promoting children's emotional security at school. Furthermore, progression has been made through the development of multiple measurement methods for both teachers and children, by expanding research from early childhood education up to secondary education, and by more recent cross-cultural studies. However, there is still limited insight in mechanisms that explain (dis)continuity in relationships over time, and a striking lack of research on dyadic teacher sensitivity and mentalization as antecedents of teacher-child relationships. Research directions for the following decade(s) of research are discussed per theme.

Keywords: teacher-child relationships, attachment theory, assessment, secure base, safe haven, teacher sensitivity, relationship continuity, chronological review

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INTRODUCTION

Teacher-child relationships have been extensively studied in the past decades. The growing body of research consistently shows that affective relationships between teachers and individual children shape children's development inside and outside schools (McGrath and Van Bergen, 2015; Spilt et al., 2022). Attachment theory (Bowlby, 1969/1982; Ainsworth, 1973) has played a prominent role in this domain of research. In the early 1990s, attachment researchers began to study children's relationships with non-familial caregivers. One reason for the growing concern for children's

relationships with non-familial caregivers was the observation that "*wider networks of caregivers now provide care once confined to smaller, familial systems*" coupled with concerns about the consequences of "*large numbers of children coming to school with inadequate relationship histories*" (Pianta, 1992a, p. 3). One of the first publications addressing attachment relationships in a "multiple caretaker environment" was the seminal volume "Beyond the Parent: The Role of Other Adults in Children's Lives" (Pianta, 1992a). This volume contained a collection of pioneering research articles on the role of relationships with non-familial adults in children's (early) lives including child-care teachers and (pre)school teachers. Pianta's publication can be considered the springboard for attachment-based research on teacher-child relationships, characterized by a specific focus on the affective and dyadic nature of teacher-child relationships. Now, three decades later, the key question for this article is how attachment-based research on teacher-child relationships in (pre)school settings has developed ever since and what insights it has yielded. Our literature review aims to explain how attachment theory has contributed to our current understanding of the role of teacher-child relationships in children's lives.

Theory-based literature reviews, grounding research in a particular theory, are scarce. Scholars have noted a general lack of theory use in the school psychology literature that limits progress in the field (Kelly et al., 2021). By reviewing the application of the attachment framework to understand teacher-child relationships, we hope to stimulate theory-based research and practice in this area. For advanced scholars, this review aims to identify gaps in knowledge and directions for forthcoming research. This way we hope to provide an incentive for the continuation of attachment-based research on teacher-child relationships to further develop and refine theoretical understanding of teacher-child relationships. For scholars who are new to this domain of research, this overview may present an introduction into attachment-based research on teacher-child relationships.

ATTACHMENT THEORY EXTENDED TO TEACHER-CHILD RELATIONSHIPS

Interpersonal relationships between teachers and students have been extensively studied in educational research. Educational researchers typically examine teacher-child relationships at the classroom level. Inspired by interpersonal theory, the main focus is on teachers' interaction styles in balancing affiliation (warmth) and control (directivity) to engage children in classroom activities and promote child learning (Wubbels and Brekelmans, 2005). Attachment-based research adds a more specific relationship-focused perspective through its emphasis on the *affective* and *dyadic* nature of teacher-child relationships. The attachment-based perspective on teacher-child relationships can be traced back to the 1990s. Guided by a strong background in mother-child attachment research, attachment researchers became increasingly interested in non-familial relationships in early education and child care settings (Pianta, 1992a). They were particularly interested in teachers as subsidiary or *ad hoc* attachment figures and raised questions of whether and how teachers could support children's emotional security when parents were absent. A new line of research emerged with a strong focus on teacher-child relationships as attachment-like bonds at the individual teacher-child level.

Parents are typically considered the *primary attachment figures* in children's lives. However, it is evident that for most children parents are not the only caregivers. Children spend many hours in day care centers and schools, in separation from their parents, which raises all kinds of questions: What happens when parents are not available and other adults are taking over the caregiving role? Do children develop attachment relationships with non-familial caregivers when parents are absent? Can non-familial caregivers provide children the necessary *emotional security*? To what extent can non-familial caregivers fulfill the *secure base* function of caregivers in educational contexts? Those were the first questions that triggered research on individual teacher-child relationships (Pianta, 1992a). Guided by attachment theory, it was predicted that children would seek proximity to teachers when parents were not available and develop attachment-like relationships with teachers (cf. infra Theme 1). It was further expected that the *secure base* and *safe haven* functions of parent-child relationships would also be visible in teacher-child relationships (cf. infra Themes 2 and 3), and that teachers' *availability and sensitivity* would predict the quality of the teacher-child relationship (cf. infra Theme 5). Finally, given the premise that children internalize attachment experiences into *internal working models* of self and others, it was expected that there would be *continuity* between parent-child and teacher-child relationships (cf. infra Theme 4). At the same time, relationships with teachers were expected to make a unique contribution to children's development above and beyond familial attachments. Thus, children's development was expected to be better predicted by the sum of children's (familial and non-familial) attachment relationships than solely by children's parent-child attachment relationships (Van IJzendoorn et al., 1992).

This review synthesizes how attachment-based research about teacher-child relationships developed over 30 years. To this end, we reviewed a selection of key research. To be able to provide a succinct review, we chose a clear focus that is on teacher-child relationships in (pre)school settings and not in child care settings. We made this decision based on qualitative differences between these settings: In educational settings, unlike in child care, teachers are instructors focusing on academic readiness or skill acquisition and their instructional role becomes increasingly dominant over their caregiver role as children progress through school (Rimm-Kaufman and Pianta, 2000).

STRUCTURE OF THE NARRATIVE REVIEW

This review presents a chronological overview of attachment-based research on teacher-child relationships in (pre)school settings from roughly 1992 onward (Pianta, 1992a). We explain how key concepts in attachment theory have guided research on dyadic teacher-child relationships by reviewing a selection of peer-reviewed research that illustrates attachment-based themes.

It was not our aim to provide an exhaustive overview or synthesis of all (published and unpublished) research as is done in systematic reviews. Instead, we adopted a narrative review approach in which pivotal papers are selected by the authors to illustrate research developments in a particular domain of research.

The review is guided by a theoretical model consisting of basic tenets of attachment theory applied to teacher-child relationships (**Figure 1**). These basic tenets are reflected in five prominent themes, according to which the review is structured: (1) conceptualization and assessment, (2) secure base and autonomous exploration, (3) safe haven and self-regulation, (4) attachment history and relationship (dis)continuity, and (5) teacher sensitivity and mentalization. These concepts guided the literature search and were used as search terms in combination with the search term "attachment" or "attachment theory." Forward and backward citation tracking was also used to identify key research.

For each theme, we reviewed the research developments across three decades. The first decade locates roughly between 1992 and 2002, the second decade between 2002 and 2012, and the third decade between 2012 and 2022. Not all themes have received equal attention across the three decades. In case of limited research, we review research of only one or two decades or combine the research across decades. Where possible, we present research in a chronological order. We end our review with suggestions for the fourth decade of research.

RESULTS

Theme 1: Conceptualization and Assessment of Teacher-Child Relationships

The key point at issue in the first series of attachment-based studies was whether attachment theory could be a valid framework to describe or conceptualize the affective nature of dyadic teacher-child relationships in school contexts. This was not an either-or issue but involved different questions about (associations between) children's security and proximity seeking behaviors, exchanges of affect, and the role of teachers' responses to children's signals of need for care (Pianta, 1992c; Van IJzendoorn et al., 1992). By the end of the first decade, a three-dimensional conceptualization of teacher-child relationships was obtained, based on observational research and teacher reports, that showed strong resemblance with qualities of parent-child relationships (Closeness, Conflict, Dependency; Pianta, 2001). In the second decade, children's own perspective and narrative interview methods were added to allow for a more comprehensive understanding of the nature of teacher-child relationships. Across the third decade, new issues emerged including teacher-child relationships across developmental phases (e.g., adolescence), cultural differences in conceptualization and assessments, and the (lack of) recognition of dependency as a relevant dimension ofteacher-child relationships.

First Decade

In the first decade of research, roughly between 1992 and 2002, the key question was whether teacher-child relationships could be conceptualized as attachment relationships. First attempts were made to describe the affective quality of teacher-child relationships along the attachment dimensions of security, anxious/resistance, and avoidance (Pianta and Nimetz, 1991; Howes and Ritchie, 1999). It was observed that children displayed similar behaviors in their relationships with teachers as with mothers, including keeping track of the teacher, seeking comfort and reassurance, attending to facial expressions and emotions, and using the teacher as secure base for exploration (Pianta et al., 1997; Koomen et al., 1999). These proximity seeking behaviors bore a clear resemblance to children's proximity seeking in parent-child relationships. Observational research was complemented with questionnaire data from teachers. Guided by theoretical knowledge of parent-child attachment classifications and the Attachment Q-set, Pianta and colleagues developed a teacher-report questionnaire (Pianta and Nimetz, 1991; Pianta and Steinberg, 1992), the forerunner of the Student Teacher Relationship Scale (Pianta, 2001). Research with this questionnaire yielded evidence for similar attachment-related dimensions including proximity seeking behavior (e.g., "this child seeks help, recognition, and support from me") and anxiousness or insecurity (e.g., "this child constantly needs reassurance from me"). Significant associations were found with measures of engagement and self-regulation, including positive task behaviors and frustration tolerance (Pianta et al., 1997). Moreover, negative and positive effects of early teacher-child relationships on academic and behavioral outcomes were reported to last up to eight grade while controlling for initial levels of child functioning (Hamre and Pianta, 2001). These findings showed that teachers' reports of teacher-child relationship qualities were not redundant with other teacher-reported school readiness measures but, on the contrary, provided unique information for the understanding of children's development and progression through school.

Toward the end of the first decade, research with (the forerunner of) Pianta's Student Teacher Relationship Scale (STRS; Pianta, 2001) accumulated in a final version for early childhood education (up to 8 year-old students), including three attachment-based dimensions: (1) *conflict:* the degree of negative feelings, unpredictability, and wariness, (2) *dependency:* the degree of excessive proximity seeking and the child's inability to gain a sense of security from the relationship, and (3) *closeness:* the degree of trust and proximity, open communication, attunement, and comfort seeking behavior. Whereas closeness refers primarily to children's safe haven use of teachers, dependency primarily indicates that a child fails to use the teacher as a secure base from which to explore, while conflict thwarts the safe haven as much as the secure base function (Verschueren and Koomen, 2012). The publication of the STRS as an easy-to-administer and valid teacher-report questionnaire provided a strong impetus for future research.

Together these first studies showed that teacher-child relationships could be assessed through an attachment lens.

However, there were certainly limits to the resemblance between teacher-child and parent-child relationships. Teacher-child relationships were typically less intense and intimate than parent-child relationships (Kontos, 1992). Contextual constraints like (limited) time spent together, teacher-child ratio's, teacher role perceptions and values, an emphasis on didactic interactions, and children changing teachers every year clarify why teacher-child relationships are not as affective, intense, enduring, and exclusive as parent-child relationships. Consequently, scholars looking back on research in this first decade came to the conclusion that teacher-child relationships should not be considered "full-fledged" attachment bonds but rather "*ad hoc*" attachments, meaning that teachers can fulfill the role of attachment figures and promote children's sense of security when parents are absent (Verschueren and Koomen, 2012; Verschueren, 2015). The teacher-child relationship thus is, for most children, probably not an attachment bond but does have an attachment component (Cassidy, 2008), that is temporally fulfilling attachment-based functions like providing a secure base and safe haven to children at school (Verschueren and Koomen, 2012; Verschueren, 2015).

Second Decade

The STRS became the most widely-used questionnaire to examine teacher-child relationships from the teacher's perspective. However, given the limitations of single-informant questionnaires, researchers started to explore new ways of assessing the affective nature of teacher-child relationships to allow for a more thorough assessment. The first instruments to assess the child's inside perspective were published in the second decade of research. In addition, there were a few attempts to obtain a more elaborate view on teachers' experiences through the use of narrative interviews. These two trends emerged in the second decade of research, roughly between 2002 and 2012.

The Child's Perspective

Guided by attachment theory, it was recognized that children may develop their own unique internal working model of the teacher-child relationship that would not necessarily correspond with their teacher's relationship perceptions. In previous years, older children's perceptions of affective relationship quality had already been investigated based on other theoretical models (e.g., social-motivational and social support models), targeting attachment-related constructs such as felt security (Ryan et al., 1994), psychological proximity seeking and emotional quality (Lynch and Cicchetti, 1992), and perceived support (Hughes, 2011). This body of research demonstrated the unique contribution of child perceptions to child outcomes above and beyond teacher perceptions of the relationship (Hughes, 2011). From the second decade on, scholars started developing child-perspective instruments based on attachment theory, aimed at capturing the three-dimensional conceptualization of teacher-child relationship quality resembling the teacher-reported STRS.

For young children in kindergarten, instruments were developed measuring the child's perception of the relationship with the teacher in a standardized interview setting. Mantzicopoulos and Neuharth-Pritchett (2003) constructed the Y-CATS, capturing a three-dimensional factor structure including warmth, conflict, and autonomy, which was also found in a Dutch kindergarten setting (Spilt et al., 2010). Reliabilities were relatively low but small associations with teacher relationship reports for content related constructs supported the instrument's validity as well as the assumed unique perspective on the relationship of child and teacher for warmth and conflict. No associations, however, were found between autonomy and the dependency scale of the STRS. In later years, Gregoriadis and Grammatikopoulos (2014) used an instrument based on the attachment Q-set (Waters and Deane, 1985) to assess indicators of closeness and conflict through the child's perspective in kindergarten. The two dimensions could be reliably assessed but associations with teacher perceptions were not reported.

In addition to standardized interviews, several child questionnaires were developed with the explicit aim of measuring the STRS constructs, closeness, conflict, and dependency, from the child's perception. Koepke and Harkins (2008) started with making a close adaptation of items and response alternatives of the STRS, presented to individual children in the lower years of grade school. They only found sufficient reliability for the closeness dimension and no agreement with the teacher's perception of the relationship whatsoever. The child-report measure of Vervoort et al. (2015; CARTS), presenting statements in two steps to early elementary children, was based on the STRS and the Y-CATS, supplemented with some new items. The three dimensions, closeness, conflict, and dependency were found sufficiently reliable, however, only child-reported closeness and conflict converged with teacher reports on the parallel STRS-scales. Child-reported dependency had more in common with closeness (both child- and teacher-reported) than with teacher-reported dependency, and may reflect rather an effective use of the teacher as a source of support (cf, instrumental dependency, Sroufe, 2021) than a lack of a secure base. For upper elementary children, Koomen and Jellesma (2015) developed the SPARTS, which was primarily based on STRS-items, supplemented with a few items from the Relatedness scales (Lynch and Cicchetti, 1992) and some new items. Next closeness and conflict, a third dimension was revealed that did not assess dependency but a new relationship dimension called negative expectations, referring to insecure feelings and unfulfilled needs of the child. All three dimensions were sufficiently reliable and again only child-reported closeness and conflict converged with the parallel STRS-scales. The SPARTS-construct negative expectations, however, did show meaningful associations with emotional problems, and hyperactivity and was, differently from the CARTS-construct dependency, negatively associated with child-reported closeness. Together these findings suggest that child-reported negative expectations of the SPARTS is a more negative relationship construct than the CARTS-construct dependency, referring to a fundamental lack of trust in the teacher that, in addition to the secure base function, seems to undermine the role of the teacher as safe haven.

In the second decade, scholars also started using more implicit techniques to capture the mental representation of the teacher-child relationship in especially young children. Based on work on family drawings, Harrison et al. (2007) started

using young children's drawings to get a new perspective on teacher-child relationships, more recently followed by Zee et al. (2020) for older elementary children. Eight different relationship dimensions could be assessed with these drawings: two positive dimensions (pride/happiness and vitality/creativity), five negative dimensions (tension/anger, bizarreness/dissociation, emotional distance/isolation, role reversal, and vulnerability), and an overall dimension (global pathology). These studies reported small to medium associations with the STRS scales closeness and conflict, but again, associations with dependency were lacking. Finally, Roubinov et al. (2020) used another implicit technique, that is a narrative hand puppet interview. Children were assumed to identify with one of two hand puppets, making contradictory statements. Their answers were coded into a measure for relational closeness, which correlated modestly with teacher-reported closeness.

In conclusion, studies have been quite effective in capturing the child's perspective on the relationship qualities closeness and conflict with both explicit and implicit methods, although it should be emphasized that research with implicit methods lags far behind in numbers. At the same time, it is striking that studies have been less successful in grabbing hold of the child's perspective with regard to dependency. The relationship dimension dependency therefore seems more tied to evaluation through the teacher's perspective.

Narrative Interviews With Teachers

Although the majority of research relied exclusively on teacher questionnaires like the STRS, new research emerged starting to explore teacher-child relationships through the lens of teachers' mental representations of relationships with individual children. Like parents, teachers are believed to develop a mental representation of the relationship with a child based on a shared history of interactions and experiences (Pianta et al., 2003). This mental representation entails beliefs and expectations about the child (perceptions and expectations about likeability, sociability, teachability, ...), the self (a sense of self-efficacy and agency in different roles, e.g., caregiver, socializer, instructor, behavior manager, ...), and the self-other relationship (expectations and perceptions of trust, intimacy, reciprocity, and sharing versus unreliability, discordance, distance, ...). These mentally represented beliefs and expectations are believed to be associated with an affective tone, referring to the affective dimension of mental relationship representations. It is assumed that a mental representation of a relationship provides a lens through which a child's behavior is interpreted and responded to by a teacher, thus guiding everyday moment-to-moment interactions (Spilt et al., 2011).

Guided by a longstanding tradition to use narrative interviews to capture attachment representations of adults, the Teacher Relationship Interview (TRI; Stuhlman and Pianta, 2002) was developed to capture teachers' mental representations of relationships with individual children. The TRI was adapted from the Parent Development Interview (Button et al., 2001). As opposed to questionnaires, requiring teachers to evaluate the qualities of the relationship on a set of pre-formulated items, the TRI asks teachers to narrate a number of relational experiences (that are afterward coded by an independent coder). The TRI may thus elucidate more implicit qualities of teachers' processing of relational experiences with a child. Research using both the TRI and STRS reported a moderate degree of convergence (Spilt and Koomen, 2009; Koenen et al., 2019), thus emphasizing the distinctiveness and complementary value of both assessment methods.

