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# Similarities and dissimilarities between teachers' and students' relationship views in upper elementary school: The role of personal teacher and student attributes<sup>☆</sup>



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## ABSTRACT

The present study aimed to advance insight into similarities and dissimilarities between teachers' and students' views of closeness and conflict in their dyadic relationship, and personal teacher and student attributes that contribute to these views. In total, 464 students (50.2% girls) and 62 teachers (67.5% females) from grades 4 to 6 participated in this study. Teachers filled out questionnaires about their background characteristics, self-efficacy (TSES), and student–teacher relationship perceptions (STRS) and students answered questions about their demographics and the student–teacher relationship quality (SPARTS). Peer-nominations were used to measure students' internalizing and externalizing behavior. Tests for measurement invariance suggested that the conflict and closeness constructs both approximated similarity across students and teachers. Multilevel structural equation models furthermore indicated that students' relationship perceptions, and conflict in particular, were predicted by their own gender, socioeconomic status, and internalizing and externalizing behavior. Additionally, teaching experience negatively predicted students' perceived conflicts. Teachers' relationship perceptions were both predicted by their own characteristics (teaching experience) and student features (gender, socioeconomic status, and externalizing behavior). These predictors explained between 39% and 61% of the variance in student- and teacher-perceived closeness and conflict. Last, teachers' general self-efficacy was positively associated with mean levels of closeness, and negatively associated with mean levels of conflict across student–teacher dyads.

## 1. Introduction

The affective nature of dyadic relationships between students and teachers has been acknowledged to play a vital role in fostering students' school adjustment in elementary school (Hamre & Pianta, 2001). A rich body of attachment-based research has attested that student–teacher relationship patterns that mark high levels of closeness and emotional security may be beneficial to students' sense of well-being, classroom engagement, and academic performance (Baker, 2006; Hamre & Pianta, 2001; Maldonado-Carreño & Votruba-Drzal, 2011; Roorda, Koomen, Spilt, & Oort, 2011). In contrast, conflict in the student–teacher dyad, characterized by high levels of discordance and negativity, has been empirically demonstrated to act as an obstacle to students' personal growth and academic success, hindering their sense of emotional security and increasing the risk of behavior problems, school disengagement, and

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academic maladjustment (Hamre & Pianta, 2001; Hughes, Luo, Kwok, & Loyd, 2008; McCormick & O'Connor, 2015; Roorda et al., 2011).

Several researchers have posited that the developmental benefits of emotionally close and conflict-free relationships between teachers and students may be particularly evident in the upper elementary grades (e.g., Roeser, Midgley, & Urdan, 1996; Roorda et al., 2011; Zee, Koomen, & van der Veen, 2013). Throughout these years, high-quality student–teacher relationships may help students cope with middle school transition stress, changes in peer relationships, and increased cognitive and emotional demands, leading to higher academic adjustment (Eccles & Roeser, 2011; Goldstein, Boxer, & Rudolph, 2015; Roorda et al., 2011). With this multitude of changes, students also become increasingly inclined to explore their identity and redefine their representations of social relationships with others, including their teachers (Roeser et al., 1996). As a consequence, dissimilarities between teachers' and students' views of their dyadic relationship are particularly likely to arise during this period, which, moreover, affect students' academic adjustment in different ways (Hughes, 2011; Murray, Murray, & Waas, 2008; Murray & Zvoch, 2011).

In spite of growing interest in similarities and dissimilarities among students' and teachers' relationship perceptions (Doumen et al., 2009; Hughes, 2011; Koomen & Jellesma, 2015; Mantzicopoulos & Neuharth-Pritchett, 2003; Murray et al., 2008), much has yet to be learned about the potential causes of these differences, especially in the upper elementary grades. Some researchers have argued that differences between the relationship views of teachers and students are mainly due to measurement and validity issues (Koepke & Harkins, 2008; Li, Hughes, Kwok, & Hsu, 2012; Murray et al., 2008). More specifically, the general lack of shared trait variance between teacher- and child-reports of the student–teacher relationship seems to suggest that the common instruments used to measure these relationship views actually tap into different constructs (Hughes, 2011; Li et al., 2012). Other investigators have come up with a more substantive justification, suggesting that personal characteristics of both members of the dyad are most likely to influence students' and teachers' ratings of their relationship (e.g., Kesner, 2000; Koepke & Harkins, 2008; Saft & Pianta, 2001).

Although both justifications seem reasonable, they have, to our knowledge, never been investigated concurrently in the final grades of elementary school. Moreover, empirical studies examining both student- and teacher-reports of the student–teacher relationship quality have thus far largely failed to recognize the potential interdependence that exists between students and teachers in the dyad. The present study, therefore, sought to explore similarities and dissimilarities between teachers' and students' relationship views in two different ways, accounting for the potential interdependence between these views.

First, we aimed to explore the extent to which differences in teachers' and students' perceptions of closeness and conflict in their mutual relationship tap into similar constructs, or emphasize different aspects of the relationship. Second, we aimed to investigate the extent to which students' and teachers' demographic characteristics, behaviors, and beliefs predict student–teacher closeness and conflict in the relationship. This may be an important step in determining how students' and teachers' perceptions of their mutual relationship are shaped and to what extent these relationship perceptions vary as a function of personal teacher and student attributes in upper elementary school.

### 1.1. A developmental systems perspective on student-teacher relationships

Common interpretations for differences between teachers' and students' views of the student–teacher relationship have increasingly relied on the developmental systems framework of student–teacher relationships (Myers & Pianta, 2008; Pianta, Hamre, & Stuhlman, 2003). This framework is heavily based on the premise that students' and teachers' perceptions of each other, as well as their shared relationship, are determined by unique internal working models of the self and the other in the student–teacher dyad (Bowlby, 1969; Pianta et al., 2003). Such internal working models, acquired through prior interaction patterns, have been theorized to reflect a dynamic set of feelings, beliefs, and personal attributes that may help interpret the underlying intentions and trustworthiness of others' behaviors and actions in mutual interactions (Pianta et al., 2003; Stuhlman & Pianta, 2002).

Depending on the nature of unique working models, students and teachers are now commonly believed to classify their mutual relationship and interactions along separate dimensions of emotional closeness and conflict (Pianta et al., 2003; Verschueren & Koomen, 2012). Generally, closeness has been considered a positive dimension of the student–teacher relationship. Teachers who endorse high scores on this relationship dimension generally sense that there is warmth and affection in the relationship with a particular student, and that the student may effectively use the teacher as a secure base (Pianta, 1999; Verschueren & Koomen, 2012). Similarly, students' perception of closeness is assumed to reflect their disclosing behavior, positive affect, and confidence in the teacher in times of stress and need (e.g., Koomen & Jellesma, 2015; Murray & Greenberg, 2000). Conflict, in contrast, has commonly been described as a negative relationship factor. Teachers who perceive the relationship with a particular student as conflictual tend to have a hard time dealing with the student, mark the student as capricious or angry, and may consequently feel pressured and emotionally drained (Pianta, 1999; Verschueren & Koomen, 2012). In turn, students with high scores on the conflict dimension experience the teacher as negative and distrustful, and are likely to reciprocate those feelings by displaying angry and discordant behaviors themselves (Koomen & Jellesma, 2015). Together, closeness and conflict assess unique aspects of the student–teacher relationship quality, instead of falling along an underlying continuum (Verschueren & Koomen, 2012).

