frontiers in Education

ORIGINAL RESEARCH
published: 30 July 2021
doi: 10.3389/feduc.2021.695298

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

OPEN ACCESS

Edited by:
Claudio Longobardi, University of Turin, Italy

Reviewed by:
Ricardo Tarrasch, Tel Aviv University, Israel
Nicole Jacqueline Albrecht, RMIT University, Australia

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

Received: *14 April 2021*
Accepted: *19 July 2021*
Published: *30 July 2021*

Citation:
Whitehead J, Schonert-Reichl KA, Oberle E and Boyd L (2021) Development and Validation of a Measure to Assess Early Adolescents' Perceptions of Caring Student-Teacher Relationships. Front. Educ. 6:695298. doi: 10.3389/feduc.2021.695298

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-Shachar 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.

FUNDING

The work reported herein was supported by funding from an anonymous donor to the second author, and by the University of British Columbia to the second author.

REFERENCES

Ahnert, L., Harwardt-Heinecke, E., Kappler, G., Kappler, G., Eckstein-Madry, T., and Milatz, A. (2012). Student-Teacher Relationships and Classroom Climate in First Grade: How do They Relate to Students' Stress Regulation? *Attachment Hum. Dev.* 14 (3), 249–263. doi:10.1080/14616734.2012.673277

Aloe, A. M., Amo, L. C., and Shanahan, M. E. (2014). Classroom Management Self-Efficacy and Burnout: A Multivariate Meta-Analysis. *Educ. Psychol. Rev.* 26 (1), 101–126. doi:10.1007/s10648-013-9244-0

Archambault, I., Vandenbossche-Makombo, J., and Fraser, S. L. (2017). Students' Oppositional Behaviors and Engagement in School: The Differential Role of the Student-Teacher Relationship. *J. Child. Fam. Stud.* 26 (6), 1702–1712. doi:10.1007/s10826-017-0691-y

Battistich, V., Solomon, D., Watson, M., and Schaps, E. (1997). Caring School Communities. *Educ. Psychol.* 32 (3), 137–151. doi:10.1207/s15326985ep3203_1

Ben-Shachar, M. S., Makowski, D., Lüdecke, D., Kelley, K., and Stanley, D. (2021). Package 'Effectsize'. Available at: https://cran.r-project.org/web/packages/effectsize/effectsize.pdf

Braun, S. S., Roeser, R. W., Mashburn, A. J., and Skinner, E. (2019). Middle School Teachers' Mindfulness, Occupational Health and Well-Being, and the Quality of Teacher-Student Interactions. *Mindfulness* 10 (2), 245–255. doi:10.1007/s12671-018-0968-2

Braun, S. S., Schonert-Reichl, K. A., and Roeser, R. W. (2020). Effects of Teachers' Emotion Regulation, Burnout, and Life Satisfaction on Student Well-Being. *J. Appl. Dev. Psychol.* 69, 101151. doi:10.1016/j.appdev.2020.101151

Brinkworth, M. E., McIntyre, J., Juraschek, A. D., and Gehlbach, H. (2018). Teacher-Student Relationships: The Positives and Negatives of Assessing Both Perspectives. *J. Appl. Dev. Psychol.* 55, 24–38. doi:10.1016/j.appdev.2017.09.002

Brown, J. L., Jones, S. M., LaRusso, M. D., and Aber, J. L. (2010). Improving Classroom Quality: Teacher Influences and Experimental Impacts of the 4Rs Program. *J. Educ. Psychol.* 102 (1), 153–167. doi:10.1037/a0018160

Buote, D., and Schonert-Reichl, K. A. (2004). "November 10 -13). Significant School – Based aAdults: Impact on Individual and Social Responsibility," in *Promoting Social Responsibility in Children and Early Adolescents: Research Finding From a University – School Board Partnership [Symposium]*. Editor K. A. Schonert-Reichl (Chair) (Dana Point, CA: Association for Moral Education Annual Meeting).