First cross-sectional studies with the TRI emerged in the second decade of research. Stuhlman and Pianta (2002) found that representations of negative affect (anger) were related to overt expressions of negativity in teacher-child interactions. This research confirmed the connection between the quality of moment-to-moment interactions and mentally represented qualities of the teacher-child relationship. Research in samples of children with and without externalizing behavior showed that teachers' mental representations of relationships with disruptive children were more strongly characterized by negative affect, including anger and helplessness (Spilt and Koomen, 2009). Research in the third decade remained sparse, although a later study examining unique associations with different externalizing behaviors (hyperactivity vs. conduct problems) further revealed that teachers' mental representations were characterized by more positive affect and sensitive practices in relationships with children displaying hyperactivity, whereas there was more represented negative affect (anger) when it came to conduct problems (Bosman et al., 2019). These findings show that teachers' mental representations of relationships with individual children are shaped by children's behavioral characteristics.

Third Decade

Despite all attempts to capture the multidimensional construct of teacher-child relationships, dependency remained largely overlooked and was treated like a stepchild, often neither mentioned nor measured in research on teacher-child relationships. It was not until the end of the third decade that a call for research on dependency was launched for a special issue on teacher-child dependency to prompt research on this dimension (Verschueren and Koomen, 2021). In the third decade, it became also apparent that there were subtle cultural differences in the understanding of teacher-child relationships, and in particular in the dimension of dependency. Furthermore, researchers began to ask what affective teacher-child relationships from an attachment perspective could still mean for older children and their teachers. Attention gradually shifted from childhood to adolescence, or from relationships in (pre)elementary education to relationships in secondary education. Below, we address these three topics: the renewed attention to teacher-child dependency, cultural differences, and relationships with adolescents.

Dependency: A Forgotten Construct?

As research into teacher-child relationships progressed during the second decade, less and less attention was paid to the dependency dimension. Although research attempting to validate the three-dimensional factor structure of the STRS in non-US samples did include dependency (e.g., Gregoriadis and Tsigilis, 2008; Drugli and Hjemdal, 2012; Fraire et al., 2013;

Milatz et al., 2014), dependency was often left out in empirical studies on the antecedents, correlates, and consequences of teacher-child relationships (e.g., Baker, 2006; Harrison et al., 2007) or combined with conflict to a more general negative relationship factor (e.g., Hamre and Pianta, 2001), and was not represented anymore in the 15-item short form of the STRS (Pianta, 1992b) that was often used in later research (e.g., O'Connor et al., 2012). As a consequence, dependency was also left out as a separate dimension in meta-analytic reviews such as those of Roorda et al. (2011, 2017). This is striking given its prominent position in the pilot version of the STRS compared to conflict (Pianta and Nimetz, 1991).

One of the reasons for this declining interest obviously was the mediocre reliability of the five-item scale of the original STRS (Koomen et al., 2012). In addition, doubts were also expressed about the validity of dependency as a measure of dyadic relationship quality versus just being an indicator of child development (Doumen et al., 2009; Spilt and Koomen, 2009). In the beginning of the third decade, a new impetus for the study of dependency came from (culturally) adapted dependency scales, showing satisfying psychometric qualities in European countries (e.g., Koomen et al., 2012; Milatz et al., 2014). But research on the specific meaning of dependency in children's lives and development received renewed attention only recently by a special issue on dependency in teacher-child relationships (Verschueren and Koomen, 2021). A meta-analysis in this special issue (Roorda et al., 2021) substantiated the developmental significance of dependency by revealing small to medium associations with engagement, academic achievement, and prosocial behavior; medium associations with externalizing behavior; and even medium to large associations with internalizing behavior.

The special issue took the reader back to essentials in the conceptualization of dependency within attachment theory, such as the importance of focusing on dependency as a relationship characteristic reflecting children's uncertainty about the availability of a specific caregiver, which may vary among relationships, instead of an enduring individual trait that characterizes a child through the years in different contexts (Sroufe, 2021; Verschueren and Koomen, 2021). Moreover, scholars in this issue reflected on the multifaceted nature of dependency (Sroufe, 2021; Verschueren and Koomen, 2021) by drawing attention to the first studies ever to focus on dependency of children on teachers. In this first research a clear distinction was found between emotional dependency, defined as chronically and excessively seeking proximity and support and therefore closely related to the present dependency concept, on the one hand, and the developmentally more appropriate type of instrumental dependency, defined as support and help seeking in effective ways, on the other (Sroufe et al., 1983; Sroufe, 2005). Children with secure histories scored higher on instrumental dependency but lower on emotional dependency compared to children with insecure (resistant or avoidant) histories. There clearly is a need for more conceptual and empirical work in this area, including the question of which methods (e.g., teacher perception, observation) are most suitable to capture this more comprehensive picture.

Cultural Issues

As research on teacher-child relationships worldwide accumulated, cultural issues in the understanding and assessment of teacher-child relationships started to emerge. From the second decade onward, the dominant framework for assessment of teacher-child relationships had been the three-dimensional structure of the STRS covering closeness, conflict, and dependency. Although the STRS was developed from a predominantly Western perspective, research in non-Western samples proved that this three-dimensional structure held across cultures [whether assessed from the child's or the teacher's perspective, see Chen et al. (2019),Gregoriadis et al. (2021), and Vahidi et al. (2022)]. However, cultural differences emerged in the associations between the three dimensions. Whereas studies in more individualistic (Western) countries had usually found a correlation between dependency and closeness ranging from not-correlated to negatively correlated, studies in more collectivistic (Eastern) countries repeatedly reported small to medium positive correlations between closeness and dependency (Gregoriadis et al., 2020; Vahidi et al., 2022). This suggests that dependency is not as negative in collectivistic countries as in individualistic countries. In Western countries, relational dependency may be at odds with the emphasis on autonomous exploration and independence that characterizes individualistic cultures, thus being considered disturbing and something that should be discouraged. Conversely, in collectivistic cultures, relational dependency may align (at least to some extent) with ethics of interdependence valuing child-adult relatedness, and may therefore be considered a more adaptive feature (Gregoriadis et al., 2020, 2021; Vahidi et al., 2022). However, Sroufe (2021, p. 585) cautions that "a positive correlation between closeness and dependency rated by the same teacher is not testimony that high emotional dependency is good." It may be more correct to interpret this finding as teachers merely reporting feelings of warmth and closeness for children who excessively express their neediness.

Factor analysis, in particular the examination for measurement (non)invariance at the item level, is another way to examine cross-cultural differences in the conceptualization and assessment of teacher-child relationships. Subtle differences across cultures at the item-level were first reported by Chen et al. (2019). Cultural differences in child perceptions of closeness were most noticeable. In close relationships with teachers, Dutch students felt more at ease with their teachers and shared more personal information than their Chinese counterparts. However, Chinese students experienced more recognition and help when feeling uncomfortable. This latter finding may suggest that the safe haven function of the teacher-child relationship is more prominent in collectivistic cultures. Some item-level differences were also found in teacher-perceived dependency. A child being continually fixed on the teacher was found to receive a higher (teacher-reported) dependency score in relationships with Chinese teachers than in relationships with Dutch teachers. Conversely, a child seeking continuous confirmation from the teacher, was found to receive a higher (teacher-reported) dependency score in relationships with Dutch teachers than in relationships with Chinese teachers. This seems to suggest

that confirmation seeking behavior is more accepted (and considered less disturbing) in collectivistic cultures than in individualistic cultures. In sum, the scant cross-country research indicates that there are a few subtle conceptual differences, in particular in closeness and dependency, that need more in-depth investigation.

Adolescence and Secondary Schools

In the first decade, attachment-based research into teacher-child relationships was almost exclusively focused on early childhood education. This aligned with the assumption that teachers in their role of attachment figures are primarily important for young children, as the attachment systems of young children get more easily activated and young children's ability for self-regulation is more limited (Verschueren and Koomen, 2012). Given this initial focus on early childhood education, the STRS (Pianta, 2001) was developed for and validated in preschool and early grade school samples only. In the second decade, researchers gradually shifted attention to upper elementary grades and early adolescence. This research in secondary schools, however, remained predominantly guided by motivational theories (Roorda et al., 2011). As a consequence, the focus was (and still is) mainly on (student-reported) teacher support and/or closeness, and not on conflict and dependency. Moreover, research in secondary education typically examined relationships with teachers in general and not dyadic relationships with individual (subject) teachers (for an exception see, Roorda et al., 2019). It was not until the third decade, that a specific understanding of teachers as possible *ad hoc* attachment figures in adolescence started to develop, with the dependency dimension, however, still being ignored.

The question that arises is whether adolescents still need teachers to foster their emotional security. As children's self-regulation ability develops, the need for adult caregivers to preserve feelings of security may diminish. In addition, adolescents increasingly turn to peers as *ad hoc* attachment figures. In line with the declining need for adult caregivers, researchers reported typical declines in closeness in teacher-child relationships when children age (Jerome et al., 2009; Ansari et al., 2020). Moreover, the rate of decline of closeness has been found to increase throughout secondary school (Ettekal and Shi, 2020). It is, however, far from clear whether this decline primarily results from a fading need for closeness to teachers or is, at least to some extent, driven by the manner in which secondary education is organized. The steady decrease in closeness suggests a developmentally appropriate decline in the need for teachers as *ad hoc* attachment figures. However, a sudden and steep decline in closeness, over and above the normative rate of decline, in the transition from elementary to secondary school (Bokhorst et al., 2010; Hughes and Cao, 2018) denotes that the organization of secondary schools may play a significant role over and above typical developmental changes. Bergin and Bergin (2009) argue that "the real problem may be that secondary schools are not designed for belongingness" (p. 157). In secondary schools, children have multiple teachers and larger classes, affording teachers and children less opportunity to build personal relationships. In addition, there is a stronger emphasis on discipline, instruction, and achievement than on emotional support and relationships. This could thwart the development of close teacher-student relationships and may fuel conflict and misunderstandings.

As became clear in the first decade of attachment-based research, dyadic teacher-child relationships need time to develop (Bergin and Bergin, 2009). It is therefore conceivable that higher levels of closeness are observed in those secondary schools that afford teachers and students the necessary (leisure) time and opportunities for building trust and closeness in teacher-child relationships. Insightful in this regard is the study of Van Ryzin (2010) about students participating in a mentor advisory program. Secondary students met periodically with teacher advisors in small groups over an extended period of time to share both academic and personal issues. Almost half of the students reported a desire to use their mentor teacher as a secure base and safe haven. Using stringent criteria for the classification of persons as attachment figures, 41% of the students nominated their teacher advisor as part of their attachment network. Attachment to the teacher advisor was found to be related to growth in feelings of hope and to growth in achievement, and to be particularly important for students whose mothers did not classify as an attachment figure (Van Ryzin, 2010). Thus, in secondary schools that actively promote teacher-student bonding, we may see more teachers performing the role of *ad hoc* attachment figures for (vulnerable) students.

Developmental differences between childhood and adolescence should perhaps not be searched so much in the *importance* of teacher-child relationships as in the *functions* of teacher-child relationships (**Figure 1**, cf. Theme 2 and Theme 3). Research on the similarity of closeness across different age groups indicated that, given the same level of teacher-child closeness, older children were less likely to seek support and comfort from their teachers when upset than younger children (Koomen et al., 2012; cf. Theme 3). In the same vein, it has been suggested that the safe haven function (cf. Theme 3) becomes less important in early adolescence than the secure base function (cf. Theme 2). The study of De Laet et al. (2014) showed that adolescents do not so much turn to teachers for help when upset, but do rely on teachers for support to undertake new activities and to pursue personal goals and plans. The secure base function thus appears more prominent. This is an interesting finding given that identity formation is a key developmental task during adolescence and involves the exploration of possible selves through the trying of commitments and the investigation of new things (Verhoeven et al., 2019). Identity exploration may be facilitated through a secure base provided by teachers. As such, close teacher-child relationships in adolescence are more than a source of social capital or support. As Murray et al. (2016) demonstrated, attachment-based constructs that underly the secure base function like emotional availability, trust, and (lack of) conflict are more important to the psychosocial adjustment of adolescents than social support-based constructs.

The unwaning importance of the secure base function found by De Laet et al. (2014) is echoed in the finding of the meta-analytic study of Roorda et al. (2017) that close teacher-child relationships become increasingly important for children's engagement in secondary school as compared to elementary school. This meta-analytic study, however, also points to a gap in our knowledge as there was limited research in secondary

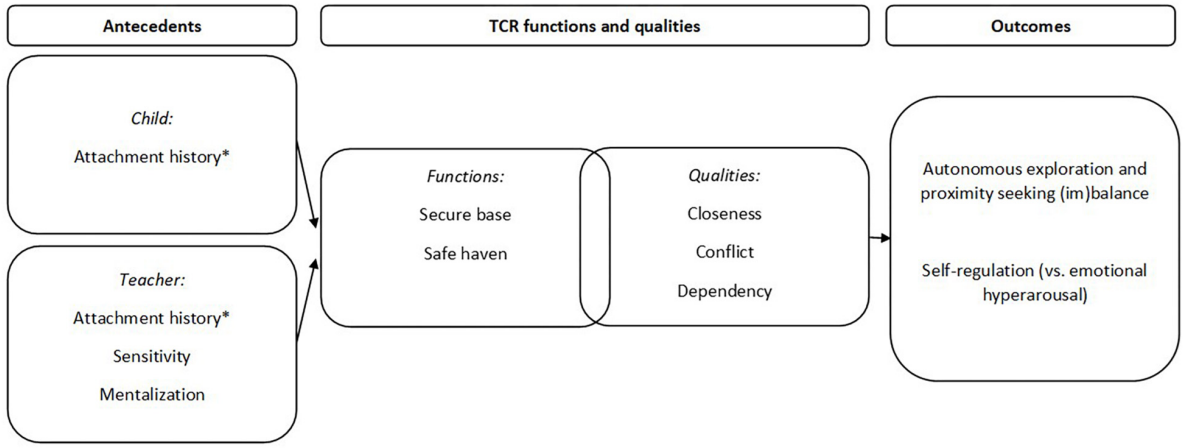

FIGURE 1 | Proposed model for the study of teacher-child relationships (TCR) from an attachment perspective. *Shaping more abstract and generalized internal working models (IWMs) of the self and others.

education that had examined teacher-child relationships from the attachment-based multi-dimensional perspective. The few studies that did, indicate that closeness and conflict both play a role in adolescents' psychosocial adjustment, school functioning, and achievement (Longobardi et al., 2016; Engels et al., 2021).

Although adolescents in general may tend to rely less on teachers for a safe haven relative to younger children (either as a result of secondary school organization or as a result of a developmentally-appropriate declining need for emotional support from adult caregivers), this may be different for vulnerable adolescents. The attachment system of vulnerable youth is believed to get activated more easily, while their self-regulating ability is relatively limited, which may lead to more excessive support seeking (e.g., dependency) or other maladaptive coping strategies (e.g., self-injury). There is indeed no evidence that dependency becomes less important as children grow older (Koomen et al., 2012), on the contrary, meta-analytic evidence shows that dependency becomes even a stronger indicator of maladjustment as children grow older (Roorda et al., 2021). Other research further signify the importance of teacher-child relationships for vulnerable adolescents including youth experiencing stressful live events (Pössel et al., 2013), lacking secure mother-child attachments (Van Ryzin, 2010), or youth with mental health problems and suicidal ideation (Sun and Hui, 2007; Halladay et al., 2020).

In sum, teacher-child relationships, and in particular the secure base function, remain important in adolescence for students in general, with the safe haven function appearing in particular important for more vulnerable students.

Theme 2: Secure Base and Autonomous Exploration

Provision of a secure base and safe haven are key functions of attachment relationships. The *secure base function* refers to children's drive for *autonomous exploration* of the environment through the promotion of children's sense of *emotional security*. In a secure teacher-child relationship, a child can use the teacher as a base for exploration. Through exploration of the environment the secure base function contributes to children's engagement in social activities and learning at school, which fosters their socioemotional and cognitive development. In insecure relationships with teachers, children may not be able to use the teacher as a basis for exploration, resulting in low social and task engagement. Children with insecure teacher-child relationships may exhibit aloof and detached behaviors, oppositional-aggressive behaviors, or excessive proximity seeking behaviors, each at the cost of autonomous exploration.

Throughout the first to third decade of research, there have been numerous correlational studies that have demonstrated effects of teacher-child relationships on children's classroom participation, task behaviors, and (dis)engagement (e.g., Birch and Ladd, 1997; Pianta et al., 1997; Hughes et al., 2008; Roorda et al., 2017; Zee and de Bree, 2017) as well as effects on social-emotional development (e.g., Zhang and Nurmi, 2012; Garner et al., 2014). In this section, we will discuss the handful of research that more explicitly tested the secure base mechanism in classroom settings. These studies are rather rare and are scattered across the second and third decade. Therefore, we discuss this research together in one section.

Second and Third Decade

Thijs and Koomen (2008) observed the secure base mechanism in a dyadic task setting in kindergarten. The results demonstrated positive effects of teacher support on the observed emotional security of socially inhibited children. In line with the secure base hypothesis, emotional security, in turn, was associated with children's task engagement. A similar kindergarten study in a small-group task setting with two children revealed that associations between observed emotional security and profiting from instruction (spontaneous recall) on a new categorization and recall task during training sessions were mediated by observed task engagement in individual children (Koomen et al., 2004). This study thus also supported the secure base hypothesis, although teacher support appeared to have no influence in this group setting with two children. It was not until 2020

that these findings were replicated in a sample of preschool children with externalizing behaviors (Alamos and Williford, 2020a), providing additional evidence for teachers' supportive interactions to contribute to children's task engagement through children's emotional security. Spilt et al. (2018) also examined the effect of observed teacher sensitivity in a dyadic setting. The study included a special education sample of children with attachment problems who were at risk of poor teacher-child relationships and were expected to be less able to use teachers as a secure base for exploration. Change in independent classroom participation and social withdrawal were assessed as proxies of autonomous exploratory behavior at the beginning and end of the school year. It was found that children with insecure-dependent teacher-child relationships showed improvement of independent classroom participation over time when dyadic teacher sensitivity was observed to be high. Conversely, a lack of sensitivity was associated with declines in independent exploratory behavior. The findings suggest that teacher sensitivity contributes to children's ability to use teachers as a secure base for autonomous exploration of the learning environment. No effects were, however, found on social withdrawal. In a sample of children with attachment problems in special education, it could be that more is needed than only a secure teacher-child relationship to improve social engagement. Alternatively, social withdrawal cannot be equated with social engagement, and future studies may need to include a more fine-grained assessment of social engagement.