### 1.2. Similarities and dissimilarities between students' and teachers' relationship views

Following the premises of the dynamic systems paradigm, investigators have generally assumed that teachers and students, based on their internal working models, are likely to develop different perceptions of the quality of their shared relationship (e.g., Hughes, 2011; Spilt, Koomen, & Mantzicopoulos, 2010). Indeed, empirical studies using both teacher- and student-reports of closeness in the student–teacher relationship have indicated that such reports are only weakly correlated, both in the early elementary grades

(Doumen et al., 2009; Mantzicopoulos & Neuharth-Pritchett, 2003) and beyond (Gest, Welsh, & Domitrovich, 2005; Hughes, Cavell, & Jackson, 1999; Jellesma, Zee, & Koomen, 2015; Koomen & Jellesma, 2015; Murray & Zvoch, 2011; Rey, Smith, Yoon, Somers, & Barnett, 2007; Vervoort, Doumen, & Verschueren, 2015). In some studies, mainly conducted in the early grades, measures of relational closeness obtained from students and teachers even failed to converge into common constructs (Hughes, 2011; Koepke & Harkins, 2008; Li et al., 2012; Murray et al., 2008). Notably, though, the reported reliabilities for early elementary students' reports of closeness in some of these studies (Koepke & Harkins, 2008; Murray et al., 2008) appeared to be as low as 0.46, suggesting that it may not be easy to obtain valid and trustworthy reports from students about their relationship with the teacher. This seems especially true for students below Grade 4. Furthermore, in a large-scale multitrait-multimethod study among 709 academically at-risk students from second and third grade, Li et al. (2012) indicated that child perceptions of closeness mainly reflect method variance and almost no trait variance. These authors came to the conclusion that student- and teacher-reported closeness may actually tap into different constructs. Thus, these findings suggest that the general lack of concordance between teachers' and students' perceptions of closeness could be due to invalid or unreliable child-reports of the relationship.

In contrast to closeness, somewhat stronger moderate associations have been noted between students' and teachers' reports of conflict in the student–teacher relationship, ranging from 0.05 to 0.59 (e.g., Hughes, 2011; Jellesma et al., 2015; Koomen & Jellesma, 2015; Mantzicopoulos & Neuharth-Pritchett, 2003; Murray et al., 2008; Vervoort et al., 2015). Furthermore, results from Koomen and Jellesma (2015) indicate that the difference in correlations between students' and teachers' ratings of both closeness and conflict is statistically significant in the upper elementary grades. One reason for these generally stronger correlations for conflict may be that such ratings, irrespective of informant, tend to be more reliable than reports of closeness (cf. Murray et al., 2008). Probably, such relational aspects as discordance and hostility are more easily observed in the other dyad member's behaviors than the subtler signs of closeness, including respect and warmth. In addition, experiences of conflict have generally been demonstrated to be the most stable, both across grades and different teacher and student raters (Hughes, 2011; Hughes et al., 2008; Jerome, Hamre, & Pianta, 2009; Pianta & Stuhlman, 2004). There is some evidence to suggest that this stability in conflict may be caused by such stable student attributes as disruptive behavior (e.g., Jerome et al., 2009). Teachers' perceptions of closeness in the relationship, on the other hand, generally seem to be more proximal to personal characteristics of teachers (e.g., Hamre, Pianta, Downer, & Mashburn, 2008; Jerome et al., 2009; Mashburn, Hamre, Downer, & Pianta, 2006). These results, then, seem to indicate that similarities and dissimilarities among student–teacher relationship perceptions may also be caused by the characteristics, behaviors, and beliefs that teachers and students bring to the dyad (e.g., Jerome et al., 2009; Myers & Pianta, 2008).

### 1.3. Associations between students' and teachers' attributes and relationship views

At the most basic level of Pianta's (1999) developmental systems model, personal attributes, beliefs, and behaviors of students and teachers have been recognized as vital correlates of the student–teacher relationship quality. These interpersonal features are likely to affect students' and teachers' internal working models, and may thereby contribute to either stability or change in their relationship perceptions. Among students' characteristics, students' demographic factors and social-emotional behaviors in class have probably been given the most substantial research attention (e.g., Pianta et al., 2003).

#### 1.3.1. Student demographic characteristics

In studies using teacher- and/or student-ratings, students' gender has been demonstrated to predict the quality of student–teacher relationships. More specifically, there is some evidence from large-scale studies that girls in upper elementary school report higher levels of closeness and lower levels of conflict in the relationship with their teacher than boys (Hughes, 2011; Jellesma et al., 2015; Koomen & Jellesma, 2015; Spilt, Hughes, Wu, & Kwok, 2012). With some exceptions (Murray & Murray, 2004), similar patterns of correlation have been noted in studies using teacher-reports, with kindergarten through eighth grade teachers generally experiencing relationships with girls that are marked by a higher degree of relational closeness and less conflict (e.g., Hamre & Pianta, 2001; Hughes, 2011; Kesner, 2000; Spilt, Koomen, & Jak, 2012; Zee et al., 2013). Findings from a study among 878 students from kindergarten through sixth Grade even suggest that the initial gap between teachers' reports of closeness for boys and girls may increase as these students move through elementary school (Jerome et al., 2009). Therefore, it is reasonable to assume that female students and their teachers report higher levels of closeness and lower levels of conflict in their mutual relationship than male students and their teachers.

In contrast to gender, the evidence regarding students' age is somewhat less conclusive. Theorists from several traditions have suggested, for example, that older students are likely to gradually become less emotionally connected to their teacher when they transition to middle school (Ang, Chong, Huan, Quek, & Yeo, 2008; Hargreaves, 2000; Lynch & Cicchetti, 1997). Empirical research on students' perceived relationships with teachers seems to concur with this assumption, suggesting that the quality of the student–teacher relationship declines over the upper elementary school years (Blankemeyer, Flannery, & Vazsonyi, 2002; Jellesma et al., 2015). Yet, when it comes to teacher-reports of student–teacher relationship patterns over time, the findings—and particularly those with respect to conflict—seem to be less clear. To be specific, the latent growth curve models of Jerome et al. (2009) demonstrated gradual increases in teacher-reported conflict up to fifth Grade, and slow declines in average ratings of conflict after fifth Grade. In contrast, Koomen, Verschueren, van Schooten, Jak, and Pianta (2012) investigated the quality of student–teacher relationships among 2463 three to twelve year olds and noted that average levels of conflict from teachers' perspective remain relatively stable throughout elementary school. In another empirical study on 1310 Kindergarten through fifth Grade students, only non-significant associations between students' age and teacher-rated conflict were established (e.g., Baker, 2006). Turning to teacher-reported closeness, the results seem to indicate, quite consistently, that the average level of warmth and emotional security may

decline in the upper elementary grades (Jerome et al., 2009; Koomen et al., 2012). Based on this body of evidence, it can thus be expected that students' age is a negative predictor of both students' and teachers' reports of the student–teacher relationship quality, and closeness in particular.

Students' socioeconomic status (SES) appears to be another demographic student characteristic that may predict student- and teacher-reported closeness and conflict, although the results are somewhat mixed. As with the findings on students' gender, there are indications that teachers report higher levels of closeness and lower levels of conflict in relationships with students whose parents have a high SES (Rudasill, Reio, Stipanovic, & Taylor, 2010; Wyrick & Rudasill, 2009). Yet, despite significant correlations, Jerome et al. (2009) could not establish unique, significant links between SES and teacher-reports of closeness and conflict. Similarly, unique associations between students' SES and their reports of closeness in upper elementary school have been found to be non-significant (Zee et al., 2013). Based on this evidence, then, it is not clear whether students' and teachers' views of their mutual relationship vary as a function of students' SES.

### 1.3.2. Students' social-emotional behaviors

Social-emotional student behaviors have consistently been shown to be among the primary factors affecting the quality of student–teacher relationships, but almost solely from teachers' perspectives (e.g., Henricsson & Rydell, 2004; Mashburn et al., 2006; Murray & Murray, 2004; Nurmi, 2012). To be more precise, students' externalizing behavior has repeatedly been demonstrated to lead to higher teacher ratings of conflict throughout the elementary grades (e.g., Birch & Ladd, 1998; Henricsson & Rydell, 2004; Jerome et al., 2009; Zhang & Sun, 2011), with coefficients as high as 0.73. For instance, Jerome et al. (2009) found that mothers' reports of their child's externalizing behavior at 54 months modestly predicted teachers' experiences of conflict with the child in Grade 6 ( $\beta = -0.02, p < 0.001$ ). Some cross-lagged longitudinal studies conducted among samples of very young children (e.g., Doumen et al., 2008; Mejia & Hoglund, 2016; Roorda, Verschueren, Van Craeyveldt, van Craeyveldt, & Colpin, 2014) even found evidence for small reciprocal associations over time, with students' externalizing student behavior predicting teacher-reported conflict and vice versa.