Cipriano, C., Barnes, T. N., Pieloch, K. A., Rivers, S. E., and Brackett, M. (2019). A Multilevel Approach to Understanding Student and Teacher Perceptions of Classroom Support During Early Adolescence. *Learn. Environ Res.* 22, 209–228. doi:10.1007/s10984-018-9274-0

Claessens, L. C. A., van Tartwijk, J., van der Want, A. C., Pennings, H. J. M., Verloop, N., den Brok, P. J., et al. (2017). Positive Teacher-Student Relationships go Beyond the Classroom, Problematic Ones Stay Inside. *J. Educ. Res.* 110 (5), 478–493. doi:10.1080/00220671.2015.1129595

Cohen, J. (1992). A Power Primer. *Psychol. Bull.* 112 (1), 155–159. doi:10.1037/0033-2909.112.1.155

Cohen, J. (1990). Things I Have Learned (So Far). *Am. Psychol.* 45, 1304–1312. doi:10.1037/0003-066X.45.12.1304

Cohen, S., and Williamson, G. (1988). "Perceived Stress in a Probability Sample of the United States," in *The Social Psychology of health: Claremont Symposium on Applied Social Psychology*. Editors S. Spacapan, and S. Oskamp (California, United States: Sage), 31–67.

Colaianne, B. A., Galla, B. M., and Roeser, R. W. (2020). Perceptions of Mindful Teaching are Associated With Longitudinal Change in Adolescents' Mindfulness and Compassion. *Int. J. Behav. Dev.* 44 (1), 41–50. doi:10.1177/0165025419870864

Collie, R. J., and Perry, N. E. (2019). Cultivating Teacher Thriving Through Social-Emotional Competence and Its Development. *Aust. Educ. Res.* 46, 699–714. doi:10.1007/s13384-019-00342-2

Dicke, T., Parker, P. D., Marsh, H. W., Kunter, M., Schmeck, A., and Leutner, D. (2014). Self-Efficacy in Classroom Management, Classroom Disturbances, and Emotional Exhaustion: A Moderated Mediation Analysis of Teacher Candidates. *J. Educ. Psychol.* 106 (2), 569–583. doi:10.1037/a0035504

Doumen, S., Koomen, H. M. Y., Buyse, E., Wouters, S., and Verschueren, K. (2012). Teacher and Observer Views on Student-Teacher Relationships: Convergence Across Kindergarten and Relations With Student Engagement. *J. Sch. Psychol.* 50 (1), 61–76. doi:10.1016/j.jsp.2011.08.004

Downer, J. T., Stuhlman, M., Schweig, J., Martínez, J. F., and Ruzek, E. (2015). Measuring Effective Teacher-Student Interactions From a Student Perspective. *The J. Early Adolescence* 35 (5-6), 722–758. doi:10.1177/0272431614564059

DuPaul, G. J., Rapport, M. D., and Perriello, L. M. (1991). Teacher Ratings of Academic Skills: The Development of the Academic Performance Rating Scale. *Sch. Psychol. Rev.* 20 (2), 284–300. doi:10.1080/02796015.1991.12085552

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., et al. (1993). Development During Adolescence: The Impact of Stage-Environment Fit on Young Adolescents' Experiences in Schools and in Families. *Am. Psychol.* 48 (2), 90–101. doi:10.1037/0003-066X.48.2.90

Eccles, J. S., and Roeser, R. W. (2011). Schools as Developmental Contexts During Adolescence. *J. Res. Adolescence* 21, 225–241. doi:10.1111/j.1532-7795.2010.00725.x

Engels, M. C., Colpin, H., Van Leeuwen, K., Bijttebier, P., Van Den Noortgate, W., Claes, S., et al. (2016). Behavioral Engagement, Peer Status, and Teacher-Student Relationships in Adolescence: A Longitudinal Study on Reciprocal Influences. *J. Youth Adolescence* 45, 1192–1207. doi:10.1007/s10964-016-0414-5

Fabrigar, L. R., and Wegener, D. T. (2012). *Exploratory Factor Analysis*. United Kingdom: Oxford University Press.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., and Strahan, E. J. (1999). Evaluating the Use of Exploratory Factor Analysis in Psychological Research. *Psychol. Methods* 4 (3), 272–299. doi:10.1037/1082-989X.4.3.272

Fokkema, M., and Greiff, S. (2017). How Performing PCA and CFA on the Same Data Equals Trouble. *Eur. J. Psychol. Assess.* 33 (6), 399–402. doi:10.1027/1015-5759/a000460

Frank, J. L., Jennings, P. A., and Greenberg, M. T. (2016). Validation of the Mindfulness in Teaching Scale. *Mindfulness* 7 (1), 155–163. doi:10.1007/s12671-015-0461-0

Furr, R. M.SAGE Research Methods Core (2011). *Scale cConstruction and Psychometrics for Social and Personality Psychology*. California, United States: SAGE. doi:10.4135/9781446287866