Another exceptional study was the experimental study of Ahnert et al. (2013) that was published at the end of the second decade. They studied the secure base function of the teacher-child relationship in kindergarten using a priming paradigm to manipulate (stimulate) emotional security by priming children with their teacher's image (experimental condition) or with a neutral prime (control condition). It was assumed that the activation of a child's mental representation of a secure (close) teacher-child relationship would enable the child to invest energy in cognitive exploration and learning, thus facilitating cognitive processing. It was indeed found that closeness was associated with a faster execution of the task (but not with greater accurateness).

Teachers may not only provide a secure base to children for exploration of the outer world (i.e., the social classroom context or learning material) but also for exploration of the inner world (Oppenheim and Koren-Karie, 2014). Through dialogue caregivers engage children in a co-construction process of meaning-making of emotional experiences. Such guided exploration of children's inner feelings is key to raise children's emotional awareness and self-understanding. According to Oppenheim and Koren-Karie, caregivers' sensitivity in guiding this co-construction process of meaning-making of emotional experiences through dialogue with children reflects the "psychological secure base" function of the caregiver-child relationship. This idea has recently been explored in a sample of children with attachment problems in special education (Spilt et al., 2021): Teachers were asked to engage with individual children in dialogues about past emotional events. High-quality dialogues, characterized by for example sensitive teacher guidance and absence of negativity of both teachers and children, were related to children's perceptions of more closeness and less conflict, but not to teacher perceptions of the teacher-child relationship. Research of Alamos and Williford (2020b) also attests to the importance of teachers' talk about emotions with individual children in the context of sensitive dyadic interactions. This more recent focus on more specific qualities of the secure base function of teacher-child relationships may deepen our understanding of the functions of teacher-child relationships.

Theme 3: Safe Haven and Stress-Regulation

The *safe haven* function of attachment relationships refers to the caregiver's ability to support a child that is distressed. The caregiver's role is to help the upset child to regulate feelings of insecurity and stress in order to restore feelings of *emotional security*. Through this process of co-regulation of the child's emotions and sensitive guiding of the child's behavioral responses, children develop the self-regulation skills that are necessary to cope with challenges and stress. Children who cannot rely on teachers as a *safe haven* are expected to experience more hyperarousal and to spend more energy on regulating feelings of insecurity in comparison to children who can rely on teachers for support. The (continuing) regulation of hyperarousal may deplete cognitive resources and lead to concentration problems, inflexibility, and frustration intolerance. Moreover, without adult co-regulation of emotions and behaviors in stressful circumstances at school, the development of self-regulation is expected to be impeded.

In the first decade, research indicated that security seeking behavior from children and supportive responses from teachers were central features of the teacher-child relationship in early childhood (cf. Theme 1). In addition, teacher-child relationships have been linked to children's emotion regulation abilities (e.g., Pallini et al., 2019) and social-emotional competence (e.g., Garner et al., 2014). However, few studies actually tested whether teachers could restore feelings of security in children in or immediately after stressful circumstances. The first studies observing the *safe haven* phenomenon in specifically stressful circumstances emerged in the second decade of research. We therefore start our review in the second decade of research. In the third decade, new experimental research emerged and biological measures of stress (e.g., cortisol secretion) were used to examine effects of teacher-child relationships on children's stress regulation.

Second Decade

In the second decade of research, there were two studies that tried to capture children's emotional insecurity in specific circumstances and the role of the teacher-child relationship. Little and Kobak (2003) examined daily fluctuations in children's self-esteem in response to negative events at school. It was shown that children's self-esteem was less impacted by negative events in the classroom when they had secure relationships with teachers. The study of Thijs and Koomen (2008) is one of the rare studies that examined the effects of observed teachers' sensitivity in real time. They expected that a one-on-one task setting would be mildly stressful for socially-withdrawn children.

However, they observed less emotional insecurity among socially-withdrawn children when teacher support was high, although this was not found in a setting with two children instead of one (Koomen et al., 2004). In sum, at the end of the second decade, there was first support, albeit sparse and inconsistent, for the idea that close relationships may help sustain and restore children's security feelings and sense of self both during and after stressful events.

Third Decade

In the third decade, research started to evaluate children's stress regulation on the basis of HPA axis activity and the release of cortisol over the course of a school day. To our knowledge, Ahnert et al. (2012) were the first to examine the secretion of cortisol, demonstrating that first grade children with secure relationships with teachers were better able to down-regulate cortisol levels throughout the day. Moreover, these children were still able to do so on Fridays when stress was more pronounced than on Mondays. Conversely, children with insecure teacher-child relationships were less successful in stress regulation on Mondays and also less successful on Fridays than on Mondays. These findings indicate that the coping resources of these children weakened throughout the school week due to the lack of a safe haven.

Causal evidence for the link between teacher-child relationship quality and children's self-regulation ability comes from experimental research. Hatfield and Williford (2017) examined the effects of Banking Time, an intervention to promote dyadic teacher-child relationships. They found greater declines in cortisol among preschool children participating in the Banking Time intervention than in the control condition. Improvements in teacher-child relationships thus appear to benefit the development of children's stress regulation at the physiological level.

Vandenbroucke et al. (2017) used an experimental design to examine the restoring effect of teacher emotional support immediately after a stressful event. The researchers used the Cyberball paradigm to simulate online social exclusion. Children played an online ball-tossing game with two virtual peers, but after a short while the two peers began to ignore the child by not tossing the ball to the child anymore. This was supposed to evoke mild distress and physiological arousal that would interfere with working memory performance. It was also assumed that such effects of (social) distress on working memory performance could be buffered in real time when adult caregivers provided emotional support. To simulate emotional support, children received an emotionally supportive audio message from a stranger (control condition), from one of their parents (parent condition), or from their teacher (teacher condition) directly following the stressful event. A buffering effect of teacher emotional support on working memory was found after social exclusion. This finding suggested that emotional support from teachers can restore emotional security immediately after a stressful event, and in such a way that insecurity feelings no longer interfere with task performance. However, this protective effect was only found for children with poor parent-child relationships, which aligns with other research suggesting that the teacher-child relationship is especially important for at-risk children (Sabol and Pianta, 2012).

In sum, both observational and experimental studies indicate that teacher-child relationships contribute to children's stress regulation and help restore felt security in difficult circumstances.

Theme 4: Attachment History and Relationship (Dis)continuity

Continuity or concordance between parent-child and teacher-child relationships was a major theme in initial research on teacher-child relationships. On the one hand, attachment theory contends that attachment quality is "a unique reflection of the dyad's history of interactions" (Van IJzendoorn et al., 1992, p. 9). This implies limited concordance between relationships with different attachment figures. On the other hand, attachment theory also states that children's representations of parent-child relationships constitute the basis of a more generalized (superordinate) attachment model that encompasses more global feelings, beliefs, and expectations about the self (self-worth) and others (availability and trustworthiness). Such global attachment representations, based on a *history of attachment relationships*, reflect the meaning of children's overall experience with multiple caregivers and provide a lens through which they interpret and evaluate the behavior of new relationship partners, thus guiding the development of new relationships (**Figure 1**). This reasoning suggests that there is *continuity* between children's relationships with parents, current teachers, and future teachers. More recently, attachment scholars have begun to explore a third argument, namely the idea of *domain-specific* attachment representations (Sibley and Overall, 2008). Children may develop domain-specific working models for relationships with parents (family relationships) as well as domain-specific working models for relationships with teachers (school-based relationships). This implies a stronger continuity in relationships with subsequent teachers (i.e., relationships within the same domain) and less continuity or even *discontinuity* between parent-child and teacher-child relationships (i.e., relationships across domains). Moreover, domain-specific representational models could mainly be activated in their specific domain but not in other domains (Verschueren et al., 2012). This would imply that children's attachment models of relationships with parents as well as those with teachers have domain-specific effects on children's development.

Limited continuity or discontinuity may point to the possibility of compensatory functions: Caregiver-child relationships outside the primary caregiving context could offer children *corrective experiences*, which may result in modification of initially insecure attachment models of self and others. In this way, teacher-child relationships can become a *compensatory resource* for children with insecure parent-child relationships (Sabol and Pianta, 2012; Verschueren, 2015). *Continuity*, on the other hand, may constitute a hazard for children with insecure parent-child relationships because it places these children at risk for the formation of insecure relationships with teachers.

Researchers have almost exclusively focused on the influence of children's attachment history. Yet, a few scholars have also

pointed to the (assumed) importance of the attachment history of *teachers* (Pianta et al., 2003; Spilt et al., 2011). Teachers' representations of attachment relationships, based on a history of attachments in their life, may shape their ideas about how children should relate to adult caregivers as well as the extent to which they believe that teaching involves a relational component. Teachers' history of attachment relationships may also explain personal differences in teachers' desire for close relationships with children (or even the tendency to seek corrective emotional experiences through relationships with children, see Riley, 2009) and in how teachers respond to children's proximity seeking behaviors. However, research that has linked teachers' attachment history or style to the quality of teachers' dyadic relationships with children in (pre)school is virtually absent (Kesner, 2000; Granot, 2014). Consequently, our review is limited to research on children's attachment histories.

Research on children's attachment history and (dis)continuity in children's relationships across different attachment figures throughout (pre)school, as well as the compensatory role of non-familial relationships, can be found in all three decades and began already early in the first decade.

First Decade

Research in the first decade reported a moderate degree of continuity between parent-child and teacher-child relationships (Pianta and Nimetz, 1991; Lynch and Cicchetti, 1992; Pianta et al., 1997). For example, it was found that maltreated children experience less optimal relationships and less psychological proximity with teachers than they desire (Lynch and Cicchetti, 1992). Moreover, continuity was more likely to occur when there were similarities in the quality and context of care as well as sufficient time for the child and adult to spend together, which was more often the case in child care settings than school settings (Howes and Matheson, 1992; Kontos, 1992). The modest continuity found suggests that children's experiences with parents do affect their relationships with teachers at least to some extent. At the same time, it points to a fundamental role of the shared history of dyadic interactions that is unique in each relationship (Van IJzendoorn et al., 1992; Pianta et al., 2003).

In addition, first support was found for the compensatory role of teacher-child relationships. Researchers reported stronger beneficial effects of teacher-child relationships on children's academic and social development when children were insecurely attached to the mother (Mitchell-Copeland et al., 1997) or had a history of poor parenting (Hughes et al., 1999; Burchinal et al., 2002). This research points to a significant window of influence of new relational experiences to reverse early experiences (Buyse et al., 2011).

Second Decade

Research on concordance between mother-child and teacher-child relationships continued in the second decade of research. Attachment (in)security with parents was found to be modestly associated with developments in closeness and conflict across the (pre)school years (O'Connor and McCartney, 2006; O'Connor et al., 2012), but the association seemed to weaken as children grew older (Zhang, 2011; Sabol and Pianta, 2012). Research further suggests that the influence of mother-child attachments diminishes in comparison to the influence of early teacher-child relationships on current teacher-child relationships (Howes et al., 1998; O'Connor and McCartney, 2006). Specifically, whereas relationships with kindergarten teachers were predicted by early relationships with mothers and child-care teachers, relationships with first-grade teachers were no longer predicted by relationships with mothers when relationships with child-care teachers and kindergarten teachers were taken into account (O'Connor and McCartney, 2006). It thus seems that within-domain relationships are more strongly interrelated than cross-domain relationships. The waning influence of mother-child attachments supports the idea that children may develop domain-specific internal working models of teacher-child relationships that become more differentiated from working models of parent-child relationships over time (Howes et al., 1998; Sabol and Pianta, 2012; Verschueren et al., 2012).

As longitudinal research increased, researchers started to examine the degree of continuity in teacher-child relationships throughout kindergarten and grade school (Jerome et al., 2009; Spilt et al., 2012a). Cross-year continuity was moderately strong for teacher-perceived conflict and significantly stronger for conflict than for teacher-perceived closeness (Jerome et al., 2009), which was relatively low. These findings have led scholars to speculate that conflict is a more child-driven aspect of the teacher-child relationship than closeness (Spilt et al., 2012a). Importantly, continuity in children's perceptions of closeness across teachers appears higher (Hughes et al., 2012) than continuity in teacher perceptions of closeness (Jerome et al., 2009). The higher continuity in children's closeness perceptions may be explained by these perceptions being shaped by more generalized representations of the trustworthiness of others based on a history of (domain-specific) relationships (Hughes et al., 2012).

Third Decade

Research on relationship continuity across home and school contexts further developed in the third decade. Whereas research in the earlier decades had typically focused on teachers and parents as informants, Vu and Howes (2012) and Vu (2015) examined children's own representations of relationships with mothers and teachers. Using the same story-completion task for the assessment of both relationships, a relatively strong level of concordance was found as compared to previous research (in particular with respect to security). Yet, there were differences in representations as well. Children's representations of attachment to teachers were less hyperactivated, less disorganized, and more deactivated than representations of attachment to mothers. These qualitative differences support the notion of domain-specific internal working models of relationships. Also, this combined finding of both similarities and differences further supports the notion that teacher-child relationships are not full-fledged attachments but *ad hoc* attachments (cf. Theme 1).

When the qualities of teacher-child relationships are not merely a reflection of the qualities of the mother-child relationships, both relationships are likely to contribute to children's development. Children's development should then

be better predicted by the sum of children's relationships than by solely the mother-child relationship. O'Connor et al. (2014) reported unique independent effects of teacher-child relationships on children's internalizing and externalizing problems as reported by their mothers, taking into account early mother-child attachment security, current mother-child relationship quality, and current teacher-child relationship quality. In addition, there is some evidence for domain-specific effects on children's development. Verschueren et al. (2012) demonstrated domain-specific effects of teacher-child relationships on academic self-concept, whereas children's general self-concept was uniquely predicted by the mother-child relationship.

Research on the compensatory functions of teacher-child relationships for children with insecure parent-child relationships also accumulated toward the third decade. Buyse et al. (2011), for example, tested this assumption in preschool. They reported that children with insecure mother-child attachments were no longer at risk for more aggressive behavior in the context of close teacher-child relationships. Ben-Gal Dahan and Mikulincer (2020) tested this assumption in public high schools focusing on a school adaptive outcome, that is task persistence. They found a negative effect of children's global attachment orientations (i.e., attachment anxiety but not avoidance) on both self-reported and actual task persistence. However, perceptions of the homeroom teacher as accepting and responsive in times of need buffered the negative effect of global attachment anxiety on task persistence. However, not all studies report a buffering effect. Roubinov et al. (2020) found that child perceptions of closeness did not prevent growth in conduct problems of children exposed to harsh parenting. They did find, however, that *low* closeness exacerbated growth of conduct problems, suggesting that harsh parenting combined with non-close teacher-child relationships constitutes a double risk for the development of oppositional defiant disorders.

In sum, this line of research clearly demonstrates that both parent-child and teacher-child relationships contribute to children's development. Furthermore, as continuity across relationships is modest, there seems support for the idea that children develop mental representations of relationships with teachers that can be differentiated from their representational models of relationships with parents. However, it should be noted that continuity may also be driven by (more or less stable) child characteristics or socialization processes rather than by early attachment representations of self and others. As such, no definite conclusions can be drawn yet. In addition, evidence for compensatory effects is also inconclusive as there are multiple studies that have found no compensatory or buffering effects of close teacher-child relationships for children with poor parent-child relationships (Meehan et al., 2003; Verschueren et al., 2012; O'Connor et al., 2014; Roubinov et al., 2020).

Theme 5: Teacher Sensitivity and Mentalization

Caregiver sensitivity is considered a causal predictor of attachment quality. *Sensitivity* refers to the ability of the caregiver to perceive and interpret a child's signals and needs accurately, and to respond appropriately and promptly (Ainsworth et al., 1974). Van IJzendoorn et al. (1992, p. 9) suggested that one of the criteria to consider teacher-child relationships as "real" attachment relationships is that teacher sensitivity should be predictive of relationship quality. A teacher's sensitivity to the needs of an individual child should thus contribute to the relationship with that child (**Figure 1**). Besides caregiver sensitivity, caregiver mentalization is considered an important predictor of attachment security (Zeegers et al., 2017). Mentalization refers to the ability of the caregiver to interpret and think about behavior in terms of underlying mental states like thoughts, feelings, desires, and intentions, and has been studied as three specific, partly overlapping, abilities: mind-mindedness, reflective functioning, and parental insightfulness (Medrea and Benga, 2021).

Despite its theoretical importance, research on teacher mentalization is almost absent. Research on teacher sensitivity toward *individual* children in (pre)school settings does exist, but has remained scattered, even after three decades of research. Most research has focused on teacher sensitivity in child-care settings (Howes and Hamilton, 1992; Ahnert et al., 2006) or has examined teacher sensitivity at the *classroom* level by observing teachers' sensitivity in relation to multiple children (e.g., La Paro et al., 2006; Buyse et al., 2008), which has proven to be basically different from dyadic teacher sensitivity (Weyns et al., 2019; Nguyen et al., 2020). There is some research showing how teacher sensitivity promotes emotional security and engagement. As already outlined above (cf. Theme 2), Thijs and Koomen (2008), Spilt et al. (2018), and Alamos and Williford (2020a) observed teachers' sensitivity and/or support in dyadic task settings at school, showing improved emotional security and engagement of children when teacher sensitivity was high. In this section, we focus on dyadic teacher sensitivity and mentalization *as antecedents of* teacher-child relationship quality (closeness, conflict, and dependency) in (pre)schools. Because research in the first decade is virtually lacking and in the second decade still scarce, we review research in the second and third decade together.

Second and Third Decade

To the best of our knowledge, hardly any study has explicitly examined dyadic teacher sensitivity as an antecedent of individual teacher-child relationship quality in (pre)school. Spilt and Koomen (2012) observed dyadic teacher sensitivity in a small-group task setting on two regular school days in preschool. No direct associations with closeness and conflict were found. As the level of sensitivity was relatively high, the authors speculated that the level of sensitivity was "good enough" for most children to develop positive relationships with teachers. For girls with behavior problems, however, teacher sensitivity did prove to be important. Girls had less conflictual relationships with teachers when the level of teacher sensitivity was observed to be high. In later years, several studies (addressing other research questions) reported zero-order correlations of observed teacher sensitivity with closeness, conflict, and dependency ranging from non-significant to significant but small (Spilt et al., 2012b;

Whittaker et al., 2018; Koenen et al., 2019; Alamos and Williford, 2020a) as well as a moderate association of narrated sensitivity (assessed with the Teacher Relationship Interview) with closeness but not with conflict or dependency (Koenen et al., 2019).