Next to conflict, teachers' reports of closeness in the student–teacher relationship seem to be predicted by students' externalizing behavior. For instance, cross-sectional studies have indicated that teachers tend to experience lower levels of closeness in relationships with young students who display externalizing behavior (e.g., Buyse, Verschueren, Doumen, Van Damme, & Maes, 2008; Thijs, Koomen, & van der Leij, 2008). Two cross-lagged panel studies (Mejia & Hoglund, 2016; Roorda et al., 2014) also disclosed moderate within-time correlations between externalizing student behavior and teacher-reported closeness in Kindergarten, ranging from  $-0.17$  to  $-0.32$ . Yet, these authors found no additional effects of these behaviors on prospective levels of closeness, after accounting for the stability in both constructs. These findings suggest that the link between students' externalizing behavior and teacher-reported closeness remains relatively stable over time (cf. Baker, Grant, & Morlock, 2008; Jerome et al., 2009; Zhang & Sun, 2011). Lastly, the only two studies focusing on students' perceptions of the relationship have indicated that students with externalizing problems report lower trust and more conflict in the relationship with their teachers (Koomen & Jellesma, 2015; Murray & Zvoch, 2011). Particularly, Koomen and Jellesma found significant moderate correlations of student-rated conflict with teacher-perceived hyperactivity/inattention ( $r = 0.41, p < 0.01$ ) and conduct problems ( $r = 0.34, p < 0.01$ ) in Grade 4 to 6. For closeness, these associations were not significant. Interestingly, Murray and Zvoch also found a correlation between child-reported lack of trust and teacher-rated externalizing behavior ( $r = 0.27, p < 0.01$ ) in a sample of 193 fifth- to eight-graders. However, this association appeared to be non-significant when students reported on their own behavioral problems. Students' and teachers' perceptions of conflict are thus most likely to vary as a function of students' externalizing behavior.

Although students' internalizing behaviors may evoke less negative affect in their teachers and are hypothesized to be more subtle than externalizing conduct (Rubin & Coplan, 2004), there is some evidence that students' internalizing problems may contribute to the concurrent degree of teacher-rated conflict in elementary school. Yet, the results of these studies are somewhat mixed. For instance, both Murray and Murray (2004) and Jerome et al. (2009) noted that teachers are likely to report higher levels of conflict in relation to students who display internalizing behavior. Longitudinal research conducted among a sample of 175 Kindergartners and their teachers (Roorda et al., 2014) substantiates these findings, indicating that internalizing behaviors modestly predict higher levels of teacher-perceived conflict over time. At the same time, however, there is also some evidence to indicate that internalizing symptoms such as shyness may facilitate less conflictual student–teacher relationships. For instance, structural equation modeling results from Rudasill (2011) pointed to a small but significant negative association between first-graders' shyness and their teachers' reports of conflict.

Symptoms of internalizing behavior have also been linked to preschool, kindergarten and first-grade teachers' reports of closeness over time, both positively (Roorda et al., 2014), and negatively (Arbeau, Coplan, & Weeks, 2010; Rudasill, 2011; Valiente, Swanson, & Lemery-Chalfant, 2012). Moreover, Jellesma et al. (2015) found significant negative correlations between internalizing symptoms and student-rated closeness in a sample of third- to sixth-graders. Yet in other longitudinal studies, evidence for the predictive role of internalizing student behavior for teacher-perceived closeness could not be established (Henricsson & Rydell, 2004; Jerome et al., 2009; Mejia & Hoglund, 2016). Hence, as with externalizing student behavior, internalizing symptoms may explain the most variance in teachers' and students' views of conflict in their shared relationship.

### 1.3.3. Teachers' demographic characteristics

Next to student characteristics, several teacher attributes may determine the odds of teachers and students having a high-quality relationship with each other, including teachers' gender and teaching experience (cf. Pianta et al., 2003; Rudasill, Rimm-Kaufman, Justice, & Pence, 2006). Unfortunately, this evidence is sparse, not fully conclusive, and predominantly based on teacher-reports of

the student–teacher relationship. Yet, there is some evidence to suggest that female teachers in elementary school experience closer and less conflictual relationships with their students than their male counterparts (Quaglia, Gastaldi, Prino, Pasta, & Longobardi, 2013; Spilt et al., 2012). This seems to be particularly true for girls, with whom female teachers generally experience the highest quality relationships (Spilt et al., 2012). Some researchers have also documented small, but positive associations between teaching experience and teachers' perceptions of student behaviors and interactions (Clarridge & Berliner, 1991; Fisher, Fraser, & Kent, 1998). Yet other studies, primarily conducted among relatively small samples of young children, failed to establish associations of teaching experience with observed teacher sensitivity and negative affect (Stuhman & Pianta, 2002), and conflict and closeness (Choi & Dobbs-Oates, 2016). Interestingly, though, in their study among 50 Kindergarten and first-grade teachers, Stuhman and Pianta (2002) observed that the negative affect teachers with more years of experience represented in relationships resulted in less sensitive behavior toward individual students. Whether students' and teachers' perceptions of closeness and conflict in their mutual relationship can be explained by teacher demographics such as gender and teaching experience remains to be explored.

#### 1.3.4. Teachers' self-efficacy beliefs

Probably more salient to teachers' experiences of closeness and conflict in the student–teacher relationship are teachers' self-referent judgments of capability, or self-efficacy beliefs (Myers & Pianta, 2008). Such beliefs have previously been considered as one of the key determinants of teachers' thought processes, affective states, and actions in class (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2001). Self-efficacy beliefs may help teachers weigh and interpret the behaviors and intentions of individual students in the context of daily interactions and contribute to teachers' views of their relationship with these students (e.g., Zee, de Jong, & Koomen, 2016). In a study of 711 children and their 210 Prekindergarten teachers, Mashburn et al. (2006) revealed that teachers who expressed high levels of general self-efficacy were likely to experience closer, but not less conflictual relationships with individual students. Hamre et al. (2008) even found that preschool teachers with poor self-efficacy beliefs tended to experience higher degrees of conflict with individual students than would be expected based on their judgments of these students' problem behaviors. In studies with smaller samples, however, teachers' ratings of conflict in the relationship were not significantly predicted by their sense of general self-efficacy, neither were their experiences of relational closeness (e.g., Chung, Marvin, & Churchill, 2005; Spilt et al., 2011; Yoon, 2002). Based on this generally mixed body of evidence, firm assumptions about whether teachers' sense of self-efficacy may account for students' and teachers' relationship perceptions cannot be made.

#### 1.4. Present study

Inspired by developmental systems theory, the present study attempted to advance insight into similarities and dissimilarities between teachers' and upper elementary students' views of their dyadic relationship, and personal teacher and student attributes that contribute to these views. Two specific aims were addressed. First, given that prior research has established only moderate concordance between students' and teachers' relationship views (e.g., Hughes, 2011), we aimed to tease out to what extent teachers' and students' perceptions of closeness and conflict in their mutual relationship tap into similar constructs, or emphasize different aspects of the relationship. Second, we aimed to investigate the extent to which students' demographic characteristics (i.e., gender, age, and SES) and social-emotional behaviors (i.e., externalizing and internalizing behavior) and teachers' demographic characteristics (i.e., gender, teaching experience) and beliefs (i.e., self-efficacy) predict student–teacher closeness and conflict in the relationship. To this end, we employed multilevel structural equation modeling for nonexchangeable dyadic data. This implies that teachers and students in each dyad were treated as indistinguishable in this study (Newsom, 2002).