Gadermann, A. M., Guhn, M., and Zumbo, B. D. (2012). Estimating Ordinal Reliability for Likert-Type and Ordinal Item Response Data: A Conceptual, Empirical, and Practical Guide. *Pract. Assess. Res. Eval.* 17 (1), 1–13. doi:10.7275/n560-j767

Gadermann, A. M., Guhn, M., and Zumbo, B. D. (2011). Investigating the Substantive Aspect of Construct Validity for the Satisfaction With Life Scale Adapted for Children: A Focus on Cognitive Processes. *Soc. Indicators Res.* 100, 37–60. doi:10.1007/s11205-010-9603-x

Gallagher, E. K., Dever, B. V., Hochbein, C., and DuPaul, G. J. (2019). Teacher Caring as a Protective Factor: The Effects of Behavioral/Emotional Risk and Teacher Caring on Office Disciplinary Referrals in Middle School. *Sch. Ment. Health* 11 (4), 754–765. doi:10.1007/s12310-019-09318-0

Gehlbach, H., and Brinkworth, M. E. (2011). Measure Twice, Cut Down Error: A Process for Enhancing the Validity of Survey Scales. *Rev. Gen. Psychol.* 15 (4), 380–387. doi:10.1037/a0025704

Greenberg, M. T., Domitrovich, C. E., Weissberg, R. P., and Durlak, J. A. (2017). Social and emotional learning as a public health approach to education. *Future Child.* 27 (1), 13–32. doi:10.1353/foc.2017.0001

Guess, P. E., and McCane-Bowling, S. J. (2016). Teacher Support and Life Satisfaction. *Edu. Urban Soc.* 48 (1), 30–47. doi:10.1177/0013124513514604

Hair, J. F., Black, B., Babin, B., and Anderson, R. E. (2010). *Multivariate Data Analysis*. 7th ed. New Jersey, United States: Pearson Prentice Hall.

Harding, S., Morris, R., Gunnell, D., Ford, T., Hollingworth, W., Tilling, K., et al. (2019). Is Teachers' Mental Health and Wellbeing Associated With Students' Mental Health and Wellbeing? *J. Affective Disord.* 242, 180–187. doi:10.1016/j.jad.2018.08.080

Hayton, J. C., Allen, D. G., and Scarpello, V. (2004). Factor Retention Decisions in Exploratory Factor Analysis: A Tutorial on Parallel Analysis. *Organizational Res. Methods* 7 (2), 191–205. doi:10.1177/1094428104263675

Hoenig, J. M., and Heisey, D. M. (2001). The Abuse of Power. *The Am. Statistician* 55 (1), 19–24. doi:10.1198/000313001300339897

Holgado–Tello, F. P., Chacón–Moscoso, S., Barbero–García, I., and Vila–Abad, E. (2010). Polychoric Versus Pearson Correlations in Exploratory and Confirmatory Factor Analysis of Ordinal Variables. *Qual. Quantity* 44 (1), 153–166. doi:10.1007/s11135-008-9190-y

Hu, L. T., and Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. *Struct. Equation Model. A Multidisciplinary J.* 6 (1), 1–55. doi:10.1080/10705519909540118

Hubley, A. M., and Zumbo, B. D. (2011). Validity and the Consequences of Test Interpretation and Use. *Soc. Indic Res.* 103 (2), 219–230. doi:10.1007/s11205-011-9843-410.1007/s11205-011-9843-4

Hughes, J. N., Im, M. H., and Wehrly, S. E. (2014). Effect of Peer Nominations of Teacher-Student Support at Individual and Classroom Levels on Social and Academic Outcomes. *J. Sch. Psychol.* 52 (3), 309–322. doi:10.1016/j.jsp.2013.12.004

Jennings, P. A., Brown, J. L., Frank, J. L., Doyle, S., Oh, Y., Davis, R., et al. (2017). Impacts of the CARE for Teachers Program on Teachers' Social and Emotional Competence and Classroom Interactions. *J. Educ. Psychol.* 109 (7), 1010–1028. doi:10.1037/edu0000187

Jennings, P. A., and Greenberg, M. T. (2009). The Prosocial Classroom: Teacher Social and Emotional Competence in Relation to Student and Classroom Outcomes. *Rev. Educ. Res.* 79 (1), 491–525. doi:10.3102/0034654308325693

Johnson, D. W., Johnson, R. T., Buckman, L. A., and Richards, P. S. (1985). The Effect of Prolonged Implementation of Cooperative Learning on Social Support Within the Classroom. *J. Psychol.* 119 (5), 405–411. doi:10.1080/00223980.1985.10542911

Jones, S. M., Bouffard, S. M., and Weissbourd, R. (2013). Educators' Social and Emotional Skills Vital to Learning. *Phi Delta Kappan* 94 (8), 62–65. doi:10.1177/003172171309400815

Kabat-Zinn, J. (1990). *Full Catastrophe Living: Using the Wisdom of Your Mind and Body to Face Stress, Pain, and Illness*. New York, United States: Delacorte Press.