Despite this lack of research on dyadic sensitivity, the first attachment-based intervention studies, that appeared at the bridge between the second and third decade, did target teachers' dyadic sensitivity as the key mechanism of change. Banking Time is perhaps the best known attachment-based intervention (Pianta, 1999; Driscoll and Pianta, 2010). The name of this intervention is a metaphor for building up positive experiences. In a series of child-directed play sessions, teachers learn to observe, narrate, and label a child's emotions and needs, communicate relational messages of care and acceptance to the child, and reduce teacher-directed behaviors. Banking Time has primarily been applied in preschool research, but its principles are also incorporated in interventions for older children, for example in secondary education (Duong et al., 2019). In some interventions, Banking Time is combined with an intervention component that targets teachers' behavior management skills (McIntosh et al., 2000; Vancraeyveldt et al., 2015). Banking Time interventions have shown mixed effects. Some studies reported improvements in teacher-reported closeness but no reduction of conflict (Driscoll and Pianta, 2010), whereas a study that included the behavior management component reported reductions of conflict but no improvements in closeness, albeit these effects were explained by the first relationship-enhancing component (based on principles of Banking Time) and not by the added behavior management component (Vancraeyveldt et al., 2015). In observational research, Banking Time was found to decrease teachers' negative interactions with children, but also, somewhat unexpectedly, to decrease positive interactions with children (Williford et al., 2017). The decrease of positive interactions may be a result of teachers having learned to limit their behaviors and interactions to allow the child more autonomy. Together, these studies provide first causal evidence that raising teachers' sensitivity and responsiveness results in improvements in teacher-child relationship quality.

At the same time, a few scholars started to explore the construct of reflective functioning, a caregiver mentalization ability, in relation to teacher sensitivity and teacher-child relationships. Stacks et al. (2013) conducted narrative relationship interviews of preschool teachers. They reported significant variation in reflective functioning between teachers. Moreover, they found that higher scores on reflective functioning were related to teachers' self-reported behaviors promoting children's social-emotional skills. Spilt et al. (2012b) used the notion of reflective functioning in the development of a relationship-focused reflection program for teachers called the LLInC program (Leerkracht Leerling Interactie Coaching in Dutch or Teacher Student Interaction Coaching when translated into English). The LLInC program is a brief coaching program that makes use of the narrative interview techniques of the Teacher Relationship Interview (TRI) to facilitate teacher reflection on internalized feelings and beliefs concerning key dimensions of the teacher-child relationships (e.g., sensitive discipline, secure base function, perspective taking). Reflection is aimed at linking the narrated mental representation to day-to-day experiences in order to understand how mental representations guide everyday interactions (cf. Pianta, 1999). Experimental research provides indications that LLInC enhances teacher sensitivity, self-efficacy beliefs for emotional support, and relationship quality as evidenced by more closeness and less conflict in relationships with children with relational or behavioral problems (Spilt et al., 2012b; Bosman et al., 2021). There is also some evidence that LLInC supports relationships of pre-service teachers with difficult children during internships (Koenen et al., 2021).

Key2Teach is a comprehensive, personalized coaching program that combines LLInC with functional behavioral analysis, video interaction guidance, and synchronous coaching (Hoogendijk et al., 2020). The authors contend that the joint focus on reflective functioning and interaction skills produces a synergy that leads to greater intervention effects. The program Key2Teach has been found to reduce conflict and increase closeness in dyadic relationships with children with externalizing problems, although it is not known which components of this comprehensive program accounted for these positive effects (Hoogendijk et al., 2020).

Together these intervention studies tentatively suggest that reflective functioning could be an antecedent of high-quality teacher-child relationships, and that reflection-inducing intervention programs may support teachers in building relationships with children with challenging behaviors.

THE FOURTH DECADE: SUGGESTIONS FOR FUTURE RESEARCH

As we look back on three decades of research, we can conclude that research on teacher-child relationships guided by attachment theory has greatly contributed to our understanding of teacher-child relationships in (pre)school contexts. All aspects of our theoretical model (**Figure 1**) have been addressed in empirical studies. Yet, there remain gaps in our understanding that we hope will be addressed in the forthcoming decade(s). For each of these issues, we provide suggestions for future research.

First, gaps remain in the assessment of teacher-child relationships across developmental phases, school levels, and cultures, and in particular with respect to the dependency dimension (cf. Theme 1). In addition, there has been limited attention to assessing more implicit processes in teacher-child relationships, including children's and teachers' perceptions of teacher-child relationships at the representational level.

Recommendations:

- Increase understanding of the role of dependency in teacher-child relationships and its effects on children's (school) development.
- Consider the concept and measurement of dependency as a multifaceted construct, and its measurement from the child's perspective through a combination of instruments and methods.
- Examine cultural differences in the three-dimensional model of closeness, conflict and dependency, and

in dyadic teacher sensitivity, to shed more light on conceptual and empirical similarities and differences in concepts and mechanisms.

- Develop concepts and measures that span different development phases (early childhood, middle childhood, adolescence) and school transitions (preschool, elementary, secondary, high) to investigate normative developments and school system influences. Investigate under what conditions and circumstances teacher-child relationships (or specific functions of the teacher-child relationship) remain important for older children, asking "how do children negotiate the need for independence and autonomy versus proximity and support when they grow older?" and "how do adolescents signal their need for proximity support?"
- Broaden understanding of teacher-child relationships by exploring more implicit processes using indirect methods like narrative interviews, drawings, or story stem tellings.

Second, teacher-child relationships are believed to contribute to children's development through its positive effects on emotional security (secure base, cf. Theme 2) and restoration of emotional security during or after stressful events (safe haven, cf. Theme 3) as basis for autonomous exploration. However, while research has established a clear link between teacher-child relationships and child development, research that focuses on manifestations of the secure base and safe haven functions in everyday interactions as the explaining mechanism through which child development is fostered remains relatively sparse. In addition, the role of emotional (in)security is often assumed but seldomly measured.

Recommendations:

- Use fine-grained assessments of teacher behaviors that reflect the secure base and safe haven functions in everyday interactions in the classroom, and examine its effects on child emotional (in)security, (maladaptive) help-seeking, and (lack of) autonomous exploratory behaviors.
- To measure child emotional (in)security, use combinations of self-reports, observations, and physiological measures of distress and resiliency.

Third, the mechanisms behind relationship (dis)continuity have remained understudied. We still do not know to what extent and how (new) relational experiences with teachers may shape children's current working models of teacher-child relationships as well as children's working models of caregiver-child relationships in general. We also have little understanding of the importance of teachers' own attachment histories for teacher-child relationships, and how this association may be mediated by representational models of caregiver-child relationships at different levels of generalization.

Recommendations:

- Increase understanding of the unique and interactive effects of parent-child and teacher-child relationships on child outcomes (as current evidence for interactive effects is inconclusive). Examine domain-specific effects of parent-child and teacher-child relationships (as teacher-child relationships may have stronger effects on school-related outcomes).
- Investigate how naturally occurring changes in relationships with teachers across schools years are related to changes in children's working models of relationships. Examine whether dyadic teacher-child relationships may offer children corrective experiences that may induce changes in relationship-specific, domain-specific (generalized within domains) and global (generalized across domains) internal working models of relationships.
- Examine connections between relationship-specific working models of teacher-child relationships, domain-specific internal working models of teacher-child relationships and global internal working models of relationships of both teachers and children.
- Examine how teachers' own attachment history may shape (representational models of) relationships with (individual) children.

Fourth, although attachment-based interventions targeting teacher-child relationships take a strong interest in improving dyadic teacher sensitivity, there is surprisingly little research on dyadic teacher sensitivity as an antecedent of relationship quality, and even less research on teachers' mentalization ability in relationships with individual children.

Recommendations:

- Advance understanding of teacher sensitivity at the dyadic level as an antecedent of teacher-child relationship quality. Examine the validity of standardized tasks to accurately assess differences in dyadic sensitivity both within and between teachers and across tasks.
- Develop and examine measures for the assessment of teachers' capacity for mentalization (e.g., reflective functioning) as an antecedent of teacher-child relationship quality.

LIMITATIONS

This chronological review focused on developments in attachment-based research on the affective and dyadic nature of teacher-child relationships. Five main themes were distinguished that were discussed in different sections and visually sketched in **Figure 1**, including (1) conceptualization and assessment, (2) secure base and autonomous exploration, (3) safe haven and self-regulation, (4) attachment history and relationship continuity, and (5) teacher sensitivity and mentalization. For each theme, we reviewed the research developments across three decades beginning in 1992. This review by no means intended to present an exhaustive overview of all attachment-based research of the last 30 years. Rather, we presented a limited number of peer-reviewed studies that, to the best of our knowledge, were most useful to illustrate attachment-based themes in teacher-child relationship research (**Figure 1**). This review was also not intended to identify cultural differences in the antecedents, qualities, functions, or outcomes of teacher-child relationships. However, cultural issues in relationship qualities (closeness, conflict, dependency) appeared too prominent to ignore and were therefore discussed to facilitate understanding of the concept of teacher-child relationships. A systematic research review is needed to obtain the complete picture of the (lack of) knowledge and insights in cross-cultural issues concerning attachment-based teacher-child relationship research. To keep the review concise and focused, we also did not specifically address issues of student ethnicity, risk and vulnerability (for a

review, see McGrath and Van Bergen, 2015). Furthermore, our review addressed the developments in attachment-based research primarily from a theoretical perspective and not from a practical perspective. We refer readers to other reviews for how issues in teacher-child relationships can be addressed in practice (e.g., Kincade et al., 2020; Spilt et al., 2022). Finally, other perspectives and models [e.g., social and motivational perspectives; Davis (2003) and Wentzel (2012)], although not less important for our understanding of teacher-child relationships, were also beyond the scope of this review. After all, from the beginning, scholars have recognized the importance of multiple frameworks and perspectives to more fully capture the developmental meaning of teacher-child relationships (Pianta, 1992c; Verschueren and Koomen, 2012; Verschueren, 2015).

CONCLUSION

At the start of the three decennia of research, Pianta wrote that during his time as a middle school teacher in special education he "was counselor, instructor, role model, mentor, and psychological parent," to which he added that it "became apparent that the students' performance was related to my sense of closeness with them and their sense of security with me" (Pianta, 1992a, p. 1). Now, 30 years later, there is no longer just a vague notion of what teacher-child relationships are and what they might mean for children. Instead, there is now a well-studied theoretical framework of teachers as "psychological parents" and of the key importance of the teacher-child relationship as a secure base and safe haven in children's school lives. This review contributed by illustrating and discussing this research base structured around five key themes that typify the application of the attachment theory to teacher-child relationships (**Figure 1**). Besides a steady progress in theoretical and conceptual understanding, we are pleased to see that research-based insights are increasingly translated into interventions that are being implemented in schools to strengthen teacher-child relationships in practice (e.g., Kincade et al., 2020). And yet there is still a lot of research work to do as some attachment-based assumptions have remained understudied or evidence has remained inconclusive. We are looking forward to the new insights that the forthcoming decade(s) of research may bring us.

AUTHOR CONTRIBUTIONS

JS wrote the first draft of the manuscript. HK contributed to the manuscript revision. Both authors contributed to the conception of the study and read and approved the submitted version.

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The role of legislation in K-12 school discipline: The silence of action

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Researchers have consistently identified the disparity between teachers' practical and legal knowledge regarding teachers' right to discipline students. However, few studies have investigated teachers' construction processes that form construction outcomes, which would help navigate the role of legislation in school discipline. This study contributes to a holistic picture of the neglected disciplinary rights that teachers construct in teaching practice and their underexplored attitude toward the law, using an interview-based constructionist method on twelve teachers of Lvliang city in a Chinese K-12 context. The findings suggest that the participants prefer to acquire discipline knowledge by interacting with multiple power relations in their local environment and that their knowledge is historically and culturally specific. Although the disciplinary right they construct is never static, balanced, or essentialised, the participants' constructions are commonly not in line with legal provisions or the aims of the law. Furthermore, school discipline legislation plays a silent role in empowering teachers to discipline students, but it is more visible in holding back teachers' use of corporal punishment. These findings illustrate the complexity of implementing school disciplinary law as a universal national policy.

KEYWORDS

social constructionism, corporal punishment, interaction, legislation, power relations, teachers' right to discipline students

Introduction

The challenge of instilling appropriate school discipline may differ across countries due to different legal and social contexts (Arum and Ford, 2012). In China, the *status quo* of K-12 school discipline is ambivalent. Some K-12 teachers use corporal punishment (CP) abusively, while others are reluctant to discipline students (Liu and Cheng, 2020; Liu and Zhang, 2020; Qin, 2020; Duan and Yang, 2021). To solve this problem, the Ministry of Education of the People's Republic of China [MOE] (2020) issued a draft for public suggestions on implementing disciplinary rules for K-12 school teachers on 22 November 2019. On 1 March 2021, the disciplinary rules for K-12 education (trial implementation) came into force. Since then, disciplining students by Chinese teachers has been a legal right.

Different from many Western countries, the major aim of the legislation about how to discipline students is for creating a harmonious and orderly educating environment, revisiting traditional norm of respecting teachers' authority (Zuo and Hu, 2012) and fixing the relationship between students and teachers (Xia et al., 2020). In modern Chinese context, "discipline" is not CP and is defined as "an educational behavior managed by schools and teachers to urge students who violate rules to correct their mistakes" (Ministry of Justice of the People's Republic of China, 2019). The law classifies discipline into mild, moderate, and severe levels, according to the violation committed by the student and the circumstances thereof. Article 8 stipulates that every teacher has the right to use the following actions:

(1) Verbal reprimands;
(2) Order students to make an apology or an oral or written review;
(3) Appropriately add additional teaching or class public welfare service tasks;
(4) Order students to stand in the classroom during one class teaching time;
(5) Give after-class instruction;
(6) Use other appropriate measures stipulated by school rules or class conventions.

Furthermore, interpreted by Chinese society as the red line that teachers cannot cross, Article 12 lists eight prohibited measures:

(1) Using CP (i.e., hitting or stabbing) that causes physical pain;
(2) Punishing in disguised forms, such as standing above the normal limit, repeated copying, forced uncomfortable movements or postures, and deliberate isolation, which indirectly harms students' physical and mental health;
(3) Abusing or violating students' dignity with discriminatory and insulting words and deeds;
(4) Punishing all students because a few students violate rules;
(5) Punishing students for their academic achievements;
(6) Selectively punishing students due to personal emotions or preferences;
(7) Appointing some students to discipline other students;
(8) Other violations of students' rights.

Research of teachers' practice of discipline

Although school discipline does not involve CP in some cultural contexts (Mamatey, 2010; Arum and Ford, 2012; Govender and Sookrajh, 2014), literature reviews on discipline cannot be divorced from the long-lasting phenomenon of CP in human society. Defined as inflicting physical pain on offenders to modify their misbehaviors (Wilson, 2002), CP is one of the oldest and most prevalent educational means adopted by almost every nationality, race, religion, and social class (Middleton, 2008; Brown, 2009; Durrant, 2020). In Anglo-Saxon literature, the doctrine of '*in loco* parentis' historically gave teachers the considerable authority to punish children (Nelson, 1965; Pagliarino, 1970; Wilson, 1982; Segalo and Rambuda, 2018), and children were treated as 'recipients of unquestioned violence in the child-adult relationship' (Richardson and Wilcox, 1994, 175). In the eighteenth century, some French and English thinkers were against 'the scholastic punishment' (Durrant, 2020), and in 1839, the first parenting book to oppose CP was published (Chavasse, 2018). Between the 1820s and the 1850s, voices condemning physical punishment rose in the United States (Glenn, 1981). In 1867, New Jersey became the first United States state to abolish school CP (Thomas, 2020). At the beginning of the twentieth century, Western views shifted from seeing children as "property" (Hart, 1991; Richardson and Wilcox, 1994) to regard them as "essential human resources whose mature form would determine the future of society" (Hart, 1982, 4). In the 1940s, CP diminished and was abolished in the United Kingdom (Middleton, 2008). Since 1989, the UN Convention on the Rights of the Child has been advancing children's rights worldwide (United Nations General Assembly [UNGA], 1989) and strongly advocating the self-determination rights of children (Hart, 1991). In 2006, the United Nations Committee on the Rights of the Child [UNCRC] (2006, 6) claimed, 'all forms of physical or mental violence does not leave room for any level of legalized violence against children'. By 2020, 59 countries had fully prohibited CP in all settings, and 132 countries had banned school CP (Durrant, 2020).

However, the debate over CP is contentious. Many studies have demonstrated that CP is cruel, abusive, and humiliating, which encourages the replication of physical or psychological violence, discourages learning, and reduces learning passion and motivation (e.g., Ariès, 1962; Glenn, 1981; Hyman, 1990; Wilcox and Richardson, 1993; Ramsburg, 1997; Gershoff, 2002; Straus, 2003; Cicognani, 2004; Cameron, 2006), while other researchers contend that CP is effective in class management. Baumrind (1996) questioned the negative relationship between CP and psychological problems, and Wilson (2002) concurred that CP is fair for everyone because everyone dislikes pain. Naong (2007) reported that banning CP in South Africa weakened local schools' discipline and frustrated teaching morale. Moreover, Arum and Ford (2012) argued that CP could result in respect for teachers, and students in countries with stronger teaching authority show better performance in math and science.

Interestingly, since the 21st century, countries such as the UK, South Korea, Singapore, Germany, Australia, and South Africa have legalized teachers' right to discipline

delinquent students (Wu, 2012; Department for Education, Government of the United Kingdom, 2016; Deakin et al., 2018; Segalo and Rambuda, 2018; Zhang and Wang, 2021). Globally, school discipline shows a common trend of being institutionalized (Deakin et al., 2018).

The development of discipline in China

As a local and international trend, CP in China was also historically rife, condemned in the past century, and legally banned in recent decades. Based on hierarchical relationships, Confucianism entitled ancient teachers to the unquestionable power to punish students, which can be seen in ancient proverbs such as "beating is a sign of affection," "a good beating makes the number one scholar," and "a lenient teacher is an inert teacher." These traditional beliefs were not challenged until the 1840s. After the Opium War, traditional Chinese agricultural society transformed into a semi-colonial and semi-feudal social structure. During this historical period of upheaval, away from Confucian tradition, a new intellectual class that embraced the Western worldview of science and democracy began to emerge, promoting the New Culture Movement (Wang, 2019) in the 1910s and 1920s, which questioned the authority of traditional Chinese teachers (Shi, 2019).