## 2. Method

### 2.1. Participants

The present study was conducted among 464 student–teacher dyads from 60 upper elementary classrooms. After ethical approval was granted by the Ethics Review Board of the Faculty of Social and Behavioral Sciences, University of Amsterdam (project no. 2013-CDE-3188), we contacted approximately 350 regular elementary schools (5% of the total number of schools) across the Netherlands. Of these schools, 24 from both urban and rural areas agreed to take part in this study. Non-participation was mainly due to schools' already full agendas.

Students ( $N = 464$ ) attended Grades 4 ( $n = 158$ ), 5 ( $n = 155$ ), and 6 ( $n = 151$ ), respectively, and most were of Dutch nationality (90.3%). This large proportion of Dutch students is relatively similar to the larger population of upper elementary students in the Netherlands (15% non-Dutch origin; CBS Statline, 2015), and has been reported in prior nationally representative studies as well (e.g., Hornstra, van der Veen, Peetsma, & Volman, 2013). The sampled students ranged from 8 years and 5 months to 13 years and 2 months of age ( $M = 10.5$ ,  $SD = 1.1$ ), and the gender composition was evenly distributed with 231 boys (49.8%) and 233 girls (50.2%). Based on teacher reports of parents' employment status and educational level, students' socioeconomic status was determined. In total, 29 students (6.4%) were considered to have a low SES, indicating that at least one of their parents was unemployed and had only followed primary education. Additionally, 236 students (50.9%) had a medium SES, signifying that one or both parents had an employment and, on average, had finished high school and/or vocational education. Last, 173 students (37.3%) were considered to have a high SES. Their parents were both employed and had finished higher education. For 26 students, information about SES was not available.

The majority of all participating teachers ( $N = 62$ ) were female (67.5%) and minimally held a Bachelor's degree in education

(93.3%). Teachers had a mean age of 42 years and 3 months ( $SD = 12.4$ , range = 23.4–63.4) and their years of professional teaching experience ranged from 1.5 to 44 years ( $M = 17.3$ ,  $SD = 12.1$ ). These demographic characteristics are comparable to those of the larger population of Dutch teachers, who generally have a mean age of 43.3 years (range = 19–67 years) and typically are female (84%; DUO, 2014<sup>1</sup>).

## 2.2. Instruments

### 2.2.1. Teacher-perceived student–teacher relationship quality

Teachers' views of the quality of their relationship with individual students were measured using a short form of the authorized translated Dutch version of the Student–Teacher Relationship Scale (STRS; Koomen, Verschueren, & Pianta, 2007; Pianta, 2001). Translation of the original 28-item STRS (Pianta, 2001) has previously been performed using a standard forward-backward procedure, involving two Dutch forward translators and one official English backward translator (Koomen et al., 2007, 2012). After the translation process was completed, the Dutch version was submitted for approval to the author of the original STRS, and validated in a Dutch sample of 2335 students aged 3 to 12 (Koomen et al., 2012). For the short version of the authorized Dutch version of the STRS, 5 items for each relationship dimension were selected on the basis of the highest factor loadings reported in earlier research (Koomen et al., 2012).

Originally, the STRS was intended to measure the degree of teacher-perceived closeness, conflict, and dependency in the student–teacher relationship, using a 5-point Likert scale (1 = *definitely does not apply*; 5 = *definitely applies*). Yet in this study, we only made use of the closeness and conflict dimensions of the STRS, as no child-reported equivalent of the dependency dimension was available (cf. Koomen & Jellesma, 2015). The closeness dimension (5 items) considers the extent to which teachers perceive the student–teacher relationship to be warm, open, and secure, with items such as “I share an affectionate and warm relationship with this child.” The conflict dimension (5 items) generally concentrates on negative aspects of the student–teacher relationship, including tension, anger, and mistrust in the relationship. An example item is “This child and I always seem to be struggling.” In a previous study, the psychometric properties of the short form of the Dutch version of the STRS have been demonstrated to be adequate for all subscales (Zee et al., 2013), with internal consistencies ranging from 0.86 to 0.93, and factor loadings  $> 0.50$ . In the present study, alpha coefficients were 0.85 for closeness and 0.89 for conflict, respectively.

### 2.2.2. Student-perceived student–teacher relationship quality

Students' perceptions of the quality of the relationship with their teachers were estimated using a short, 10-item version of the Student Perception of Affective Relationship with Teacher Scale (SPARTS; Koomen & Jellesma, 2015). This short form was developed in the Netherlands and yields two primary dimensions, closeness and conflict, which parallel those of the STRS. The closeness dimension (5 items) is designed to measure students' positive feelings toward their teacher, as well as their reliance on them in times of need and stress. A sample item includes “I tell my teacher things that are important to me.” Conflict (5 items) provides insight into students' perception of the amount of negative behavior, anger, and distrust in the relationship with their teacher, with items such as “I easily have quarrels with my teacher.” The SPARTS employs a 5-point response scale, ranging from 1 (*no, that is not true*) to 5 (*yes, that is true*). The internal consistency of the closeness ( $\alpha = 0.80$ ) and conflict dimensions ( $\alpha = 0.80$ ) were adequate and largely consistent with alpha coefficients found in previous Dutch research (e.g., Jellesma et al., 2015; Koomen & Jellesma, 2015; Zee & de Bree, 2016). Moreover, sufficient evidence has also been provided for the factorial, convergent, and concurrent validity of both the original and short SPARTS, with alpha coefficients ranging between 0.70 and 0.79, and factor loading ranging between 0.49 and 0.70 (Koomen & Jellesma, 2015; Zee & de Bree, 2016).

### 2.2.3. Students' social-emotional behavior

All students from participating classrooms were asked to fill out a sociometric questionnaire on their classmates' externalizing and internalizing behaviors in the classroom. An unlimited nomination procedure was used in which students could name as many peers in their classroom as they wanted for each question (Terry, 2000). In total, four nomination items were incorporated to estimate students' externalizing and internalizing behavior (cf. Goodman, Lamping, & Ploubidis, 2010). The two peer nomination items pertaining to externalizing behavior concentrated on aspects of conduct problems (“These children most often start fights or are mean to other children”) and hyperactivity/inattention (“These children cannot sit still for long”). Students' internalizing behaviors were measured using two items regarding emotional symptoms and peer problems (“These children are often shy and frequently work or play alone” and “These children are often ridiculed, are not allowed to play along, or are bullied by other children”, respectively). Sociometric scores were computed for each student as a target, by counting the number of nominations per question and standardizing them within classrooms. Additionally, the sociometric scores for the two externalizing behavior items as well as for the internalizing behavior items were summed to represent one score for each type of social-emotional problem behavior.

To validate the peer nomination scores, teachers were asked to complete the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001), a brief 25-item behavioral screening questionnaire measuring individual students' adjustment and psychopathology in class. The scale consists of positive and negative student attributes that together represent five factors reflecting strengths (Prosocial Behavior) and difficulties (Emotional Symptoms, Conduct Problems, Hyperactivity-Inattention, and Peer Problems). Of these difficulties, Conduct Problems and Hyperactivity-Inattention are generally considered to be indicative of overall Externalizing

<sup>1</sup> The Education Executive Agency of the Dutch Ministry of Education, Culture, and Science.