Kabat-Zinn, J. (1994). Wherever You Go, There You Are: Mindfulness Meditation in Everyday life. New York: Hyperion.

Kaiser, H. F. (1974). An Index of Factorial Simplicity. *Psychometrika* 39 (1), 31–36. doi:10.1007/BF02291575

Kam, C., and Greenberg, M. T. (1998). "Technical Measurement Report on the Teacher Social Competence Rating Scale [Unpublished Technical Report]," in *Prevention Research Center for the Promotion of Human Development* (United States: The Pennsylvania State University).

Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling*. 4th ed. New York, United States: Guilford Press.

Koepke, M. F., and Harkins, D. A. (2008). Conflict in the Classroom: Gender Differences in the Teacher-Child Relationship. *Early Edu. Dev.* 19 (6), 843–864. doi:10.1080/10409280802516108

Koomen, H. M., and Jellesma, F. C. (2015). Can Closeness, Conflict, and Dependency be Used to Characterize Students' Perceptions of the Affective Relationship With Their Teacher? Testing a New Child Measure in Middle Childhood. *Br. J. Educ. Psychol.* 85 (4), 479–497. doi:10.1111/bjep.12094

Koomen, H. M. Y., Verschueren, K., van Schooten, E., Jak, S., and Pianta, R. C. (2012). Validating the Student-Teacher Relationship Scale: Testing Factor Structure and Measurement Invariance Across Child Gender and Age in a Dutch Sample. *J. Sch. Psychol.* 50 (2), 215–234. doi:10.1016/j.jsp.2011.09.001

Kurdi, V., and Archambault, I. (2018). Student-Teacher Relationships and Student Anxiety: Moderating Effects of Sex and Academic Achievement. *Can. J. Sch. Psychol.* 33 (3), 212–226. doi:10.1177/0829573517707906

Ladd, G. W., Birch, S. H., and Buhs, E. S. (1999). Children's Social and Scholastic Lives in Kindergarten: Related Spheres of Influence? *Child. Dev.* 70 (6), 1373–1400. doi:10.1111/1467-8624.00101

Levine, M., and Ensom, M. H. H. (2001). Post hoc Power Analysis: An Idea Whose Time Has Passed? *Pharmacother. Official J. Am. Coll. Clin. Pharm.* 21 (4), 405–409. doi:10.1592/phco.21.5.405.34503

Lippman, L. H., Moore, K. A., Guzman, L., Ryberg, R., McIntosh, H., Ramos, M. F., et al. (2014). Studying Aspects of Flourishing Among Adolescents, in *Flourishing children. Springer Briefs in Well-Being and Quality of Life Research* (Berlin, Germany: Springer), 1–23. doi:10.1007/978-94-017-8607-2_1

Liu, X., Zhao, Y., Li, J., Dai, J., Wang, X., and Wang, S. (2020). Factor Structure of the 10-Item Perceived Stress Scale and Measurement Invariance Across Genders Among Chinese Adolescents. *Front. Psychol.* 11, 537. doi:10.3389/fpsyg.2020.00537

Longobardi, C., Prino, L. E., Marengo, D., and Settanni, M. (2016). Student-Teacher Relationships as a Protective Factor for School Adjustment During the Transition From Middle to High School. *Front. Psychol.* 7, 1988. doi:10.3389/fpsyg.2016.01988

Longobardi, C., Quaglia, R., Prino, L. E., Pasta, T., and Gastaldi, F. G. M. (2014). Measuring the Influence of Stress and Burnout in Teacher-Child Relationship. *Eur. J. Edu. Psychol.* 7 (1), 17–28. doi:10.1989/ejep.v7i1.149

Longobardi, C., Settanni, M., Lin, S., and Fabris, M. A. (2020). Student-Teacher Relationship Quality and Prosocial Behaviour: The Mediating Role of Academic Achievement and a Positive Attitude Towards School. *Br. J. Educ. Psychol.* 91 (2), 547–562. doi:10.1111/bjep.12378

Lüdecke, D., Lüdecke, M. D., and Calculator from David, B. W.(2017). Package 'esc'. Available at: https://cran.rproject.org/web/packages/esc/esc.pdf

Malecki, C. K., Demaray, M. K., and Elliott, S. N. (2000). *The Child and Adolescent Social Support Scale*. DeKalb: Northern Illinois University.