Furthermore, the Cultural Revolution between 1966 and 1976 refuted the traditional Chinese virtue of respecting teachers and damaged Chinese teachers' social status (Zhao, 2014). After the Reform and Opening Up Policy in 1978, Western concepts were introduced into China again, such as children's rights, the learner-centered teaching approach, and appreciative education (Yan, 1999; Huang, 2016; Li and Huang, 2020; Qian and Ma, 2020; Xia et al., 2020), thus greatly improving students' rights and weakening strict education. In 1986, the Compulsory Education Law of the People's Republic of China abolished CP in school systems. However, this law did not play a significant role in curbing CP, as many studies have demonstrated that CP is still widely practised by many Chinese teachers (e.g., Liu and Su, 1997; He, 2001; Wei, 2011; Yu and Gao, 2018). At the same time, school punishment creates conflicts between the family and schools (Zuo and Hu, 2012; Liu and Cheng, 2020; Shen, 2020; Wu, 2020). Current studies about school discipline conducted by Chinese researchers do not mostly focus on the development of children but on the return of teachers' authority and the harmony of school management. It should be mentioned here that China's One-Child Policy lasted 24 years (from 1982 to 2016) and made every single child the only hope of a whole family leading to the current child-centered Chinese education culture (Zhang and Wang, 2021). Gradually, parental involvement has taken on a powerful position to intervene in teachers' occupational duties (Wu, 2020). To create a more orderly school environment, Chinese society is revisiting the Confucian norms of respecting teachers' authority (Xia et al., 2020).

Research of teachers' knowledge of legislation

If teachers' concerns are not addressed, the enforcement of changed discipline policies 'is bound to fail' (Naong, 2007). Therefore, it is important to understand teachers' perceptions regarding school discipline legislation. Some related studies exist, although they are few. Some researchers have demonstrated that teachers' beliefs about discipline differ from the legislation. For example, in Govender and Sookrajh's (2014, 14) study, even though "teachers regulate disciplinary techniques according to legislation, some teachers still see value in using CP." Lwo and Yuan (2011, 158) also found that participants in Taiwan are fully aware of laws but do not believe that alternative disciplinary measures can "increase students' self-control and management." This is also evident in Segalo and Rambuda's (2018) study, which found that some South African teachers feel that alternative discipline strategies are usually ineffective.

Similarly, Brown (2009) reported that surveyed South Korean teachers perceived the law banning CP as a hindrance to teaching. Mamatey (2010) continued to explore what drives South Korean teachers to endorse CP as an educational system factor but not the teachers' beliefs. Furthermore, some empirical studies indicated that teachers feel reluctant or fearful to exercise their right to discipline learners "because they might in doing so infringe on students' human rights" (Rossouw, 2003, 2), or because the learners might counter-attack them and threaten the teachers' safety (Cicognani, 2004; Segalo and Rambuda, 2018). Zuo and Hu (2012) assert that Chinese teachers are unclear about the word "appropriate" in the legal provisions; therefore, they have a wait-and-see tendency in practice. Skiba (2016) found that disciplinary right has been unequally exercised by United States teachers as marginalized students are more likely to be disciplined.

The above studies reveal a gap between practice and law, which indicates disparities between teachers' grassroots knowledge and official knowledge. Previous studies have put forward the following suggestions: Instead of using coercive power, teachers should display expertise in their teaching to command authority (Tlhapi, 2015); class sizes should be reduced (Lwo and Yuan, 2011; Cheruvalath and Tripathi, 2015; Segalo and Rambuda, 2018); and teachers should "refresh their understanding of how discipline can be enforced and should work on findings new ways of effectively minimizing incidents of misbehavior" (Segalo and Rambuda, 2018, 5). Additionally, parental involvement should be reinforced (Segalo and Rambuda, 2018; Obadire and Sinthumule, 2021), and education administrators should supervise teachers to ensure they do not give up this right and include teachers' exercise of the disciplinary right into the teachers' performance assessment indicators (Yu et al., 2020). Educators should also make joint efforts to discipline mischievous learners

(Obadire and Sinthumule, 2021). If teachers do not exercise their right to discipline students, this should be regarded as dereliction of duty (Yu and Gao, 2018; Li and Huang, 2020).

Moreover, teacher training about discipline should be strengthened (Lwo and Yuan, 2011; Segalo and Rambuda, 2018), and a standard procedure for resolving conflicts between school and family should be established (Lwo and Yuan, 2011). An institutionalized and transparent relief mechanism should also be built to safeguard students and teachers' rights (Yu and Gao, 2018), and legislators need to standardize the formulation of school discipline plans and guide parents to participate in school supervision rationally (Zhang and Wang, 2021).

Nevertheless, many of the previous studies have adopted a "God's eye view," which regards teachers as a rational community. Second, some studies presume that the rights regulated by law equal the teachers' real rights in practice. Third, suggestions for teachers are essentialist-oriented, paying much attention to the essence of teachers' cognitive outcomes but overlooking how individual teachers' constructions emerge and change during daily social interactions in specific contexts. As such, these studies have failed to provide a comprehensive and dynamic picture of teachers' perceptions regarding their right to discipline students in the real world.

The phenomenon of school discipline in the modern world has been widely discussed in the existing literature. However, a discussion on the role legislation plays in school discipline is missing, and this role is fundamentally determined by teachers' constructions, given that the test of authority should be its implementation at the micro-level (Foucault, 1980). Therefore, teachers' constructing processes should be explored before offering them suggestions. This study is a step toward filling this gap in the literature.

Theoretical framework: Social constructionism

Social constructionism is defined by Gergen (1973), who argued that knowledge is historically and culturally related and people must extend their enquiries into social, political and economic fields for a comprehensive understanding of the world. In addition to social conditions, Willig (1999a) insisted on the equal importance of individual action, which starts with people's convictions about the nature of the society (Collier, 1998). Stressing cultural and historical specificity, social constructionism is also featured by anti-essentialism, which upholds the world as a product of social processes; thus, people have no essence or definable nature (Burr, 2003).

Additionally, social constructionists focus on "the dynamics of social interaction" (Burr, 2003, 9) and social practices that generate new knowledge (Foucault, 2000). As social interactions construct "our versions of reality" (Burr, 2003), people's constructions are non-objective and partial (Jovchelovitch, 2001). Furthermore, constructionism studies emphasize the process of social construction, which is explained by Gergen (2014, 1772) as "negotiated agreements among people." This emerging process is closely connected with iniquitous power relations, which lead people to make decisions (Burr, 2003).

Social constructionism also suggests that constructions are driven by language on the significance of "the social meaning of accounts and discourses" that reveal the "power relations operating in society" (Burr, 2003), and discourse analysis often attracts social constructionists' interest. Knights and Morgan (1991) claimed that discourse is not just about how we describe the world but also how it influences people's actions. Consequently, the constructive analysis often takes the form of the traditional qualitative interview approach, but the difference 'is in the theoretical assumptions that are driving the analysis' (Burr, 2003, 174).

Considering school discipline, people's constructions regarding punitive violence have fluctuated with changes in economic, cultural, and social structures. The construction of individual teachers is worth exploring further. Kelly (1955) argued that every individual has unique ways of constructing the world, and understanding different constructions may lead people to create new possibilities for action. Subsequently, this study addresses the following questions:

(1) How do teachers construct their legislative right to discipline students?
(2) What are their constructions about this right?
(3) What role does the legislation play in K-12 school discipline?

Methodology

The sample and data collection procedure

Lvliang is an underdeveloped mountain city, located in the North central region of China. Adopting the snowball sampling method, the researchers designed semi-structured interview questions (See **Table 1**) revolving around teachers' construction about the legal right and recruited 12 interviewees. **Table 2** summarizes the profiles of the 12 participants who were recruited for the interview.

The data collection lasted for more than one year. Two rounds of in-depth interviews (i.e., 24 interviews) were conducted in Mandarin Chinese and were audio-recorded, transcribed, and then coded by Nvivo 12. The first interview round took place in July 2020, nine months after the draft of public suggestions was issued by the Chinese Ministry of Education, mainly focusing on the teachers' construction process about the right to discipline students. In July 2021, four months after the formal implementation of the legislation, the second interview round was conducted, which mainly concentrated on teachers' perceptions of the new legislation.

TABLE 1 Sample of the semi-structured interview questions.

The first round
Q1: Have you ever paid attention to teachers' right to discipline students? How do you understand it?
Q2: What do you think is the greatest difficulty of exercising this right in practice?
Q3: Do you work in a school where there are many disciplinary phenomena for students as a whole? What kind of punishment do teachers usually use?
. . .
The second round
Q1: What is the attitude of the teachers in your school toward learning the disciplinary rules for K-12 education? Does the principal attach importance to this?
Q2: Do you think teachers in your school dare to discipline students since the implementation of the law?
Q3: Has the principal's management orientation changed?
. . .

TABLE 2 Profiles of the participant group.

Participants	Gender	School type	Age	Teaching experience
A	Female	Public High School	59	34 years
B	Female	Private Elementary School	56	37 years
C	Female	Public Elementary School	46	27 years
D	Female	Public Elementary School	36	14 years
E	Female	Public Junior High School	32	12 years
F	Female	Public High School	45	24 years
G	Female	Public Junior High School	39	16 years
H	Female	Public Elementary School	34	12 years
I	Female	Public Elementary School	43	22 years
J	Male	Public Elementary School	38	15 years
K	Female	Public Elementary School	30	5 years
L	Female	Private Elementary School	31	9 years

Additional questions were asked within the predetermined thematic framework based on the participant answers in order to allow the researchers to develop a keen understanding of participants' thoughts. As social constructionists call for a democratic research relationship (Burr, 2003), researchers employ the approaches of "collaborative inquiry" (Gergen, 1999) and "community psychology" (Orford, 1992) to seek "participant-led ways of improving specific social situations" (Willig, 1999b, 7) during interviews. Moreover, because social constructionist research never aims to identify a final description of the world, reliability and validity are not suitable for evaluating the quality of social constructionist research (Burr, 2003).

Data analysis and presentation

As the social constructionist perspective rejects 'objectivist' vision of social groups but emphasizes the constructing process of realities through emerging social interaction (Dervin, 2011), the initial data analysis resulted in a large cluster of data linked to various interacting ways. Notably, every individual teacher's constructing process and results are never formed by solely interacting with just one party from the groups of parents, principals, colleagues, students and the social environment. Instead, the interaction process often takes place in a non-liner way. Therefore, the coding process involved an interaction between examining the data of multiple interacting ways and referring to theories linked to social constructionism. Guided by the social constructionism theory, the second round of data analysis looked for data relevant to the "priori codes" (Johnson and Christensen, 2018, 489) of "negotiating identity," "private conversation," "observation," and "personal experience" that were identified before doing the analysis. Also, the inductive code of "interculturality" was generated during the data analysis process (See **Table 3**).

Even though the research questions tend to address K-12 teachers' "constructing ways," "constructing results," and "constructing influences," the latter two themes are always co-occurring with the first one. Therefore, the finding part will in details explain the concrete interacting process that how participants constructed their knowledge about the right to discipline students, and the discussion part will address all of the three research questions.

Findings

Finding 1: Constructing from negotiating identities

Primary socialization "involves being an identity and a place in society" (Andrews, 2012, 41). Identity "originates not from inside the person, but from the social realm, a realm where people swim in a sea of language and other signs' (Burr, 2003, 109). How do people describe the reality indicates hidden power relations (Burr, 2003). Teachers in this study commonly construct and negotiate their "fragmented, shifting and temporary identity" (Burr, 2003, 54) as disadvantaged roles during family-school interactions, of which the process is often filled with conflicts (Burr, 2003). Additionally, with the prevailing use of mobile Internet technology, online chat groups have become a normalized communication channel between school and family. By taking advantage of communication technology, the online "self-organization" (Paul, 1988) of parents comes into being, opening up previously closed classrooms to the public. Participant C expressed the teachers' concerns as thus:

Now, teachers often say that parents are God! Every class has a WeChat group (a popular mobile phone chat tool in China), and parents also set up WeChat groups that exclude teachers. This allows parents to interact with each other regarding teaching in school. The multi-media and We-media might focus their cameras on you. . . We dare not exercise this right entitled by the Ministry of Education. Who knows the result after punishment?

TABLE 3 Sample of the coding process.

Interview data	Codes	Priori code	Inductive code
Now, teachers often say that parents are God!	Negotiating identity	√	
She kept telling me never to touch any delinquent students	Private conversation	√	
Our principal merely read this law to us but never truly encourages us to discipline students as he does not want to cause problems for himself.	Observation	√	
. . ."what teachers can do" regulated by the new legislation does not work well in real class management.	Personal experience	√	
I hear that CP is legal in America. Why are we just learning appreciation education from them?	Interculturality		√

C seemed to suggest that parents stand in a higher position within school-family power relations. The metaphor of *God* implies the infiltration of consumerism culture into Chinese education, which enables one consumer (parent) to refer to another (Baudrillard, 1996). Also, she believes the technology tools weaken teachers' authority and her attitudes toward the legislation are negative. This demonstrates people's action is determined by the prevailing knowledge in the society (Burr, 2003) but not the legal knowledge. "Who knows the result after punishment?" reflects individual teachers' fearful emotion as the result after exercising the disciplinary right is still unpredictable. Even though the legislation protects teachers' right (if the teacher was the injured party), teachers think the appealing procedures are troublesome in taking time and energy. They don't believe this legislation is capable of recalling their courage to discipline students. G negotiated teachers' identity as a "vulnerable group." She had this to say:

We teachers are very vulnerable when dealing with the administrative power. If this kind of things happen (family-school conflict), teachers are always those who are blamed for. Can I appeal to the law? But I still need time to work and earn money.

Although the legislation frames the disciplinary right, teachers tend to seek for other ways of strengthening their rights. C has also constructed that trust from parents can reinforce teachers' disciplinary rights through interacting with many parents. To her, improving children's test scores has become a means of self-empowerment. She felt confident about constructing an identity of the "model teacher' to win parents" trust and more real rights to discipline students:

I am a model teacher and always play a leading role among colleagues. How do you make them (parents) trust you? The first thing is to improve their children's testing scores. Those teachers who are bad at that are very likely to trigger school-family conflicts.

Finding 2: Constructing from private conversations

Burr (2003) asserts that our understanding of the worlds is never objective, which comes from people around us. Berger and Luckmann (1991) maintain that conversation maintains, modifies and reconstructs subjective reality. It was found that no participants in this study had carefully read the legal documents about discipline, but they would like to obtain the objective knowledge from private conversations among colleagues. The shared inner thoughts and subjective experience serve a more constructive role in building their knowledge. For instance, from participant G's viewpoint, the role of legislation is invisible in empowering teachers with disciplinary rights but visible in curbing teachers' punishment behavior and lowering teaching morale. Her construction arose from a private dialog, from which she internalized the legal effects by understanding how the authorities representing the law deal with ordinary teachers. Then, a negative attitude toward the law has been passed on to others.

Recently, an experienced teacher in our school was forced to suspend a class. Out of responsibility, she used CP on students, and the parents complained against her. Eventually, even the superintendent came to our school to deal with her case. I feel bad and angry. She told me that those who do nothing about discipline have no problems with their teaching careers, but being responsible will stir up trouble. I felt her depression. She kept telling me never to touch any delinquent students.

Also, all of 12 participants shared the family-school conflicts aroused by punishment, which just happened around them. Actually, teachers talk to each other about those incidents in their daily life, invisibly building up teachers' knowledge about the law from a bottom-to-up pattern. Those individual teachers are not only information receivers but also information deliverers. From this research, the legislation doesn't change teachers' original conviction. They are inclined to draw informal working experience about how to avoid troubles in teaching practice through private conversations. For instance:

I often told young teachers that, if you don't discipline students, the worst thing is that you are seen as a bad teacher. But it is better than losing your career. Right? If conflicts happen, you are going to be blamed by the whole society (A).

I am sure no parents in nowadays encourage you to beat their children. Even though a few parents told teachers to discipline their kids, we would not do that. Many colleagues told me those parents didn't say what they really thought. If you really discipline their kids, you might be complained (J).

Finding 3: Constructing from observing the education environment

Social constructionists believe that people's observations reflect the real world (Andrews, 2012). Teachers can directly observe if the law has changed the education environment. All 12 participants reported that their school principals organized conferences to help teachers understand the new legislation about organizing their right to discipline students. Moreover, they commonly confessed that they paid little heed and trust to the principal's public discussions about the new legislation. However, according to the interview data, not all participants could clearly distinguish between CP and discipline. Many of them observed that their colleagues did not care about the new law. Their commonly indifferent learning attitude resulted in the formalism of the legislation. Additionally, China is a high-context country; thus, teachers tend to sense the regulatory climate from the principals' actions rather than the principals' public discourses. For example, Participant H said,

> Our principal read this new law to us. But I don't think she really attaches importance to it. When it comes to discipline, we still associate it with beatings. My colleagues and I never actively acquire legal knowledge on our own unless we hear complaints from parents. Nothing has changed. CP is still commonly seen in my school.

It can be seen from this micro environment that the intention of principals' public talk was supposed to impart the knowledge of legal rights. Nevertheless, teachers observed that principals also played a passive role when facing complaints from parents. This observation in fact decreased teachers' willingness to study the law. Participant B tried to explain why teachers were not concerned about the new legislation. She posited that, from the principal's perspective, encouraging teachers to discipline students might threaten the safety of the school management. B commented on the principal's blocking role as follows:

Our principal merely read this law to us but never truly encourages us to discipline students as he does not want to cause problems for himself.

Finding 4: Constructing from subjective disciplinary experience

The world can never be known if human subjective experience is neglected (Andrews, 2012). In this study, participants are likely to justify the feasibility of disciplinary measures offered by legislation by reflecting on their subjective practices. Whether rational or emotional, teachers' reflection is certainly a mode of thinking (Dewey, 1933), often stimulated by teaching practice, which is supposed to "be a powerful tool contributing significantly in maximizing teacher learning and their professional expertise" (Stavroulia and Lanitis, 2020, 286). Some identified scenarios evolve around teachers' practice of discipline is teachers' reference to legal policies when they need to make "disciplinary decisions" (Yell and Rozalski, 2008).

Disciplinary practice in schools is more complex than the formal written legislation that governs it on the surface. The main role of the legislation is to guide the school to have the intended view of what it wants it to be. Its effectiveness is to be perceived as fair for all students, protecting students' right to education in a safe and dignified environment. However, in schools, the relationship between the legislation and practices tends to be of a nominal value. There is no doubt that teachers undertake efforts to comply with legislation, they reflect the use of more creative ways to create school norms that are more relevant in addressing behavioral issues. Nevertheless, this study finds that teachers' subjective experience only helps them construct the idea that the legislation does not facilitate a good learning climate. This is consistent with the idea of Hammersley (1992) that reality means the subjective experience of every day rather than the objective world. For example, Participant J said the following:

> We are not allowed to use CP now, but "what teachers can do" regulated by the new legislation does not work well in real class management. For example, 'standing against the wall as a punishment' hardly subdues students, especially younger pupils.