Behavior (10 items; Goodman et al., 2010), with items such as “Restless, hyperactive, cannot sit still for long” and “Often has temper tantrums or hot tempers.” Emotional Symptoms, as well as three items from the Peer Problems factor (i.e., “Rather solitary, tends to play alone,” “Gets on better with adults than with other children,” and “Picked on or bullied by other children”) have been shown to reflect a valid and reliable Internalizing Behavior factor (8 items; Goodman et al., 2010). Teachers responded on the items on a 5-point Likert scale, ranging from 1 (*not true*) to 5 (*certainly true*). Previous research (e.g., Goodman, 2001; Goodman et al., 2010; Van Leeuwen, Meerschaert, Bosmans, de Medts, & Braet, 2006) has provided support for the construct validity and reliability of the SDQ. Cronbach's  $\alpha$ 's in the present study were 0.86 for Externalizing Behavior and 0.81 for Internalizing Behavior.

Overall, the validity of students' peer-nominated Externalizing and Internalizing behaviors appeared to be supported by correlations with the two SDQ-scales. Specifically, students' peer-nominated Externalizing Behavior was positively associated with overall Externalizing Behavior ( $r = 0.60, p < 0.01$ ). Students' peer-nominated Internalizing Behavior showed positive associations with overall Internalizing Behavior ( $r = 0.39, p < 0.01$ ).

#### 2.2.4. Teachers' general sense of self-efficacy

Teachers' perceptions of their general self-efficacy were estimated using a short, 12-item version of Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001). Analogous to the original 24-item TSES, this instrument evaluates teachers' perceived capability across a variety of important teaching tasks related to instruction, classroom management, and student motivation. Examples of items include “To what extent can you provide an alternative explanation or example when students are confused?,” “How much can you do to get children to follow classroom rules?,” and “How much can you do to help your students value learning?,” respectively. Participating teachers responded to these items on a 7-point Likert-type scale, ranging from 1 (*nothing*) to 7 (*a great deal*). The factorial validity of the short TSES has been shown to be adequate and evidence of measurement invariance has been found across grades and countries (Klassen et al., 2009; Tschannen-Moran & Woolfolk Hoy, 2001; Zee, Koomen, Jellesma, Geerlings, & de Jong, 2016). In the present study, Cronbach's alpha for the 12-item scale was 0.84.

### 2.3. Procedure

After obtaining permission from the school principal of each participating school, information letters about the nature and purposes of the study were sent to all teachers who taught in the upper elementary grades, soliciting their voluntary and anonymous participation in the study. On average, three teachers per participating school (range = 1–8 teachers) agreed to participate. Teacher participation rates per school ranged between 50% and 100%. Non-participation was due to sickness, strenuous workloads, or survey fatigue. Following teachers' consent, students' parents also received an information letter and informed consent form, which was ultimately signed by 95% of all parents. Teachers completed questionnaires on demographic background factors, their sense of self-efficacy, students' social-emotional behaviors, and the quality of the student-teacher relationship, during a planned school visit in the period of January–March. To avoid making the data collection excessively burdensome for teachers, participating teachers were asked to fill out the STRS and SDQ items for eight students. Four boys and four girls were randomly selected by the first author from the pool of students whose parents provided informed consent. Teachers who were not present at the time of data collection could return their booklet by regular mail or e-mail. In total, 91.2% of all participating teachers completed and returned their questionnaires.

All student data, including demographics, students' perceptions of the student-teacher relationship, and peer nomination questions about their classmates' social-emotional behavior, were collected concurrently with the teacher survey. To facilitate free and honest answering, teachers were asked to complete their survey outside the classroom. A test assistant was present in the classroom to answer students' questions, ensure that students answered all items in a serious way, and motivate those who took too much time completing the survey. The total student response rate was 99%.

### 2.4. Data analysis

To explore similarities and dissimilarities between teachers' and students' views of their dyadic relationship, and personal teacher and student attributes that contribute to these views, we fitted a series of multilevel structural equation models for nonexchangeable dyadic data. For these models, we used a similar model specification to that used with latent growth curve modeling, allowing us to take account of variance in the degree of closeness and conflict within and between student-teacher dyads (Newsom, 2002). Moreover, this approach has several advantages over the more traditional hierarchical linear modeling approach to dyadic data in that latent factors can be specified, and more complex error structures estimated (Newsom, 2002). Accordingly, this technique also enabled us to examine to what extent potential differences between ratings of members of the dyad may reflect problems with measurement and validity. To be more precise, by testing the latent factor structure of the measures used in this study, we were able to verify the construct validity of both teacher- and student-reported closeness and conflict in the student-teacher relationship (Kline, 2011; Little, 2013). Furthermore, this technique helped us determine whether the closeness and conflict measures were likely to reflect similar or different constructs across students and teachers (Newsom, 2002).

#### 2.4.1. Modeling procedure

We first evaluated the measurement models of student-teacher closeness and conflict to ensure that factors, when specified, reflected the hypothesized common factor structure. To avoid computation problems, untrustworthy standard errors of the model parameters, and loss of statistical power, we fitted separate models for closeness and conflict. To meet the assumption of factorial



invariance across members of the dyad, we successively imposed equality constraints on the parallel loadings (i.e., weak or loading invariance) and intercepts (i.e., strong or intercept invariance) of student- and teacher-reports of the relationship quality. According to Little (2013), at least partial intercept invariance is required to meet the assumption of factorial invariance across teachers and students. Identification of these models was achieved by fixing the first factor loading of both teacher- and student-reports of closeness and conflict to 1, and allowing the residuals of parallel loadings to correlate (Little, 2013; Newsom, 2002). Appendix A provides an overview of all closeness and conflict items. Of note, teacher and student items were predominantly matched on the basis of corresponding item content.

After at least partial intercept invariance was established (Little, 2013), we estimated unconditional curve-of-factors models for closeness and conflict. These empty models without predictors allowed us to evaluate differences in the level of each relationship dimension and potential variability in such differences across teachers and students. Subsequently, we included student characteristics (gender, age, SES, and internalizing and externalizing behavior) and teacher characteristics (i.e., teachers' gender, teaching experience, and general self-efficacy) to predict students' and teachers' perceptions of closeness and conflict in their mutual relationship. Missing data (< 6%) in these models were treated using full information maximum likelihood estimation.

#### 2.4.2. Model goodness-of-fit

All models were fitted in *Mplus* 7.11, using robust maximum likelihood estimation (MLR; Muthén & Muthén, 1998–2012). This estimation method offers a mean-adjusted model  $\chi^2$ , which is asymptotically equivalent to the  $T_2$  test-statistic (Yuan and Bentler, 2000), and adjusted standard errors that are robust for non-normality (Muthén & Muthén, 1998–2012). Generally, non-significant  $\chi^2$  tests are indicative of good model fit (Kline, 2011; Little, 2013). Yet, given that trivial discrepancies between the expected and the observed model may lead to the model's rejection (Chen, 2007), other fit indices were calculated as well. These included the root mean square of approximation (RMSEA), with values  $\leq 0.05$  reflecting close fit, and  $\leq 0.08$  signifying reasonable fit (Browne & Cudeck, 1993), and the Comparative Fit Index (CFI), with values  $\geq 0.90$  indicating satisfactory fit, and values  $\geq 0.95$  indicating close fit (Bentler, 1992). Modification indices, residual correlations, and their associated summary statistic SRMR (standardized root mean square residual) were used to evaluate component fit. Values  $\leq 0.08$  indicate good fit of the model to the data (Kline, 2011). To compare alternative models, we employed the Satorra–Bentler scaled chi-square difference test (TRd; Satorra & Bentler, 2010), with CFI changes  $\geq 0.02$  being indicative of model nonequivalence (Cheung & Rensvold, 2002).