Malecki, C. K., and Demaray, M. K. (2002). Measuring Perceived Social Support: Development of the Child and Adolescent Social Support Scale (CASSS). *Psychol. Schools* 39 (3), 1–18. doi:10.1002/pits.10004

Mashburn, A. J., Hamre, B. K., Downer, J. T., and Pianta, R. C. (2006). Teacher and Classroom Characteristics Associated with Teachers' Ratings of Prekindergartners' Relationships and Behaviors. *J. Psychoeducational Assess.* 24 (4), 367–380. doi:10.1177/0734282906290594

Maslach, C., Jackson, S. E., and Leiter, M. P. (1996). *Maslach Burnout Inventory Manual*. 4th ed. Sunnyvale, CA: Consulting Psychologists Press.

Matsunaga, M. (2010). How to Factor-Analyze Your Data Right: Do's, Don'ts, and How-to's. *Int. J. Psychol. Res.* 3 (1), 97–110. doi:10.21500/20112084.854

McCombs, B. L., Daniels, D. H., and Perry, K. E. (2008). Children's and Teachers' Perceptions of Learner-Centered Practices, and Student Motivation: Implications for Early Schooling. *Elem. Sch. J.* 109 (1), 16–35. doi:10.1086/592365

McDonald, R. P. (1985). *Factor Analysis and Related Methods*. London: Psychology Press.

McFarland, L., Murray, E., and Phillipson, S. (2016). Student-Teacher Relationships and Student Self-Concept: Relations With Teacher and Student Gender. *Aust. J. Edu.* 60 (1), 5–25. doi:10.1177/0004944115626426

Meredith, W. (1993). Measurement Invariance, Factor Analysis, and Factorial Invariance. *Pyschometrika* 58, 525–543.

Midgley, C., Kaplan, A., Middleton, M., Maehr, M. L., Urdan, T., Anderman, L. H., et al. (1998). The Development and Validation of Scales Assessing Students' Achievement Goal Orientations. *Contemp. Educ. Psychol.* 23 (2), 113–131. doi:10.1006/ceps.1998.0965

Miller, J. L., Vaillancourt, T., and Boyle, M. H. (2009). Examining the Heterotypic Continuity of Aggression Using Teacher Reports: Results From a National Canadian Study. *Soc. Dev.* 18 (1), 164–180. doi:10.1111/j.1467-9507.2008.00480.x

Moshagen, M., and Erdfelder, E. (2016). *Package 'SemPower'*. https://CRAN.R-project.org/package=semPower.

Nakagawa, S., and Foster, T. M. (2004). The Case Against Retrospective Statistical Power Analyses With an Introduction to Power Analysis. *Acta Ethol* 7 (2), 103–108. doi:10.1007/s10211-004-0095-z

Noakes, M. A., and Rinaldi, C. M. (2006). Age and Gender Differences in Peer Conflict. *J. Youth Adolescence* 35 (6), 881–891. doi:10.1007/s10964-006-9088-8

Noam, G. G., and Goldstein, L. S. (1998). *The Resilience Inventory*. [Unpublished protocol].

Noddings, N. (2013). *Caring: A Relational Approach to Ethics and Moral Education*. California: University of California Press. doi:10.1525/9780520957343

Noddings, N. (2015). *The Challenge to Care in Schools*. 2nd ed. New York, United States: Teachers College Press. doi:10.1017/cbo9781139871655

Norman, G. R., and Streiner, D. L. (2014). *Biostatistics: The Bare Essentials*. 4th ed. USA: People's Medical Publishing.