Finding 5: Constructing from interculturality

China is 'an extremely diverse country' (Dervin, 2021, 35) with an enormous population and a vast territory, of which the social homogeneity brought about by industrialization and commercialization is lower than that of small developed countries (Su, 2011). Even though the same legislation presides in all places for K-12 teachers in China who share the same passport, teaching conventions, and official language, implementing the same policy is heterogeneous because of cultural distances. Many participants in this study think that Lvliang is a small mountainous city, often reacting slower to national policies than developed areas. Based on an intracultural perspective, participant B had this to say:

> I think (teachers) in big cities might be better (in knowing the documents). In small cities, teachers are just either busy with teaching or household duties. They don't pay attention to the new law.

Participant A's account demonstrates an essentialist tendency of trying to catch the "cultural essence" (Dervin, 2011)

of cultural groups in different nations, as she integrated critical cultural awareness into her construction of the law. Her "skills to critically evaluate practice and products of one's own culture and those of other cultures" (Byram, 1997, 53) led her to make a cultural comparison, thinking about the differences and similarities, and formed her critical attitudes toward the law:

> You see, when Westerners make hamburgers, they devote particular attention to standardized production, but traditional Chinese chefs never use a measuring glass or weighing machine. The food-making process was not normalized, but Chinese food tastes great!

CP had been an undoubtful teaching act until Western concept of children's rights was introduced to China. Since then, voices for respecting children's rights have increased, which influence people's understanding and practice of disciplining. Participant B criticized that the over-emphasis on appreciation education was not good for children's development. She believed the return of strict education was very necessary. When she shared her cognition about the right to discipline students, she recognized that education culture was fluid and showed some cultural ethnocentrism.

> You see, we learn the appreciation education from USA. I hear that CP is legal in America. Why are we just learning appreciation education from them? They just don't let us learn the right thing (strict education)!

Discussion

How do teachers construct their legislative right to discipline students?

Regarding the first question, the findings demonstrate that while interpreting the law, teachers are inclined to acquire their subjective knowledge from interacting with the small world they inhabit. For them, official ways are not the only approach to understanding the extent to which they can exercise their right to discipline students in practice. Instead, after interacting with students, parents, colleagues, and principals in different micro contexts, teachers are like rhetoricians, using their capacity for identity negotiation, argument, justification, and criticism but not absorbing the literal rules without reflection (Billig, 1987). These findings echo Sarbin's (1986) opinion that human beings often impose a structure on personal experience, and this structure present both their experience and how they represent those to themselves.

Daily interactions constitute individual teachers' working experience, construct teachers' underlying beliefs about their positions in a set of non-linear power relations, and "reaffirm the basic validity of this dominant moral order" (Kitzinger, 1989, 95). The findings regarding the participants' constructing process demonstrate that what motivates teachers to shift their attitude is not top-down training but the sense of safety from micro contexts. This finding raises questions about the suggestions made by Segalo and Rambuda, who stressed teachers' agency and ignored that individual teachers' cognitive process is often in the service of their own interests (Burr, 2003). Furthermore, in Participants B and H's construction processes, principals do not truly value the discipline legislation. This finding reveals school administrators' inner attitudes toward the law, which contrasts Yu et al's. (2020) suggestion that education administrators should supervise and evaluate teachers to ensure they do not give up their disciplinary rights.

Moreover, education is a moral and ethical act (Reagan, 1993). As emotional human beings with moral senses who "make large personal emotional investments in their practice' (Juan, 2018, 1), the participants" constructing processes are accompanied by emotions and moral sense. From this study, in disciplinary settings, teachers construe that anger and regret toward disobedient students occur out of a sense of responsibility and love. Except for taking personal interests into account, the findings demonstrate that teachers need to be praised, affirmed, and recognized for their moral behaviors as their disciplinary acts are not intended to cause harm. Discipline is, therefore, a kind of emotional and moral labor in some participants' constructions. When students and parents misunderstand this labor, they feel frustrated, helpless, and even scared of their duties. Therefore, the suggestion that taking no disciplinary measures means a dereliction of duty (Yu and Gao, 2018; Li and Huang, 2020) might aggravate teachers' negative emotions, which "can only fast track their exit from the profession" (Naong, 2007, 297).

What are their constructions about the disciplinary right?

In terms of the second question, the data demonstrate the uniqueness in participants' constructions of the law on discipline. Their constructions are subjective, fluctuating, and unbalanced. The constructions include the following: discipline means CP; beating is a sign of being responsible; the disciplinary right in law is ineffective in practice; to improve students' test scores, teachers must be empowered to discipline the students; the teachers' right to discipline is limited and not encouraged by the law; and giving up the disciplinary right is for their occupational safety. Even though the findings of K-12 teachers' construction results are individualized, in some way, they reflect Chinese history, cultural norms, educational values, and economic structure.

In China, CP has traditionally been viewed as necessary, and its recorded history can be traced at least 2,500 years back (Tang, 2017). It also includes a long history of adopting Confucian doctrine to dominate the classroom moral order,

but the traditional culture that teachers should be honored, respected, and not doubted has eroded in the globalization era. With frequent interactions with Western cultures, modern China is moving away from its traditions, becoming increasingly similar to developed countries in the West (Su, 2011). Mayo (1945) points out that traditional society is stereotyped, as the modern industrial world is a society that requires adaptation to rapid changes. Consequently, conflicts between the old and new cultures in Chinese society have intensified. Over the past 40 years of the Reform and Opening Up Policy, the eastern regions of China have taken the lead in industrialization, but the central and western regions have developed slowly. Accordingly, the degree of industrialization and legalization in undeveloped areas, such as the mountainous city of Lvliang, is lower than that in many developed cities in the easter part of China. The traditionally qualified privilege to inflict CP on learners is easier to replicate in these backward areas. This finding might explain why teachers in low-economy areas still associate discipline with CP, which also supports Durrant's, 2020 conclusion (2020, 9) that CP is more prevalent "in countries with higher levels of inequality and lower levels of democratic decision-making."

Confucianism links academic achievement to personal success (Hesketh and Ding, 2005). Traditionally, Chinese people believe that 'to be a scholar is to be the top of society.' With the rapid economic development of mainland China, competition for jobs has become increasingly fierce (Hesketh and Ding, 2005; Dello-Iacovo, 2009). Unfortunately, Chinese parents' assessment of teachers tends to be homogenous: Students' academic achievement speaks louder than anything else. This alienated evaluation is intensified by consumerism (Lin and Lu, 2020), and modern technological communication offsets the boundary between school and family. Tlhapi (2015) proposed that teachers win their authority by showing their expertise. However, the findings of this study demonstrate that some teachers tend to construct this "expertise" as the teacher's capability to raise students' grades. This construction cannot be dissociated from the contemporary Chinese educational context, emphasizing academic achievement.

Many Chinese scholars report the legal mechanisms of countries such as the United Kingdom, the United States, Japan, or Germany for reference. However, from the findings of this study, transplanting the legalism experience is not a viable way to help teachers feel less ill-equipped to handle discipline problems in underdeveloped areas like Lvliang, where the legislative disciplinary right lacks a solid legal foundation and social support. In this globalized, industrialized, and informational era, disciplining disruptive students has become a legal concept, while punishing students had been a non-institutionalized personal behavior embedded in China's long history (Zhang and Wang, 2021). The conventional identity of teachers was not that of a law executor, and their disciplinary behaviors were never standardized before this law came out. Participants' constructions also reveal that it is still hard for teachers in Lvliang to understand the 'separation of law and morals' (Hart, 1958, 598).

What role does legislation play in school discipline?

The reality is socially defined by groups of individuals (Berger and Luckmann, 1991). Teachers' indifferent attitudes toward the official knowledge are detrimental to the landing of the disciplinary legislation. Albeit based on varying constructions shaped by different experiences, the participants in this study have little interest in familiarizing themselves with newly promulgated legislation. When they have convincing reasons to punish students, they are willing to enforce discipline constructed through dynamic interactions rather than legal instruments. Teachers only recognize the compulsory power of the law when severe family-school conflicts take place. Therefore, legislation plays a silent role in K-12 school discipline in Lvliang.

First, this legislation aimed to ensure and standardize teachers' implementation of their legal duty in managing students and maintaining their own dignity (Ministry of Justice of the People's Republic of China, 2019). In this sense, the new legislation is assumed to regulate and rebuild the relationships between schools and families. Notably, this law merely outlines the red line for teachers, but parents' behavior is still unrestricted. This means that the legislation, indeed, increases the definiteness of disciplining means, but what will happen after disciplining is still unpredictable. Avoiding discipline, therefore, seems to be self-protective for personal interests, which eventually leads to the "tragedy of the commons" (Hardin, 1968, 1243). This echoes the opinion that possibilities for action come with 'identity and power implications' (Walkerdine, 1981) rather than "the essentialist connotations of personality" (Burr, 2003).

Second, principles put forward by law are general and essential, and cannot contain specific cases (Lerner, 1989). Due to diverse disciplinary settings and experiences, teachers' constructions of their legal rights are pluralistic, fluid, and anti-essential. Furthermore, the essence of teachers is impossible to define because teaching staff comprise individual teachers with individualized experiences and professions. Even though a group of teachers stays in the same cultural environment, they have a non-essentialist interpretation of the official policy. Therefore, presupposing a unified execution of the official policy is formidable, especially in such a large country.

Last, the participants are not used to depending on rational and standard provisions to discipline students, which makes sense in the Chinese cultural context. Although one participant's example of making food indicates an essentialist perspective of seeing Chinese as a homogeneous group, the silent role of legislation in K-12 schools in Lvliang, to some extent, has its roots in the Confucian idea that law cannot govern everything

(Matthyssen, 2021). Adherence to law has traditionally been absent in ancient China (Weatherley, 2002; Hansen, 2004). This sort of reluctance toward legislation left much room for long-lasting arbitrary interpretation (Matthyssen, 2021). Even today, acting meticulously according to the law in Chinese society is often considered dogmatic (Su, 2011). As products of Chinese culture and history, the participants still think that discipline is a form of tacit but not legal knowledge.

Conclusions and implications

Within the framework of social constructionism, social change is made by human activity (Berger and Luckmann, 1991). Teachers' subjective constructions regarding the right to discipline students are based on multiple non-linear interactions with every stakeholder living in the same environment. The inculcation of morals and values cannot rest solely on the shoulders of teachers because the dilemma of school discipline in China is co-constructed by a network of complicated power relations as heretofore discussed, such as school and family education, legal history, traditional Confucianism, industrial transformation, modern rational orders, globalization, cultural change, national policies, and technology. The collective action predicament of teachers can never be tackled by elaborately manipulating any single side of them. Teachers in Lvliang lead a passive and surface learning attitude toward the new disciplinary legislation for cultural, historical, and social reasons. In conclusion, legislation plays a silent role, but it is more visible in suppressing teachers' use of CP rather than in encouraging teachers to discipline students.

Although social constructionism is very limited in suggesting an alternative way of life after showing the identity and power relations (Burr, 2003), this study contributes to a holistic picture of the neglected disciplinary right that teachers construct in daily life and their underexplored attitude toward the law. The following are suggestions for future research:

(1). Teachers' tacit knowledge of the appropriate discipline in teaching settings should be observed, collected, and transformed into teacher training by experts. Therefore, scholars and policymakers should enter the real world of K-12 teachers to seek alternative disciplinary measures in consultation with teachers.
(2). Principals significantly influence the legal and regulatory climate of school discipline, but this study found that they play a blocking role in exposing the legislation to teachers. Thus, there is a need for further research on the concerns and attitudes of principals toward the same issue.
(3). The legislation on school discipline regulates what school insiders can and cannot do. However, parental behavior or involvement is not regulated by law. Therefore, as stakeholders, parents' construction of school discipline should be explored.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: https://figshare.com/articles/dataset/Interview_Data_nvp/19243977.

Author contributions

MB was mainly responsible for the literature review, theoretical framework, research design, data collection, and data analysis. GO helped the MB in discussing the findings and polishing the written language. MB and GO joint efforts in completing this manuscript. Both 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

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"We can't share things with our teachers": Narratives of mistrust and disconnect between South African female learners and their teachers

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The quality and nature of student-teacher relationships have implications outside of the academic domain. Support from teachers plays a significant protective role in the mental and emotional well-being of adolescents and young people, and can help to reduce or delay their engagement in risk behaviours, thereby decreasing negative sexual and reproductive health outcomes such as teenage pregnancy. Using the theory of teacher connectedness, an element of school connectedness, this research explores the narratives surrounding teacher-student relationships amongst South African adolescent girls and young women (AGYW) and teachers. Data were collected through in-depth interviews with 10 teachers, and 63 in-depth interviews and 24 focus group discussions with 237 AGYW aged 15–24 from five South African provinces characterised by high rates of HIV and teenage pregnancy amongst AGYW. Analysis of the data followed a thematic and collaborative approach, comprising coding, analytic memo-ing, and verification of emerging interpretations through discussion and participant feedback workshops. Findings related to perceptions of support and connectedness in teacher-student relationships centred around AGYW narratives of mistrust and a lack of support from teachers, and the consequential negative implications for academic performance and motivation to attend school, self-esteem, and mental health. Teachers' narratives centred around challenges providing support, feeling overwhelmed

and incapable of fulfilling multiple roles. Findings provide valuable insight into student-teacher relationships in South Africa, their impact on educational attainment, and on the mental health and sexual and reproductive health of AGYW.

KEYWORDS

adolescent girls and young women, teachers, South Africa, school connectedness, teacher connectedness, education, sexual and reproductive health (SRH)

Introduction

Inconsistent school attendance, poor-quality learning, and low levels of educational attainment undermine health and well-being during adolescence, and throughout an individual's life course. South Africa has joint epidemics of HIV and unintended teenage pregnancies; with a quarter of all new HIV infections occurring amongst adolescent girls and young women (AGYW) aged 15–24 (Duby et al., 2020). Education is a key structural driver of HIV amongst AGYW, and low levels of educational attainment are associated with higher risks of unintended pregnancies (The Global Fund, 2015). South Africa has high rates of teenage pregnancy, posing a threat to gender parity in education and resulting in poor mental health outcomes and low educational achievement amongst AGYW; figures suggest that a third of female learners drop out of school due to pregnancy (Bhana et al., 2010; Reddy et al., 2016; Jonas et al., 2020).

Social support theories outline the way in which individuals are nested within social support networks comprising of close bonds with people who provide support, a critical aspect of mental health and well-being (García-Moya, 2020). Close, positive, and supportive relationships with non-familial adults have been shown to serve a protective function for adolescents, enabling them to develop behavioural and social-emotional competencies (Baker et al., 2008; Herrero Romero et al., 2019; García-Moya, 2020). This is especially the case in situations where support from primary caregivers is insufficient or lacking (Herrero Romero et al., 2019). Teachers are in a prime strategic position to become significant non-familial adults in young people's lives (García-Moya, 2020). There is increasing recognition that teachers, as well as providing academic instruction, are in a position to facilitate the social and emotional development of students (Binfet and Passmore, 2017).

As a theoretical framework, we focus on "teacher connectedness," a sub-domain of "school connectedness." School connectedness refers to the sense of belonging and connectedness within the school environment, encompassing the emotional bonds students have within the school setting, the extent to which they are respected and supported, and the perception that adults in the school environment care not only about their learning, but also about them as individuals (Rawatlal and Petersen, 2012; Biag, 2016; Mitchell et al., 2016; Sharp et al., 2019). Conversely, the theoretical construct of school connectedness can also help to explain the relationship between feelings of isolation, alienation and disconnect that some students may experience (Van Maele and Van Houtte, 2011; Page et al., 2021). Outside of the family context, the school environment has been shown to be important not only for academic development, but also to provide a protective environment for the social, psychological, and physical well-being of learners (Govender et al., 2013). Students' sense of connectedness and engagement with the school environment is greatly influenced by their perceptions of interpersonal relationships with teachers, the strength of the bonds they have with teachers, and the extent to which they feel supported (Van Maele and Van Houtte, 2011; Mitchell et al., 2016).

Some theorists have emphasised the importance of delineating between school connectedness, relating to bonding and engagement in the school environment as a whole, and teacher connectedness, referring specifically to the sense of connectedness students have with their teachers (Garciìa-Moya et al., 2019). School connectedness has more to do with students' overall feelings toward the educational institutional and school environment, whereas teacher connectedness is a dimension of the interpersonal relational domain (García-Moya, 2020).

In this paper we focus on teacher connectedness, referring to student-teacher bonds fostered by teachers through providing positive feedback, demonstrating empathy, and being open to dialogue (Sturdivant, 2020). Positive teacher-student relationships, characterised by feelings of trust and relatedness, are associated with positive academic motivation, successful expectations and self-belief, interest and satisfaction with school, and academic self-efficacy and performance (Gillespie, 2002; Baker et al., 2008; Mitchell et al., 2016). Student-teacher relationships have potentially significant and far-reaching implications outside of the academic domain; the support

that teachers can provide is not only educational or academic, but can also be psychosocial or emotional support, playing a significant protective role in mental and emotional well-being, positively affecting students' self-confidence, self-esteem, social skills, and social competence (Gillespie, 2005; Biag, 2016; Binfet and Passmore, 2017; Herrero Romero et al., 2019; Ungar and Theron, 2019; Kincade et al., 2020). Self-esteem, well-being, and perceived social support are key to ensure positive sexual and reproductive health (SRH) outcomes for adolescent girls and young women (Duby et al., 2021). Support from teachers can help to prevent or delay adolescents' engagement in various high risk health behaviours (McNeely and Falci, 2004; Rawatlal and Petersen, 2012; Govender et al., 2013; Ungar and Theron, 2019; García-Moya, 2020). Teachers and educators are in a position to be able to provide support to AGYW, promote healthy SRH decision-making, and thereby help to decrease negative outcomes such as teenage pregnancy (Herrero Romero et al., 2019). Teacher support, defined as social, practical, or emotional support from a teacher, has been found to be independently associated with reduced HIV-risk behaviour incidence amongst adolescents in South Africa, with significant HIV prevention effects, independently of other social interventions (Cluver et al., 2016). For these reasons, adolescents' sense of connectedness in the school setting has implications not only for academic success, but also for SRH outcomes such as teenage pregnancy (Thompson et al., 2006; Govender et al., 2013; Sharp et al., 2019).