### 3. Results

#### 3.1. Descriptive statistics

Table 1 displays the zero-order correlations, means, and standard deviations of the study's main variables. Teachers reported higher levels of Closeness in relation to girls, younger students, students with a higher SES, and students with lower levels of peer-nominated Externalizing Behavior. Students' perceived levels of Closeness were only negatively correlated with their Age, suggesting

**Table 1**  
Means, standard deviations, and zero-order correlations.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Student characteristics												
1. Student gender	1.00											
2. Student age	−0.09*	1.00										
3. Student SES	0.01	−0.12*	1.00									
4. Peer-nominated externalizing behavior	−0.24**	0.09	−0.09	1.00								
5. Peer-nominated internalizing behavior	0.01	0.03	−0.11*	0.08	1.00							
Teacher characteristics												
6. Teacher gender	0.04	−0.16**	0.05	−0.03	−0.09	1.00						
7. Teaching experience	−0.00	0.07	−0.00	0.01	0.07	−0.28**	1.00					
8. Teacher self-efficacy	0.02	−0.13**	0.12*	−0.00	−0.01	−0.18**	0.10*	1.00				
Student–teacher relationship quality												
9. Student-perceived closeness	0.03	−0.12*	0.08	−0.01	0.03	0.14**	−0.14**	0.06	1.00			
10. Student-perceived conflict	−0.10*	0.13**	−0.15**	0.19**	−0.13**	−0.08	0.04	−0.09	−0.56**	1.00		
11. Teacher-perceived closeness	0.27**	−0.15**	0.10*	−0.10*	−0.08	0.07	0.09	0.07	0.28**	−0.21**	1.00	
12. Teacher-perceived conflict	−0.16**	0.08	−0.16**	0.52**	0.10*	−0.08	−0.00	−0.10*	−0.18**	0.36**	−0.33**	1.00
Descriptive statistics												
Mean	–	10.50	3.05	0.09	0.04	–	17.26	5.62	3.72	1.61	3.91	1.52
Standard deviation	–	1.10	0.48	0.13	0.09	–	12.11	0.50	0.82	0.71	0.80	0.85

Note. Gender: 0 = boys/male teachers, 1 = girls/female teachers. The full correlation matrix can be obtained from the author.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

**Table 2**  
Fit indices of estimated model for closeness and conflict.

	$\chi^2$ (df)	RMSEA (90% CI)	CFI	SRMR	TRd (df)	$\Delta$ CFI
<b>Model closeness</b>						
Pattern invariance (step 1)	165.95 (29)	0.101 (0.086–0.116)	0.901	0.045	–	–
Pattern invariance (correlated residual)	55.23 (28)	0.046 (0.028–0.063)	0.980	0.032	87.33 (1)**	0.079
Loading invariance (Step 2)	61.31 (32)	0.044 (0.027–0.061)	0.979	0.046	5.97 (4)	0.001
Intercept invariance (Step 3)	261.90 (36)	0.116 (0.103–0.130)	0.837	0.081	233.99 (4)**	0.142
Partial intercept invariance (intercepts 2 and 5 freely estimated; step 4)	73.22 (34)	0.050 (0.034–0.066)	0.972	0.040	240.55 (2)**	0.135
Intercept-only model (step 5)	129.60 (36)	0.075 (0.061–0.089)	0.932	0.119	n/a	n/a
Unconditional curve-of-factors model (step 6)	73.77 (35)	0.049 (0.033–0.064)	0.972	0.050	n/a	n/a
Final conditional curve-of-factors model (step 7)	210.35 (84)	0.060 (0.050–0.070)	0.921	0.050	n/a	n/a
<b>Model conflict</b>						
Pattern invariance (Step 1)	100.84 (29)	0.073 (0.058–0.089)	0.941	0.049	–	–
Pattern invariance with correlated residual	67.68 (28)	0.055 (0.039–0.072)	0.967	0.047	19.56 (1)**	0.026
Loading invariance (step 2)	88.91 (32)	0.062 (0.047–0.077)	0.953	0.070	18.70 (4)	0.014
Intercept invariance (step 3)	246.68 (36)	0.112 (0.099–0.126)	0.827	0.105	242.99 (4)**	0.126
Partial intercept invariance (intercepts 4 and 5 freely estimated; step 4)	102.52 (34)	0.066 (0.051–0.081)	0.944	0.071	243.68 (1)**	0.117
Intercept-only model (step 5)	122.93 (36)	0.072 (0.058–0.086)	0.929	0.110	n/a	n/a
Unconditional curve-of-factors model (step 6)	120.59 (35)	0.073 (0.059–0.087)	0.930	0.110	n/a	n/a
Final conditional curve-of-factors model (step 7)	224.60 (84)	0.063 (0.053–0.073)	0.910	0.062	n/a	n/a

Note. TRd = Satorra-Bentler scaled chi-square difference.

\*\*  $p < 0.01$ .

that older students view the relationship with their teacher as less Close. Additionally, both teacher- and student-perceived Conflict were negatively correlated with students' Gender and SES, and only students' judgments of Conflict were positively correlated with their Age. Positive correlations were also noted between Externalizing Behavior and both reports of Conflict, and teachers' reports in particular. This indicates that students' Externalizing Behavior, as reported by their peers, is particularly detrimental to teachers' experiences of Conflict in the relationship. Remarkably, students with Internalizing Behavior seem to experience less Conflict in the student–teacher relationship, whereas teachers report higher levels of Conflict with these students.

With respect to teacher characteristics, students reported higher levels of Closeness in relation to female teachers and less experienced teachers, and teachers with poor general Self-Efficacy perceived the relationship with their students as more Conflictual. Additionally, there was only low to moderate concordance between students' and teachers' views of their mutual relationship. Yet, all correlations were in the expected direction. Means indicated that students experienced slightly higher levels of Conflict and lower levels of Closeness in the student–teacher relationship than their teachers.

### 3.2. Factorial invariance of teacher- and student-perceived closeness and conflict

To evaluate whether the student–teacher relationship dimensions were comparable across teachers and students, separate pattern invariance models for Closeness and Conflict were tested first. In the closeness model, latent factors were specified for teacher-perceived Closeness and student-perceived Closeness. The Conflict model also comprised two latent factors: one for teacher-perceived and one for student-perceived Conflict. Both models, in which the same pattern of loadings across raters was assumed (Little, 2013), failed to reach a satisfactory fit to the data (see Table 2, step 1). Improvement in fit of the Closeness model was achieved by adding a correlation between the residuals of items 1 and 2 of the STRS (see Appendix A). These items both reflected teachers' perceptions of the child's confidence in them in times of stress and need, and therefore, this correlation was deemed theoretically plausible. The pattern invariance model for Conflict significantly improved after adding a correlation between the residuals of items 3 and 4 of the STRS. These items both focused on teachers' views of the child's unpredictable and/or discordant behavior (see Appendix A). Given that this correlation seems to capture a minor, theoretically justifiable factor (i.e., students' problematic behavior), we decided to retain this residual correlation.

Next, we evaluated the loading invariance of the constructs across raters. Placing equality constraints on the factor loadings across teachers and students did not seem to deteriorate the overall fit of the Closeness and Conflict models (see Table 2, step 2). Accordingly, these results support the loading invariance in teacher- and student-perceived relationship quality, and warrant inspection of the intercept invariance of the constructs over raters. To this end, we imposed equality constraints on all factor loadings and intercepts in the Closeness and Conflict models, while freely estimating the latent means of students' views of the relationship. These constraints resulted in a statistically significant deterioration of model fit, suggesting that strong factorial invariance may not hold (see Table 2, step 3). Follow-up tests provided evidence in favor of partial intercept invariance models, specifying two intercepts in the Closeness model and two intercepts in the Conflict model to be mathematically different. In those relatively well-fitting models (see Table 2, step 4), the intercepts of Closeness items 2 and 5, as well as the intercepts of Conflict items 4 and 5 appeared to be higher for students. These partial strong invariance models indicated that both Closeness and Conflict dimensions approximated similarity across teachers and students. Accordingly, estimation of the curve-of-factors models for teacher- and student-perceived Closeness and

Conflict seemed to be warranted.