Oberle, E., Gist, A., Cooray, M. S., and Pinto, J. B. R. (2020). Do Students Notice Stress in Teachers? Associations Between Classroom Teacher burnout and Students' Perceptions of Teacher Social-Emotional competence. *Psychol. Schs* 57 (11), 1741–1756. doi:10.1002/pits.22432

Oberle, E., and Schonert-Reichl, K. A. (2016). Stress Contagion in the Classroom? the Link Between Classroom Teacher Burnout and Morning Cortisol in Elementary School Students. *Soc. Sci. Med.* 159, 30–37. doi:10.1016/j.socscimed.2016.04.031

Offer, D., and Schonert-Reichl, K. A. (1992). Debunking the Myths of Adolescence: Findings From Recent research. *J. Am. Acad. Child Adolesc. Psychiatry* 31 (6), 1003–1014. doi:10.1097/00004583-199211000-00001

Özdemir, H. F., Toraman, Ç., and Kutlu, Ö. (2019). The Use of Polychoric and Pearson Correlation Matrices in the Determination of Construct Validity of Likert Type Scales. *Turkish J. Edu.* 8 (3), 180–195. doi:10.19128/turje.519235

Pallini, S., Vecchio, G. M., Baiocco, R., Schneider, B. H., and Laghi, F. (2019). Student-Teacher Relationships and Attention Problems in School-Aged Children: The Mediating Role of Emotion Regulation. *Sch. Ment. Health* 11, 309–320. doi:10.1007/s12310-018-9286-z

Pedhazur, E. J., and Pedhazur Schmelkin, L. (1991). "Exploratory Factor Analysis," in *Measurement, Design and Analysis: An Integrated Approach*. Editors E. J. Pedhazur and L. Pedhazur Schmelkin (London: Psychology Press), 590–630.

Pianta, R. C. (2001). Student–Teacher Relationship Scale–Short Form. Lutz, FL: Psychological Assessment Resources

Pianta, R. C., and Stuhlman, M. W. (2004). Teacher-child Relationships and Children's Success in the First Years of School. *Sch. Psychol. Rev.* 33 (3), 444–458. doi:10.1080/02796015.2004.12086261

Pössel, P., Burton, S. M., Cauley, B., Sawyer, M. G., Spence, S. H., and Sheffield, J. (2018). Associations Between Social Support From Family, Friends, and Teachers and Depressive Symptoms in Adolescents. *J. Youth Adolescence* 47 (2), 398–412. doi:10.1007/s10964-017-0712-6

Prewett, S. L., Bergin, D. A., and Huang, F. L. (2019). Student and Teacher Perceptions on Student-Teacher Relationship Quality: A Middle School Perspective. *Sch. Psychol. Int.* 40 (1), 66–87. doi:10.1177/0143034318807743

R Core Team (2017). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.

Raufelder, D., and Hoferichter, F. (2015). Development and Validation of the Teacher and Motivation (TEMO) Scale: A Self-Report Measure Assessing Students' Perceptions of Liked and Disliked Teachers as Motivators. *Int. J. Sch. Educ. Psychol.* 3 (2), 97–106. doi:10.1080/21683603.2014.966228

Raufelder, D., Scherber, S., and Wood, M. A. (2016). The Interplay Between Adolescents' Perceptions of Teacher-Student Relationships and Their Academic Self-Regulation: Does Liking a Specific Teacher Matter? *Psychol. Schs.* 53 (7), 736–750. doi:10.1002/pits.21937

Reddy, R., Rhodes, J. E., and Mulhall, P. (2003). The Influence of Teacher Support on Student Adjustment in the Middle School Years: A Latent Growth Curve Study. *Dev. Psychopathol* 15, 119–138. doi:10.1017/S0954579403000075

Revelle, W. (2018). *Psych: Procedures for Personality and Psychological Research*. United States: Northwestern University.

Ricard, N. C., and Pelletier, L. G. (2016). Dropping out of High School: The Role of Parent and Teacher Self-Determination Support, Reciprocal Friendships and Academic Motivation. *Contemp. Educ. Psychol.* 44-45, 32–40. doi:10.1016/j.cedpsych.2015.12.003

Rickert, N. P., Skinner, E. A., and Roeser, R. W. (2020). Development of a Multidimensional, Multi-Informant Measure of Teacher Mindfulness as Experienced and Expressed in the Middle School Classroom. *Int. J. Behav. Dev.* 44 (1), 5–19. doi:10.1177/0165025419881724

Roberti, J. W., Harrington, L. N., and Storch, E. A. (2006). Further Psychometric Support for the 10-Item Version of the Perceived Stress Scale. *J. Coll. Couns.* 9 (2), 135–147. doi:10.1002/j.2161-1882.2006.tb00100.x

Rodgers, C. R., and Raider-Roth, M. B. (2006). Presence in Teaching. *Teach. Teach.* 12 (3), 265–287. doi:10.1080/13450600500467548