The bulk of research examining school and teacher connectedness relates to the Global North and to high-income contexts. Additionally, few studies have differentiated between school connectedness and teacher connectedness (Garciìa-Moya et al., 2019). In light of this, and that the fact that school and teacher connectedness are likely to have socio-cultural and contextually specific dimensions, there has been a call for more comprehensive examination of teacher connectedness in different settings (Garciìa-Moya et al., 2019). There is a dearth of literature pertaining to student-teacher relationships and connectedness in the South African context, and in particular how these impact on mental health and well-being, and SRH amongst AGYW. A better understanding of the intersecting social cohesion processes as a protective factor against adolescent health risk behaviours is necessary (Govender et al., 2013). The aim of this study was to explore barriers and facilitators to school attendance, retention, and attainment amongst AGYW in communities in South Africa characterised by high rates of teenage pregnancy and HIV. Additionally, this study sought to provide evidence to improve the provision of necessary support to both AGYW and teachers, in order to strengthen AGYW educational motivation, aspirations and achievement. In this paper, we focus on student-teacher relationships and their impact on the educational attainment, mental health and well-being of AGYW in South Africa.

Materials and methods

Study setting

Data collection took place between August 2018 and March 2019 in five districts across five provinces of South Africa: City of Cape Town, Western Cape (WC); King Cetshwayo, KwaZulu-Natal (KZN); Gert Sibande, Mpumalanga (MPU); Bojanala, North West (NW); and Nelson Mandela Bay, Eastern Cape (EC). Selected districts were a mix of urban, semi-urban and rural, but shared the characteristic of having amongst the highest teenage pregnancy and HIV incidence rates nationwide.

Sample

The study sample consisted of a total of 237 adolescent girls and young women (AGYW) aged between 15 and 24 years. Of these, 177 were in the 15–19 years age group, and 60 were in the 20–24 years age group. Additionally, the sample included 10 school teachers. Participants were purposively sampled from selected schools within each study district. The sample of teachers included those who were involved in teaching Life Orientation[1] and/or involved with non-academic extracurricular activities, and/or those that had been liaising with coordinators in a school-based health intervention.

Data collection

Data collection comprised of 63 in-depth interviews (IDIs) and 24 focus group discussions (FGDs) with 237 AGYW, and IDIs with the 10 teachers. Trained female researchers fluent in the local languages conducted IDIs (20–40 min in length) and FGDs (40–90 min in length) in participants' language of choice (English, isiZulu, isiXhosa, Setswana, or siSwati). Interviews and FGDs were semi-structured, following topic guides with open-ended questions and probes for potential additional issues, allowing for iteration, probing and digression on relevant themes. School connectedness and teacher connectedness were not initially a focal area in this study, but emerged as salient topics during data collection. These themes emerged in response to questions in the topic guides relating to perceived barriers and facilitators to school

1 The Life Orientation curriculum in South Africa includes aspects related to adolescents' sexual and reproductive health. For more information visit: https://www.education.gov.za/.

attendance, retention, and achievement and perceptions of received and needed support. AGYW were asked to describe their overall school experience, and the extent to which they received support from various people in their lives, including teachers. Teachers were asked questions relating to their perceptions of the support received and needed by AGYW at school, and outside of school. In this paper we focus on findings related to student-teacher relationships. A brief demographic questionnaire was also administered to participants.

Data analysis

Translation followed a four-step approach. Audio recordings of IDIs and FGDs underwent a process in which they were: (1) transcribed verbatim into their original language; (2) reviewed by the interviewer/s for accuracy; (3) translated into English; (4) and reviewed again to assess the accuracy of translations. Following a cyclical thematic approach, analysis started with pre-determined deductive codes, based on the discussion topics, which underwent inductive development and refinement as the analysis progressed (Bradley et al., 2007; Vaismoradi et al., 2016; Nowell et al., 2017). Collaborative interpretation by research team members involved data immersion and familiarisation, and repeated transcript readings through which meanings and patterns emerged. Theoretical and reflective thoughts that developed through immersion in the data were shared amongst the research team. Codes were identified, refined, and entered into NVivo 12 software, which was used to enable the organisation and labelling of relevant text from the raw data. As concepts and themes inductively emerged, they were collaboratively reviewed and refined. Weekly meetings, held throughout the data collection and analysis phases, allowed for team debriefing and discussion of the evolving connection and interpretation of the data. To accompany the coding process, and ensure reliability and validity of the analysts' interpretations, participant verification feedback workshops were held with AGYW. A total of three workshops were held with 32 AGYW aged 15–24 at three of the study sites, some of whom had previously participated in IDIs and FGDs, and some who had not. Workshop participants' feedback, captured through notes and transcribed audio recordings, are presented alongside the findings.

Ethical considerations

Informed consent was obtained from all participants 18 years and older. Written assent with written guardian consent was obtained for those younger than 18 years. Reimbursement and refreshments were provided. The study protocol and research tools were approved by the South African Medical Research Council Research Ethics Committee, and the interviewers were trained in human subject research ethics.

Findings

Demographic characteristics

Amongst the 237 AGYW respondents aged 15–24, the mean age was 17.4 years. Self-reporting on the highest level of education achieved amongst the 237 AGYW, 2% (n = 5) some primary schooling, 83% (n = 197) were either currently in school, or had achieved some secondary schooling, and 11% (n = 25) had completed secondary schooling. A total of 3% (n = 7) had some tertiary education (college or university). Out of all AGYW aged 15–24, 18% (n = 41) self-reported to have had ever been pregnant. The ten teacher respondents, three male and seven female, were aged between 27 and 57 years, with a mean age of 45 years.

The findings presented below are arranged into key thematic areas that emerged during analysis relating to AGYW's narratives of their relationships with teachers. Quotations are English translations, followed by details of the participant's province, sample group.

Adolescent girls and young women narratives

When asked to describe their overall school experience, the qualitative narratives shared by AGYW demonstrated the disconnect they felt in relationships with their teachers, characterised by an overwhelming sense of mistrust: "We don't trust our teachers" (WC, 15–19 years). In addition to lacking trust, AGYW described feeling "scared that they (teachers) are going to judge us" (NW, 15–19 years). The fear of judgement fosters a reluctance amongst AGYW to confide in or seek support from teachers: "Girls here are secretive because the teachers here judge" (WC, 15–19 years). In addition to fearing judgement, mistrust of teachers related to breaches of confidentiality: "Teachers do not always maintain confidentiality of the issues we share with them. You'll be surprised how information you shared with one teacher got to be known by another teacher" (WC, 15–19 years). Emerging clearly in the data was the perception amongst AGYW that teachers gossip with each other about learners: "Teachers, when they are at the staff room... they talk about you... their topic will be you" (WC, 15–19 years); "They'll talk about us in the staff room... whatever you're going to talk to her (teacher) about won't stay with her for long... they'll go around telling other teachers" (NW, 15–19 years); "Teachers sometimes gossip and tell other teachers at the staff room about things that you told them in confidence" (MPU, 15–19 years). Those AGYW

who trust certain teachers enough to confide in them, risk having their confidentiality breached: "In this school we have teachers that you can go to share some things, deep things, but the problem starts when the teachers gossip to other teachers" (WC, 15–19 years).

The lack of trust AGYW have in teachers, leads them to avoid seeking support: "They (teachers) have that weakness (gossiping)... that's why we are now afraid to tell them our problem" (MPU, 20–24 years). AGYW suggested that consulting or confiding in a teacher about sexual health would likely result in private information being shared with other staff members, and even with other learners. "There are teachers here at school who talk about, like you would tell a teacher that you are on contraceptives... that teacher will discuss your problem with another teacher, and that teacher will tell another one. You start to feel uncomfortable... sometimes they make examples about you... in the LO (Life Orientation) class" (WC, 15–19 years). The perceived inability of teachers to maintain confidentiality was viewed by AGYW as a sign of disrespect toward learners: "They (teachers) don't have respect for us... we have deep secrets... we go to a specific teacher that we trust and now that teacher will go to another teacher to go gossip about us... that teacher maybe has learners around her desk and she will tell her learners and those learners will tell others now the whole school looks at you" (WC, 15–19 years).

Not being able to trust teachers or seek their support means that AGYW feel they have no one to confide in, making them feel emotionally isolated: "You cannot trust anyone... teachers here at school like to gossip" (MPU, 20–24 years). This sense of emotional isolation and lack of support negatively impacts the mental health and well-being of AGYW: "We can't share things with our teachers. They are supposed to be our parents at school, but we can't share things with them, because they can't keep it with them... they will share it with other people, then you will see people giving you funny looks, so we don't share our sexual and personal life things with them, because of how they are. (Instead) we keep it to ourselves, then some of us commit suicide" (WC, 15–19 years). The perception amongst AGYW that teachers do not care about their feelings or problems was described as hurtful: "There are those teachers when you tell them your challenge, they ignore you... That hurts school learners" (MPU, 20–24 years).

Instead of feeling that teachers provide support and encouragement, AGYW described teachers enacting behaviours that negatively impact learners: "We have those kinds of teachers who instead of encouraging you, will discourage you and keep pushing you down" (KZN, 15–19 years). Disparaging remarks from teachers compound the sense of disconnect: "Our teacher will tell you that you are rubbish... how are you going to talk to the teacher if you are a rubbish?" (WC, 15–19 years). Name-calling or ridicule from teachers negatively affect the self-esteem and self-confidence of learners: "Our teacher calls me by those names in front of a full class and you feel small. He will call me stupid... all sorts of names. That makes you feel small" (MPU, 15–19 years). Discouraging attitudes displayed by teachers negatively impacts on AGYW self-confidence, motivation, as well as academic performance: "When the teacher has an attitude against you, you end up doing worse than you were doing before" (WC, 15–19 years).

The motivation and willingness of AGYW to attend school is also negatively affected by discouraging and negative attitudes expressed by teachers: "it will make you feel like not going to school like when a teacher will say to you "this thing that keeps on failing"... you end up hating to go to school, and your self-esteem becomes down" (KZN, 15–19 years); "Teachers will be like "...you should have stayed at home and not come to school"... (so) the following morning you will be like why should I go to school? The teacher said I might as well stay at home" (WC, 15–19 years). The sense of being disrespected or ridiculed by teachers negatively impacts on school attendance, particularly for learners who are more vulnerable or require additional support: "Some children do not come to school because of teachers, because of teachers' attitude. They don't treat other kids well... They disrespect them because they are not clever... they make a joke of them. These kids then end up losing that love for school... then drop out of school because they are scared to be laughed at when they have failed" (MPU, feedback workshop).

The sentiment was also expressed by AGYW that teachers lack passion in their work, and as a consequence, fail to inspire learners: "They don't have passion... they will be like "I don't care about you, my money (salary) is in"... they don't inspire us" (WC, 15–19 years). Respondents described the way in which the quality of instruction and education provided is negatively affected by factors such as teachers being distracted by their mobile phones, or giving rushed and incomplete classes: "teachers become bored... they spend most of their time on their phones instead of teaching. And when they teach, they are in a hurry and miss other points" (WC, 15–19 years).

When learners seek career advice or support, they are ridiculed, which causes feelings of embarrassment and consequential reluctance to seek the help and advice they need to pursue their career aspirations: "When you go and ask them what subjects you must do to become a lawyer, they will answer with rage and say at your age you don't know what subjects you want to do? ...you will be disappointed with that answer because you were not expecting it and end up saying "it's fine teacher thank you." You end up lying saying you are rushing, it's not that you are rushing somewhere but because you are embarrassed because of what the teacher said to you. And they will repeat that again in class tomorrow in front of people. You become embarrassed and not knowing what to do in life, because she's not telling you what you should do to succeed" (WC, 15–19 years).

Adolescent girls and young women respondents described scenarios in which pregnant learners were mocked and ridiculed

by teachers in the classroom: "In Life Orientation class it will seems when the teachers are talking (about pregnancy) they are referring to her (pregnant girl in class)... she will just remain quiet because she doesn't want to be teased... the teacher will blame her saying "after all you pregnant." (WC, 15–19). In addition to pregnancy learners being treated badly by teachers, AGYW described situations in which HIV positive learners were treated disrespectfully, with teachers discussing learners' HIV status with others: "If it happens that a learner is diagnosed (HIV) positive... teachers shouldn't talk about it because some people have fragile hearts and they get hurt easily. We wish they could keep things private... teachers should not expose our problems to other children and they make fun about it" (WC, 15–19 years).

Another factor adding to the sense of mistrust in teachers related to AGYW experiences of having been victimised or sexually harassed by male teachers, and when reporting this harassment they are not taken seriously: "Male teachers... they will create a story about you even when you did not do that particular thing. I was once a victimised by a teacher... he just said I wanted him to be my partner... That made me feel offended, so we went to him with my friends and confronted him about it. The sad part was that he said all this in front of other teachers... his response was that he was just joking with me... I then came to school and spoke to one lady teacher, told her that I'm hurt by what the teacher has said about me... I was so angry, she then said I must calm down" (MPU, 15–19 years). Respondents suggested that male teachers sometimes make inappropriate comments of a sexual nature to female learners: "One male teacher... he would say "look me straight into the eye not in front of my trouser" (at his crotch), disturbing the learners... that does not sit well with me" (MPU, 15–19 years). Allegations of teachers' coercive sexual harassment of female learners emerged in the narratives of AGYW respondents: "Teachers at school are making advances on the school girls and if they don't agree, they abuse them" (MPU, 20–24 years).

In general, AGYW respondents voiced their desire for improved, non-judgemental, holistic support from teachers: "We would like not to be judged by our teachers... they must not humiliate you in class when you do something wrong in front of other children" (WC, 15–19 years). The desire for improved confidentiality, and more respectful communication, were amongst the key demands AGYW respondents expressed: "(We want) privacy, teachers should not expose our problems to other children and make fun about it" (WC, 15–19 years); "When you go to (a teacher) in confidence with some confidential issue. Maybe you told him something that has happened at home, we request that they must not share the information we have shared in confidence with them, with their colleagues" (MPU, 20–24 years). Respondents suggested that if teachers were more supportive, there would be beneficial effects on levels of motivation amongst learners: "If teachers could be supportive and friendly... maybe we can show more interest in our studies" (WC, 15–19 years).

The view was expressed that teachers are in a position to act as positive role models for learners, setting examples of respectful and pro-social behaviour: "teachers must be taught to respect learners, so that they won't spread rumours about school children, so that they can set an example for us as school children, because they fail to respect school children. That will also cause us not to respect fellow learners. So, respect from teachers to learners would be a good idea, that will encourage students to respect each other and there won't be people who gossip, laugh at others and do all those things" (EC, 15–19 years). When parents are not available or present, or in situations where AGYW do not reside with parents, teachers could play the role of a supportive adult/caregiver: "Our parents are staying very far, we take them (teachers) as our parents. So, if I tell them my problem in confidence and they tell somebody else, etc., then it is no longer a secret" (MPU, 20–24 years). In our analysis of the data, there were very few instances in which AGYW shared their positive experiences of having received support from teacher and educators. There was recognition of the capacity for educators to play a positive parental role: "The teachers and the Principal at the school are like our parents because they play a role in our lives... (they) show us positive things in our lives" (WC, 15–19 years). Importantly, it was noted by AGYW themselves that not all teachers are the same: "there are those kind and approachable teachers whom you can divulge any kind of challenge you are facing. There are those when you tell them your challenge, they ignore you" (MPU, 20–24 years).

Despite the majority of AGYW expressing mistrust in teachers, it was highlighted that not all teachers are the same, and there are a rare few who can be trusted: "There are those kind and approachable teachers whom you can divulge any kind of challenge you are facing" (MPU, 20–24 years).

Teachers' narratives

Those teachers interviewed shared their views on the roles and responsibilities that teachers have toward AGYW learners. Respondents felt that teachers should provide psychosocial support, emotional support, and care for the well-being of AGYW: "You see what the girl needs, the girls first need love... Just love... from home and at school, you should bring the girl child closer to you so you can see all the changes that will happen to her... If you do so, then you will give her all the support, because you won't be able to support her if she's away from you... when you bring them closer, that's where you'll see how much support she needs, but if you are a person who doesn't pay attention, you will not see that she needs support... Maybe you just notice, if someone is absent you notice that she has been absent so many times, and call her aside, what happened, what's causing you to not come to school, then you find out

that there is a problem like that and that. And also boys, same thing... But girls, it's necessary to be closer to them" (KZN, teacher). Building the self-confidence and self-esteem of AGYW was seen as of critical importance: "The biggest thing that we (teachers) are supposed to do, we are supposed to build that spirit of confidence in children right, I mean a child who doesn't have confidence in themselves... it will build up to a point where it causes her harm... if we can teach our children to talk... and they should talk... in life they should know who to confide in, people they trust, irrespective of whether it's a parent at home or a teacher" (NW, teacher).

Understanding the emotional and psychosocial vulnerability of AGYW was described as important in order to be able to support them appropriately: "For girls to feel loved, we shouldn't criticise them even when they have done wrong, we can say things that go along with the situation, but we need to get to the bottom of all the reasons that have led them to behave in that manner, where did it start, because sometimes leaners find themselves in situations because they lack support at home, and when the learner arrives at school, other learners abuse them, though it might not be known, then they end up misbehaving because they have pressure somewhere" (KZN, teacher). It was suggested that AGYW are not always able to seek emotional support or communicate effectively about their needs: "The problem we have is that our learners are not used to voicing out things that are affecting them personally... Some are not used to that... They know that they won't ask... just anyone, who will ask a lot of questions... they will look for a person that they trust and someone who will be understanding of the situation they are facing" (KZN, teacher).

Helping AGYW cope with stress and anxiety related to exams and academic performance was also described as within teachers' responsibilities: "Mental health support, eh yes, I used to give them sometimes, because in some learners, problems will start now that exams will commence, there will be a lot of problems that will arise maybe some leaners experience fear... some are scared of failing... it's their expectations, they think that even though they have studied, they might not remember when it is time to write, so we support them spiritually and physically for the exam... You will find others will be so tense that they don't even give themselves time to eat" (KZN, teacher).

Teachers felt they had a responsibility to play parenting roles toward AGYW, in addition to playing the role of educators: "It's not that here at school... it's just teaching and learning, and it is all over... the class teacher should serve as a parent" (KZN, teacher). Additional burden is placed on teachers where parental involvement is lacking or insufficient: "(Female learners) need support, they need guidance, and one key challenge that we have in our school community, and one key challenge we have in our school, in our community, is no parental involvement. Parental involvement is a big challenge... our learners come from a very poor background, where social ills are the order of the day. So the parent doesn't care... doesn't care whatever the child does... the difference is... the school stands in for the parents" (EC, teacher). Respondents described the way in which their maternal/parental responsibilities toward learners, feeling responsible for their holistic well-being, causes additional stress to already overburdened teachers: "I end up being a mother to a lot of children, some are boys, some are girls, so, sometimes it becomes a challenge because I reach home exhausted... You will find that I was talking for the whole day and it exhausts me... there's a trend that is going on at school that I want to put to an end because I realised that it was becoming too much, let's say there's a learner who has a problem at school, even if I'm in class I will be called, they will refer that learner to me whereas we are all allocated a class, I also have learners in my class... it becomes a problem if a teacher cannot deal with a minor issue, I also realised that it was too much for me. ...rather they come if it is a major problem, a major problem, not one they can deal with, so I've seen that that challenges me a lot but I was helping no matter how tired I was... it was becoming too much because I saw an element of being irresponsible from other colleagues" (KZN, teacher).