### 3.3. Curve-of-factors models of teacher- and student-perceived closeness and conflict

#### 3.3.1. Intercept-only models

Model fit information for the intercept-only models of Closeness and Conflict are provided in Table 2 (step 5). The average Closeness and Conflict scores for all student–teacher dyads were 3.82 and 1.57, respectively. These scores suggest that both members of the dyad experienced moderate to high levels of Closeness and low levels of Conflict in their mutual relationship. The between-dyad variance was 0.12 ( $p < 0.01$ ) for Closeness and 0.22 ( $p < 0.01$ ) for Conflict, indicating that the average degree of teacher- and student-perceived Closeness and Conflict tended to fluctuate across dyads. The variance within dyads appeared to be somewhat higher, however, both for Closeness (0.67,  $p < 0.01$ ) and Conflict (0.34,  $p < 0.01$ ). These differences are also reflected in the intraclass correlations (ICC), which refer to the proportion of between-dyad variation relative to the total variation in both constructs (Newsom, 2002). Intraclass correlations were 0.16 for Closeness and 0.39 for Conflict, indicating that despite measuring mathematically equal constructs, individual students' and teachers' views of their mutual relationship were only moderately correlated.

#### 3.3.2. Unconditional curve-of-factors models

Subsequent to the intercept-only models, we fitted separate unconditional curve-of-factors models for Closeness and Conflict, which included random intercepts as well as random slopes, or change factors. Both models appeared to demonstrate estimation problems, however, due to negative variance in the change factors. This implied that the observed differences in perceptions of Conflict and Closeness between teachers and students were quite similar across dyads. Separate analyses, in which the intercept variance was fixed, indicated that the random slope (co)variance did not reach the significance threshold (cf. Newsom, 2002). Therefore, we decided to fix the slope variance and covariance at zero, resulting in reasonably fitting and identified unconditional models for Closeness and Conflict (see Table 2, step 6). The mean slope was  $-0.25$  ( $p < 0.01$ ) for Closeness and  $-0.05$  ( $p = 0.23$ ) for Conflict, suggesting no overall differences in Conflict between both members of the dyad, but significantly lower degrees of Closeness in the relationship from the students' perspectives.

#### 3.3.3. Conditional curve-of-factors models

The Conditional Model for Closeness reflected a sound fit to the data,  $\chi^2(100) = 257.12$ ,  $p < 0.001$ , RMSEA = 0.062 (90% CI [0.053–0.071]), CFI = 0.902, SRMR = 0.049. However, the model's parameter estimates and modification indices suggested some improvement of the model by fixing the non-significant paths of teachers' Gender and students' Age to zero. Eliminating these paths did not alter the direction or magnitude of the other parameter estimates and resulted in a more parsimonious and reasonably fitting model,  $\chi^2(84) = 210.35$ ,  $p < 0.001$ , RMSEA = 0.060 (90% CI [0.050–0.070]), CFI = 0.921, SRMR = 0.050. The results of this final Closeness model are depicted in Fig. 1.

Results first pointed to a positive association between teachers' general Self-Efficacy and levels of Closeness across student–teacher dyads ( $\beta = 0.21$ ,  $p < 0.01$ ). With respect to associations between students' own attributes and relationship views, we found students' perceptions of Closeness to be positively predicted by their own SES ( $\beta = 0.14$ ,  $p < 0.01$ ) and negatively predicted by their teachers' years of Teaching Experience ( $\beta = -0.19$ ,  $p < 0.01$ ). Teachers' views of Closeness in the relationship with individual students were also predicted by these students' SES ( $\beta = 0.13$ ,  $p < 0.01$ ) and their own Teaching Experience ( $\beta = 0.09$ ,  $p < 0.05$ ). Hence, where more experienced teachers seemed to report higher degrees of Closeness in the relationships, students were found to perceive the relationship with these more experienced teachers to be less close. A positive association was also noted between students' Gender and teacher-perceived Closeness ( $\beta = 0.24$ ,  $p < 0.01$ ), suggesting that teachers experienced higher levels of Closeness in relation to girls. All other associations did not reach the significance threshold. In total, the student and teacher attributes explained 43.6% of the variance in teacher-perceived Closeness and 39.3% in student-perceived Closeness.

The conditional model for Conflict appeared to be a relatively poor representation of the data,  $\chi^2(100) = 279.65$ ,  $p < 0.001$ , RMSEA = 0.066 (90% CI [0.057–0.076]), CFI = 0.891, SRMR = 0.057. To diagnose the sources of misfit in this model, we inspected the model's modification indices and parameter estimates, which again suggested improvement by eliminating the non-significant paths of teachers' Gender and students' Age from the model. This resulted in reasonable fit to the data,  $\chi^2(84) = 224.60$ ,  $p < 0.001$ , RMSEA = 0.063 (90% CI [0.053–0.073]), CFI = 0.910, SRMR = 0.062, and the modifications did not affect the initial estimated coefficients in the model. The parameter estimates of the final Conflict model are displayed in Fig. 2.

The average level of Conflict across student–teacher dyads was significantly and negatively predicted by teachers' Self-Efficacy ( $\beta = -0.23$ ,  $p < 0.01$ ), indicating that both members of the dyad experienced higher levels of Conflict when the teacher expressed limited self-efficaciousness. Statistically significant associations between students' attributes, but not teacher attributes, and Conflict were also found. More specifically, students' SES negatively predicted both teacher-perceived ( $\beta = -0.11$ ,  $p < 0.05$ ) and student-perceived Conflict ( $\beta = -0.18$ ,  $p < 0.01$ ) in the relationship and students' Gender only predicted their own perceptions of Conflict ( $\beta = -0.10$ ,  $p < 0.05$ ). Peer-nominated Externalizing Student Behavior showed statistically significant positive associations with Conflict from teachers' perspective ( $\beta = 0.55$ ,  $p < 0.01$ ) as well as students' viewpoint ( $\beta = 0.14$ ,  $p < 0.01$ ). Classmates' perceptions of students' Internalizing Behavior were negatively associated with student-reported Conflict ( $\beta = -0.16$ ,  $p < 0.01$ ), suggesting that students were likely to experience less Conflict in the relationship with their teacher when their peers perceived them to display behavior of an internalizing nature. In total, the student and teacher attributes explained 60.6% of the variance in teacher-perceived Conflict and 44.4% in student-perceived Conflict.