Roeser, R. W., and Eccles, J. S. (2014). Schooling and the Mental Health of Children and Adolescents in the United States. In M. Lewis and K. D. Rudolph (Eds.), *Handbook of Developmental Psychopathy* (pp. 163–184). Springer. Berlin, Germany doi:10.1007/978-1-4614-9608-3_9

Roeser, R. W., Midgley, C., and Urdan, T. C. (1996). Perceptions of the School Psychological Environment and Early Adolescents' psychological and Behavioral Functioning in School: The Mediating Role of Goals and Belonging. *J. Educ. Psychol.* 88 (3), 408–422. doi:10.1037/0022-0663.88.3.408

Roeser, R. W., Skinner, E., Beers, J., and Jennings, P. A. (2012). Mindfulness Training and Teachers' Professional Development: An Emerging Area of Research and Practice. *Child. Dev. Perspect.* 6 (2), 167–173. doi:10.1111/j.1750-8606.2012.00238.x

Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., and Oort, F. J. (2011). The Influence of Affective Teacher-Student Relationships on Students' School Engagement and Achievement. *Rev. Educ. Res.* 81 (4), 493–529. doi:10.3102/0034654311421793

Rosseel, Y., Oberski, D., Byrnes, J., Vanbrabant, L., Savalei, V., Merkle, E., and Chow, M. (2017). Package 'Lavaan'. ftp://tucows.icm.edu.pl/packages/cran/web/packages/lavaan/lavaan.pdf (on July 30, 2020).

Ruzek, E. A., Hafen, C. A., Allen, J. P., Gregory, A., Mikami, A. Y., and Pianta, R. C. (2016). How Teacher Emotional Support Motivates Students: The Mediating Roles of Perceived Peer Relatedness, Autonomy Support, and Competence. *Learn. Instruction* 42, 95–103. doi:10.1016/j.learninstruc.2016.01.004

Sabol, T. J., and Pianta, R. C. (2012). Recent tTrends in Research on Teacher-Child Relationships. *Attachment Hum. Dev.* 14 (3), 213–231. doi:10.1080/14616734.2012.672262

Saft, E. W., and Pianta, R. C. (2001). Teachers' Perceptions of Their Relationships With Students: Effects of Child Age, Gender, and Ethnicity of Teachers and Children. *Sch. Psychol. Q.* 16 (2), 125–141. doi:10.1521/scpq.16.2.125.18698

Scales, P. C., Pekel, K., Sethi, J., Chamberlain, R., and Van Boekel, M. (2020). Academic Year Changes in Student-Teacher Developmental Relationships and Their Linkage to Middle and High School Students' Motivation: A Mixed Methods Study. *J. Early Adolescence* 40 (4), 499–536. doi:10.1177/0272431619858414

Schonert-Reichl, K. A., and Buote, D. (2006). *Is it Better to Have Loved and Lost Than Never to Have Loved at all? A Short-Term Longitudinal Study of Early Adolescents' Natural Mentoring Relationships With School-Related Adults*. San Antonio, TX, United States: Society for Prevention Research Annual Meeting. [Paper presentation].

Schonert-Reichl, K. A., and Lawlor, M. S. (2010). The Effects of a Mindfulness-Based Education Program on Pre- and Early Adolescents' Well-Being and Social and Emotional Competence. *Mindfulness* 1 (3), 137–151. doi:10.1007/s12671-010-0011-810.1007/s12671-010-0011-8

Schonert-Reichl, K. A. (2017). Social and Emotional Learning and Teachers. *Future Child.* 27 (1), 137–155. doi:10.1353/foc.2017.0007

Schumacker, R. E. (2015). *Learning Statistics Using R*. California, United States: SAGE. doi:10.4135/9781506300160

Skinner, E. A., and Belmont, M. J. (1993). Motivation in the Classroom: Reciprocal Effects of Teacher Behavior and Student Engagement Across the School Year. *J. Educ. Psychol.* 85 (4), 571–581. doi:10.1037/0022-0663.85.4.571

Spilt, J. L., Koomen, H. M. Y., and Mantzicopoulos, P. Y. (2010). Young Children's Perceptions of Teacher-Child Relationships: An Evaluation of Two Instruments and the Role of Child Gender in Kindergarten. *J. Appl. Dev. Psychol.* 31 (6), 428–438. doi:10.1016/j.appdev.2010.07.006

Steiger, J. H. (2007). Understanding the Limitations of Global Fit Assessment in Structural Equation Modeling. *Personal. Individual Differences* 42 (5), 893–898. doi:10.1016/j.paid.2006.09.017

Thomson, K. C., Schonert-Reichl, K. A., and Oberle, E. (2015). Optimism in Early Adolescence: Relations to Individual Characteristics and ecological Assets in Families, Schools, and Neighborhoods. *J. Happiness Stud.* 16 (4), 889–913. doi:10.1007/s10902-014-9539-y

Thurstone, L. L. (1947). *Multiple Factor Analysis*. Chicago: University of Chicago Press.