Teachers described the ways in which they try to help and support learners, particularly those who come from socio-economically disadvantaged backgrounds: "At our school our children is our gold, so anything we do at this school, we do it with a passion... what we do, we look at children, we identify... underprivileged children, children with needs, whatever the case may be... we look at... where we can provide them with school clothes... where we can give personal counselling... they must be free to come... and share whatever they encounter" (EC, teacher). Teachers who have vulnerable learners in their classes end up getting financially and emotionally involved in situations where learners are faced with poverty, abuse or neglect: "I have a challenge of this learner who I tried to help... (she) does not have a place to stay... and she was emotionally abused... (her mother) doesn't support her... she gets the grant, her mom receives the money but she doesn't support her with anything. As far as transport, she has to make her plan to see how she will come to school and how she will get home... they almost destroyed all her uniform, she was only left with a shirt and jersey... So it's still a challenge... I took it up with the (school) management thinking that they will call the parent and find out what's happening, but because of work and lack of time, nothing has happened thus far, but I thank God that up to this far, the learner still comes to school because this thing started in the beginning of the year, so seeing her still coming, it's a relief... Though sometimes she comes to me and says she doesn't even have food, she doesn't have this and that, but because I have pads here at school, I provide her with pads, but the uniform issue is still outstanding... she doesn't have uniform ...I see this child ending up being exposed to different

things... life is challenging her in all aspects, and she is a girl... if I did not give her money... and I pack food for her to take home... That is the challenge I am faced with now" (KZN, teacher).

Teachers often feel overwhelmed when they are left to deal with serious situations in which AGYW learners have been abused at home: "We have cases that are sometimes brought to us here at school by neighbours... some neighbours are very attentive, they can see... or a child is the one who tells the neighbours whatever happens in their house... they end up being brought by the neighbours at school... It becomes too much for us because we are here to teach the learner, we end up with cases which requires the police, and we wonder why they brought those things to us" (NW, teacher). At times abused learners seek assistance themselves: "When a child comes honestly, confessing that he/she needs help, we attend such child... some are beaten up... beaten too much at home that they end up with bruises... they come with cases which are serious sometimes" (NW, teacher).

Some teachers highlighted that although they would like to be able to provide learners with psychosocial and emotional support, they don't have the time or capacity to do so sufficiently: "We don't get time to deal deep with the issues" (MPU, teacher). Teachers also suggested that schools lack support structures for vulnerable learners, or those who engage in risk behaviours such as substance use.

Discussion

Emerging clearly in our analysis of the data from IDIs and FGDs with AGYW was the sentiment of the lack of trust that AGYW have in their teachers. Mistrust in teachers' ability to maintain confidentiality was cited as a major issue, with AGYW respondents sharing experiences of confidentiality being breached after confiding in teachers around sexual health issues. AGYW expressed sentiments of having their trust betrayed when teachers gossip about them. Although teachers are in a position to provide critical psychosocial and emotional support, AGYW feel unable and unwilling to confide in, and seek support from teachers, demonstrating a sense of student-teacher disconnect. The lack of effective communication and emotional support from teachers fosters a sense of isolation amongst AGYW, and negatively impacts their mental health, and school performance. AGYW respondents voiced a desire for improved communication with, and increased emotional support from teachers, suggesting that teachers would be appropriate adult support mechanisms. It is evident that some teachers themselves recognise that AGYW need psychosocial support, particularly those learners who are socio-economically disadvantaged. However, teachers often feel overwhelmed and lack the capacity to provide learners with the support they need. Overall, both AGYW and teacher narratives depicted a lack of teacher connectedness in these settings.

In our study, AGYW respondents described ways in which their lack of connectedness with teachers has negative impacts on their mental health and well-being. The feeling of not being able to trust teachers or seek their support means that AGYW feel they have no one to confide in, leading to feelings of emotional isolation. In addition, the harsh, ridiculing or judgemental words that some teachers direct at learners negatively affects their self-esteem and self-confidence. It is possible that the perspectives of learners and teachers may be somewhat discordant. AGYW's subjective experiences of feeling judged or ridiculed, are likely to negatively impact their mental health, and could potentially have serious consequences. For example, a study in the Gauteng province of South Africa found that feelings of sadness, discouragement, worthlessness, suicidal ideation and loss of opportunities amongst learners was due to negative relationships with, and disrespectful treatment from teachers (Naicker et al., 2014). The level of connectedness between students and their teachers can have a strong impact on the learning experience, and the mental health of students (Gillespie, 2002). Evidence suggests that teacher connectedness may help to reduce rates of depression and suicidal ideation amongst students (Govender et al., 2013; Joyce and Early, 2014; Sharp et al., 2019). Where students feel that teachers care about their well-being, adolescents are less likely to experience depressive symptoms, and more likely to have future positive emotional well-being (Joyce and Early, 2014). Teacher connectedness has been framed as a psychological resilience factor for students in low-resource settings; and shown to be negatively correlated with emotional distress, suicidality, violence, and substance use in these contexts (Sharp et al., 2019). Caring and supportive relationships between teachers and adolescents can serve a protective function, acting as buffers from adverse effects or risk, particularly for students who are at risk socially and academically (Davis, 2006; Baker et al., 2008). The protective effect that having a personal connection with a teacher has on students' educational, behavioural and health outcomes is amplified amongst low-income students, students who live in unsafe or violent communities, students who lack parental/familial support, and female adolescents (Joyce and Early, 2014; Lenzi et al., 2017; Duong et al., 2019; Garciìa-Moya et al., 2019). Students who are economically or socially vulnerable, and are at a disadvantage for educational attainment, can succeed and achieve academic success in the presence of significant obstacles, if they have strong relationships, characterised by respect, trust, care, with at least one teacher who serves as a positive role model and supportive and caring adult (Downey, 2008).

Adolescent girls and young women respondents in our study expressed consternation over the lack of respect that teachers have for them, evident in the way that teachers

ridicule or mock students in class. Mutual respect is one critical component for building trustworthy and supportive student-teacher relationships. Key teacher behaviours that contribute to building close student-teacher bonds include holding frequent social conversations with students about their life outside of the classroom, increasing teacher accessibility and availability, and showing respect for students by valuing their perspectives and ideas (Liebenberg et al., 2015; Binfet and Passmore, 2017). In the narratives of AGYW in our study were descriptions of pregnant learners being mocked and judged by teachers, particularly in Life Orientation classes. In order to avoid negative consequences on AGYW educational and future opportunities, it is critical that teachers' moralising or judgemental opinions toward learners who most need support, such as those who are pregnant or already have children, are addressed, and that teachers are responsive to the support needs of this sizeable, and vulnerable group (Bhana et al., 2010). Also relating to a lack of respect for learners, some AGYW in our study shared their experiences of being sexually harassed by or receiving inappropriate remarks from male teachers. There have been prior allegations of sexual abuse of AGYW by male teachers in South African schools (Bhana et al., 2010). It was outside the scope of this study to explore this issue in detail, but it warrants further investigation.

Most AGYW respondents described a reluctance to confide in teachers, due to the belief that teachers discuss learners' confidential information with colleagues and in the staff room. It is possible that one factor that might explain AGYW feelings that teachers breach confidentiality when they confide in them may be due to teachers needing to refer learners for services in situations where they require additional professional help, or where a teacher is unable to assist alone and requires support from colleagues. The dimension of trust is a critical element in the interpersonal teacher-student relationship; it has been suggested that students generally expect teachers to be trustworthy, automatically trusting a teacher until the teacher violates that trust (Dobransky and Frymier, 2004). Trust is an inherent part of teacher connectedness, a foundation for open communication and information sharing, and key for the creation of an environment in which students feel affirmed and supported (Gillespie, 2002; Mitchell et al., 2016). Students who have strong bonds with, and trust, their teachers are more likely to seek their help and guidance, thereby accessing teachers as a key source of support (Baker et al., 2008; Anderson et al., 2011; Lenzi et al., 2017).

There is an important distinction between received and perceived social support; students' perception of teacher support being a critical component of teacher connectedness (García-Moya, 2020). The perception of being listened to and cared for, and enacting "help-seeking" behaviour through identifying people or resources in order to solve a problem or address a concern, is a crucial component of coping behaviour, necessary for good mental health (Van Der Riet and Knoetze, 2016; Lenzi et al., 2017; Duby et al., 2021). Trust is also a critical aspect of the help-seeking process; when students trust their teachers, they are more likely to confide in them (Mitchell et al., 2016). A lack of trust, or the concern that personal disclosures may not be kept confidential serve as barriers to help-seeking; conversely, a high level of trust or an emphasis on confidentiality in a relationship, facilitate help-seeking (Van Der Riet and Knoetze, 2016). Interpersonal relationships characterised by social trust have significant positive impacts on the academic and psychological well-being of adolescents (Roffey, 2012). The feeling of having a reliable and trustworthy source of support is critical for good mental health. When students perceive their teachers as caring, trustworthy and supportive, they are much more likely to have positive academic and health outcomes (Davis, 2006; Baker et al., 2008; Duby et al., 2021).

Teacher respondents in our study shared their perceptions of the multiple roles that teachers should play in the school environment, expressing the view that their responsibilities toward learners go above and beyond academic instruction, and include the provision of support. Congruent with AGYW respondents' narratives of the importance of teacher support for those students whose parents are absent or unavailable to provide sufficient support, teachers described their attempts to support vulnerable learners as much as possible, sharing how this responsibility places additional stress on them. Compounded by difficult working conditions in government schools, teachers described feeling overwhelmed with the multiple roles and responsibilities they have to fulfil, in order to provide the psychosocial support that AGYW need in addition to academic support. This was exacerbated in situations where teachers identified learners in their class who were facing circumstances of poverty, abuse, or neglect. As our teacher respondents suggested, at times they become caught up in the well-being of students, especially those who face challenges related to poverty or violence. The emotional strain and time burden that is placed on teachers who are increasingly expected to foster students' social and emotional competencies alongside the development of students' intellectual development and corresponding academic achievement, can be overwhelming (Binfet and Passmore, 2017). This increased expectation of teachers' roles is partly due to a recognition that many learners, especially those in socio-economically difficult circumstances, come to school underprepared materially and emotionally for optimal functioning and learning (Binfet and Passmore, 2017). Teachers in the South African context bear an additional burden due to the disruption of families caused by a combination of social, economic and historic factors such as migrant labour and apartheid policies. Indeed, figures published in 2017 suggest that 21% of South African children do not live with either of their biological parents (Sharp et al., 2019).

The provision of psycho-social and emotional support to students is ideally part of the teaching package, with teachers serving as a primary social and emotional support mechanism for some students (Binfet and Passmore, 2017). Teachers

often have to be mother/parent, psychologist/counsellor, friend, spiritual advisor, as well as academic educator; as described by teachers in our study, playing these multiple roles can be challenging (Hattingh and de Kock, 2008). Even if educational policies outline the concept of an ideal teacher, the reality of resource and material constraints can impede the achievement of this ideal (Harley et al., 2000). For teachers working in under-resourced schools, with oversubscribed classes, the roles of counselling and pastoral care to students may not be prioritised (Harley et al., 2000). A key aspect determining student-teacher relationships is the way in which teachers regulate and express their own negative emotions, which is often challenging given the stressful situations they have to deal with in the school setting (Jennings and Greenberg, 2009). Even when teachers recognise the importance of building positive relationships with students, if teachers feel overwhelmed or stressed, they are less likely to exhibit a caring attitude, provide support, or make an effort to foster connectedness with students (Jennings and Greenberg, 2009; Duong et al., 2019). The delivery of quality teaching and education in the South African state education system is problematic, due to factors such as shortages of teaching staff, low morale and poor working conditions (Fourie and Deacon, 2015). In circumstances such as these, it is unlikely that teachers are able to provide the sufficient academic support to learners, let alone the kinds of psychosocial and emotional support that would help to foster teacher connectedness. It is unfair to lay the blame upon teachers for the student-teacher disconnect, as teachers in the South African state system lack the necessary support, training and capacity to enable them to build relationships of trust with learners (Salmon and Sayed, 2016).

The main limitation of our study relates to the selection bias in the small sample of teachers interviewed. Sampled teachers included those who were already engaged in extracurricular activities at the schools, and/or teaching Life Orientation classes. Therefore, in addition to the likelihood that our sample included only those teachers who were more committed and engaged, and therefore more likely to be supportive of AGYW, it is also possible that as a consequence of social desirability bias, teachers would also be unlikely to admit their own lack of support of learners. As school connectedness was not an initial focus of the study, interview guides did not include specific questions on teachers' connectedness or relationships with leaners, but rather this data emerged in discussions centred around support that AGYW receive or need in the school environment.

Implications for practice

Interventions and programmes that can help to foster a sense of school connectedness and teacher connectedness amongst students are critical in order to harness the potential of schools as a context through which to provide necessary psychosocial support, and promote the well-being and mental health of young people in South Africa. Efforts to facilitate more effective support for AGYW in their SRH decision-making and behaviour, need to include the provision of integrated health delivery in schools, of which mental health promotion is a key component.

Support from teachers can be an effective form of social support which helps to reduce risk behaviours amongst adolescents; tailored combination social protection, inclusive of teacher support, is likely to be the most effective approach to reducing HIV risk amongst this age group (Cluver et al., 2016). The ability of South African teachers to engage and connect with their students may be improved by addressing poor working conditions (Fourie and Deacon, 2015). Teachers need to be supported in order to experience more meaning in their work, which would then enable them to make a positive difference in learners' lives through building positive, trusting relationships (Fourie and Deacon, 2015). Additionally, special consideration needs to be given toward providing teachers with professional development in order to equip them with the skills with which to provide support to pregnant learners, teenage parents, and those learners living with HIV (Bhana et al., 2010).

Teachers can play a critical role in promoting school connectedness through positive relationships with learners, providing mentorship, role modelling healthy behaviours, and building a positive school climate conducive to learning and a culture of well-being (Rawatlal and Petersen, 2012; Kern et al., 2017). In order to achieve this, efforts need to be made to build teachers' interpersonal skills and competence, enabling them to foster positive relationships with students (Rowe et al., 2007; Joyce and Early, 2014). Teacher training should help to enrich teachers' understanding of how levels of school connectedness and the school climate can influence learners' academic achievement, positive peer interactions, social acceptance, and overall emotional well-being, particularly in contexts where young people may lack positive parental role models or familial support (Rawatlal and Petersen, 2012; Kern et al., 2017).

The potential to use schools as conduits for promoting adolescent mental health and providing linkages to mental healthcare are increasingly being recognised, with school staff being in a unique position to support positive psychosocial outcomes amongst vulnerable young people (Kutcher and Wei, 2012; Liebenberg et al., 2015; Kutcher et al., 2016). School-based mental health interventions should include a broad spectrum of prevention, referral, assessment, intervention, and counselling. Evidence based interventions to address school connectedness and promote mental health amongst students include the provision of training and enhanced staff education to improve the mental health literacy of teachers and equip

them with the skills to identify common presentations of mental health issues, and pick up on early warning signs indicative of stress, anxiety, trauma, abuse, depression (Kutcher et al., 2016; Kern et al., 2017). Standard teacher training and professional development programmes need to include components on social and emotional developmental processes during childhood and adolescence, and incorporate curricula targetted at the most common mental health issues likely to be present in schools, and those which may affect school attendance and performance (Jennings and Greenberg, 2009). Training teachers on how to identify a learner who is showing signs of disengagement and disconnectedness, and how and when to refer them for psychosocial support would also help to increase connectedness (Kern et al., 2017). The capacity of teachers to connect their learners to appropriate mental health support should also be enhanced, alongside instruction on how best to approach learners in a way that encourages them to discuss their concerns and feelings (Kern et al., 2017). Equipping teachers with skills to assist in the identification and referral of mental health issues amongst learners may also help to address their own sense of feeling overwhelmed by the emotional and behavioural challenges in their classrooms (Fazel et al., 2014).

Interventions and programmes that can enable increased student–teacher communication and bonding, and foster caring relationships in the school setting, could provide an important psychosocial support mechanism for young people, and promote positive emotional, social and educational development (Chapman et al., 2013). Providing teachers with skills training on how to respond to students using strategies such as supportive listening and praise, would help to improve the quality of student-teacher relationships (Kincade et al., 2020). However, training teachers on these practices may not lead to sustained implementation alone; there is a need for on-going training and consultation to ensure teacher buy-in, and support teachers' adoption, delivery, and sustained use of these practices (Kincade et al., 2020). Interventions that have shown success in improving student-teacher relationships and building students' trust in teachers include mentorship or internship programmes and relationship-focused reflection (Joyce and Early, 2014; Lenzi et al., 2017).

Conclusion

Our findings provide valuable new insights into student-teacher relationships in the South African context, how the student-teacher disconnect experienced by AGYW impacts not only on AGYW's educational attainment, but also on their mental health and well-being, as well as their sexual and reproductive health. As is evident from our findings, AGYW desire and need better support from teachers. It is likely that more trusting and supportive relationships between AGYW and teachers would improve the potential of AGYW for educational attainment and help to decrease rates of teenage pregnancy. Addressing the disconnect between AGYW and their teachers may go some way to improving AGYW's perceived psychosocial and emotional support, and in turn, lead to reduced engagement in risk behaviours, mitigating their risk of negative sexual and reproductive health outcomes, and reducing the prevalence of teenage pregnancy and HIV amongst AGYW in South Africa.

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 South African Medical Research Council Research Ethics Committee and by the Associate Director for Science in the Centre for Global Health in the Centres for Disease Control and Prevention. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author contributions

ZD was the principal study investigator, performed analysis of data, and led the manuscript writing. KM contributed to data collection, data analysis, and drafting of the manuscript. KJ was a co-investigator and conducted reviews of the manuscript. TM was a co-investigator, assisted with study management, and conducted reviews of the manuscript. LV conducted reviews of the manuscript. CM was a co-principal investigator and contributed to writing the manuscript. 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

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