Vandenberg, R. J., and Lance, C. E. (2000). A Review and Synthesis of the Measurement Invariance Literature: Suggestions, Practices, and Recommendations for Organizational Research. *Organizational Res. Methods* 3 (1), 4–70. doi:10.1177/109442810031002

Wang, M.-T., and Eccles, J. S. (2012). Social Support Matters: Longitudinal Effects of Social Support on Three Dimensions of School Engagement From Middle to High School. *Child. Dev.* 83 (3), 877–895. doi:10.1111/j.1467-8624.2012.01745.x

Waters, E., Stewart-Brown, S., and Fitzpatrick, R. (2003). Agreement Between Adolescent Self-Report and Parent Reports of Health and Well-Being: Results of an Epidemiological Study. *Child. Care Health Dev.* 29 (6), 501–509. doi:10.1046/j.1365-2214.2003.00370.x

Watkins, M. W. (2018). Exploratory Factor Analysis: A Guide to Best Practice. *J. Black Psychol.* 44 (3), 219–246. doi:10.1177/0095798418771807

Wentzel, K. R. (2002). Are Effective Teachers Like Good Parents? Teaching Styles and Student Adjustment in Early Adolescence. *Child. Dev.* 73 (1), 287–301. doi:10.1111/1467-8624.00406

Wentzel, K. R., Battle, A., Russell, S. L., and Looney, L. B. (2010). Social Supports From Teachers and Peers as Predictors of Academic and Social Motivation. *Contemp. Educ. Psychol.* 35 (3), 193–202. doi:10.1016/j.cedpsych.2010.03.002

Wentzel, K. R. (2003). Motivating Students to Behave in Socially Competent Ways. *Theor. into Pract.* 42 (4), 319–326. doi:10.1207/s15430421tip4204_9

Wentzel, K. R. (1998). Social Relationships and Motivation in Middle School: The Role of Parents, Teachers, and Peers. *J. Educ. Psychol.* 90 (2), 202–209. doi:10.1037//0022-0663.90.2.20210.1037/0022-0663.90.2.202

Wentzel, K. R. (1997). Student Motivation in Middle School: The Role of Perceived Pedagogical Caring. *J. Educ. Psychol.* 89 (3), 411–419. doi:10.1037/0022-0663.89.3.411

Whitehead, J. K. (2013). *Investigating Factor Structure and Validity Evidence of a Measure Assessing Students' Perceptions of Teachers' Social and Emotional Competence [Master's Thesis*. Vancouver, BC: University of British Columbia. UBC Theses and Dissertations Archive. doi:10.1061/9780784412909.023 https://open.library.ubc.ca/collections/ubctheses/24/items/1.0103371.

Xia, Y., and Yang, Y. (2019). RMSEA, CFI, and TLI in Structural Equation Modeling With Ordered Categorical Data: The Story They Tell Depends on the Estimation Methods. *Behav. Res.* 51 (1), 409–428. doi:10.3758/s13428-018-1055-2

Yoon, J. S. (2002). Teacher Characteristics as Predictors of Teacher-Student Relationships: Stress, Negative Affect, and Self-efficacy. *Soc. Behav. Personal.* 30 (5), 485–493. doi:10.2224/sbp.2002.30.5.485

Zee, M., and de Bree, E. (2017). Students' Self-regulation and Achievement in Basic Reading and Math Skills: The Role of Student-Teacher Relationships in Middle Childhood. *Eur. J. Dev. Psychol.* 14 (3), 265–280. doi:10.1080/17405629.2016.1196587

Zee, M., and Koomen, H. M. Y. (2017). Similarities and Dissimilarities Between Teachers' and Students' relationship views in Upper Elementary School: The Role of Personal Teacher and Student Attributes. *J. Sch. Psychol.* 64, 43–60. doi:10.1016/j.jsp.2017.04.007

Zumbo, B. D. (2007). "Validity: Foundational Issues and Statistical Methodology," in *Handbook of statistics: Psychometrics*. Editors C. R. Rao and S. Sinharay (Amsterdam, Netherlands: Elsevier), Vol. 26, 45–79.

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.