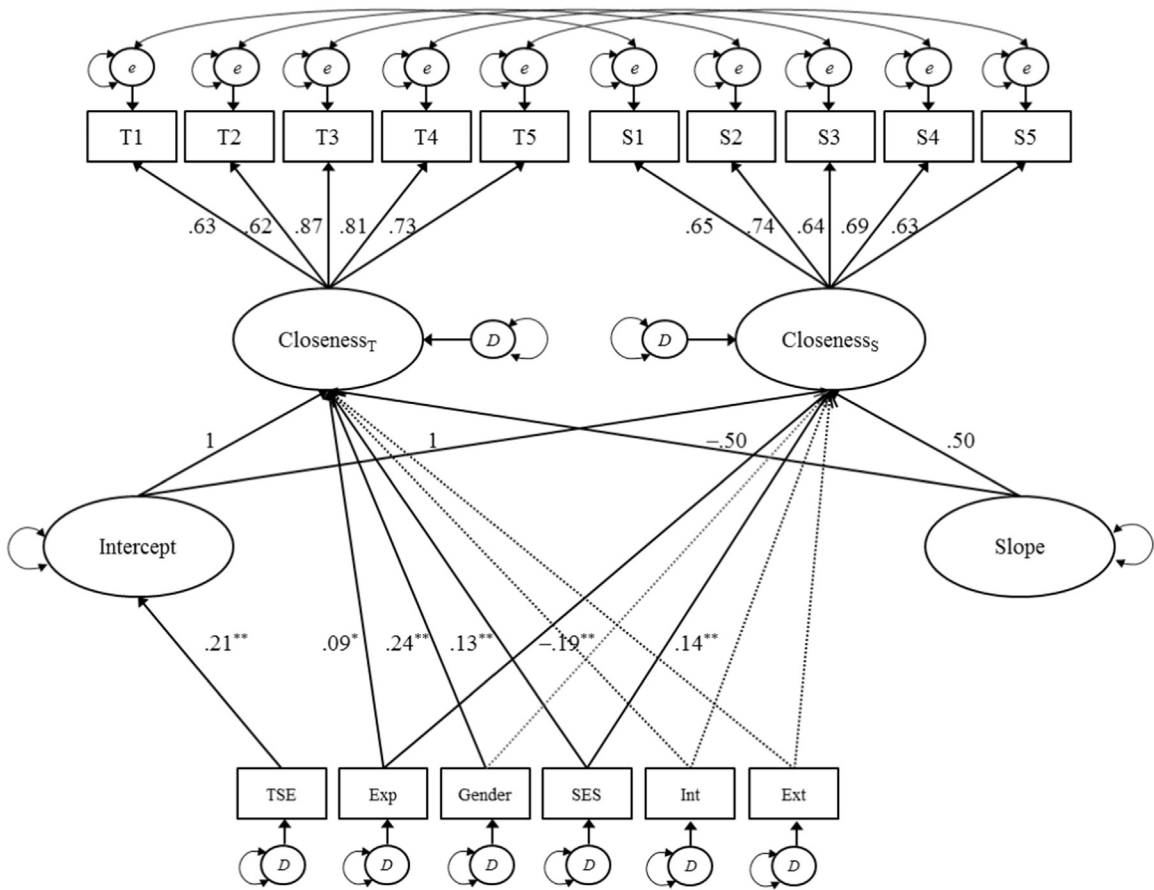


Fig. 1. Curve-of-factors model of student–teacher closeness. Standardized robust maximum likelihood parameter estimates are reported. Dashed lines represent non-significant coefficients. TSE = teacher self-efficacy; Exp = teaching experience; Gender = student gender (0 = boy, 1 = girl); SES = students' socioeconomic status; Int = students' internalizing behavior; Ext = students' externalizing behavior. \* $p < 0.05$ . \*\* $p < 0.01$ .

4. Discussion

Inspired by Pianta's developmental systems framework of student–teacher relationships (Myers & Pianta, 2008; Pianta et al., 2003), we sought to identify to what extent teachers' and students' perceptions of closeness and conflict in their mutual relationship tap into similar constructs, and aimed to explore associations between students' and teachers' characteristics and relationship perceptions in upper elementary school. Results from this study may offer new insights into the similarities and dissimilarities between teachers' and students' views of their dyadic relationship, and the various teacher and child features that may contribute to these interdependent relationship perceptions.

4.1. Similarities and dissimilarities between teachers' and students' relationship views

Prior studies have generally indicated that students' and teachers' reports of closeness and conflict in their mutual relationship are moderately associated with each other (e.g., Koomen & Jellesma, 2015; Rey et al., 2007). This moderate teacher–student agreement has brought into question whether teacher- and student-reports of the relationship actually tap into similar constructs, or emphasize different aspects of the relationship (cf. Hughes, 2011). Tests of measurement invariance in the present study suggested that both conflict and closeness constructs tended to approximate similarity across students and teachers. To be more specific, loading invariance was established for all closeness and conflict items, and intercept invariance constraints could be imposed on three out of five indicators of the closeness and conflict dimensions, respectively (Little, 2013). Of note, indicators whose means did not fully conform to the expectation of invariance across members of the dyad also appeared to be the least comparable in terms of item content. For instance, the fourth indicator of student-perceived conflict (“I can be very angry with my teacher”) focused solely on students' feelings of negativity and anger, whereas the fourth indicator of teacher-perceived conflict (“This child's feelings toward me can be unpredictable or can change suddenly”) emphasized a broader spectrum of student reactions and feelings toward the teacher, including more positive feelings. These divergences in item content may clarify why the mean levels of some indicators varied a bit across teachers and students. Despite such relative distinctions, the current study is one of the first to imply that potential dissimilarities between students' and teachers' views of the relationship may, in large part, not be due to measurement and validity

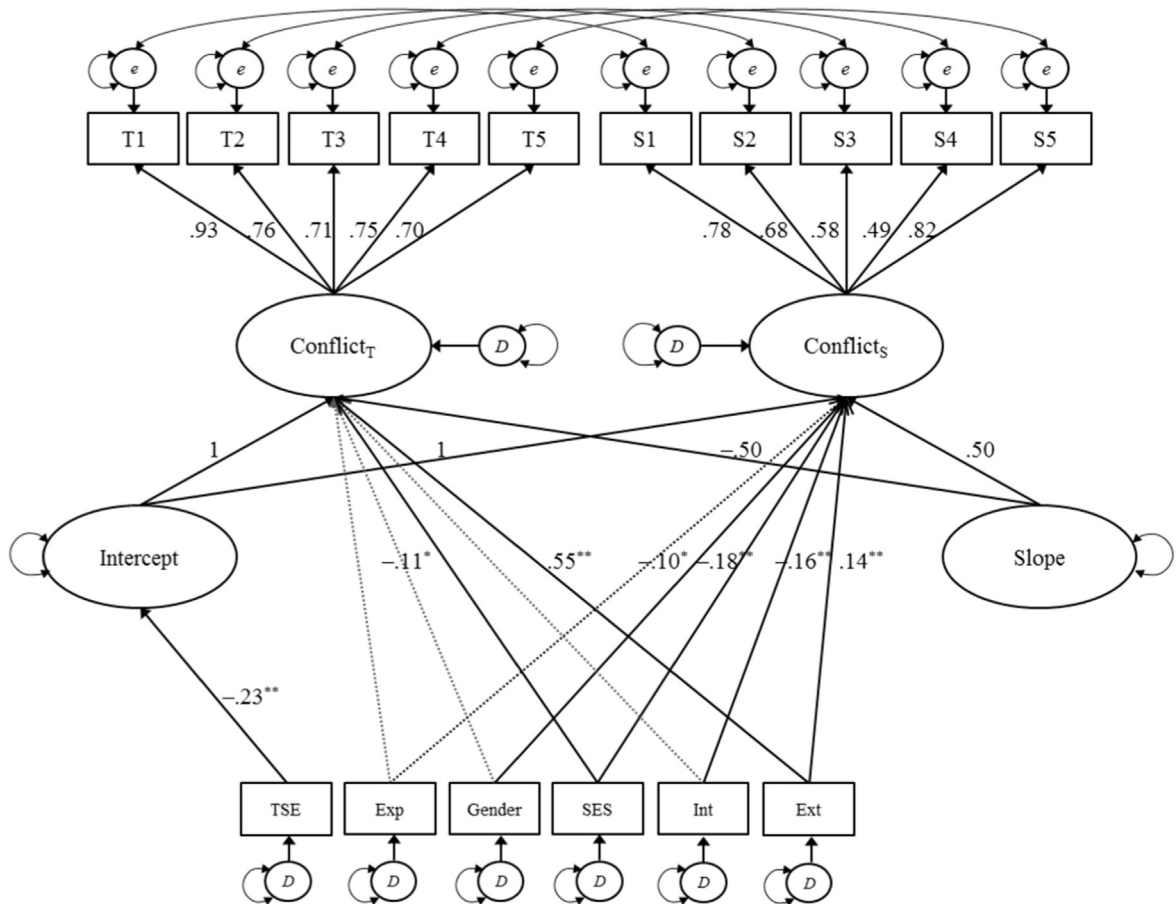


Fig. 2. Curve-of-factors model of student–teacher conflict. Standardized robust maximum likelihood parameter estimates are reported. Dashed lines represent non-significant coefficients. TSE = teacher self-efficacy; Exp = teaching experience; Gender = student gender (0 = boy, 1 = girl); SES = students' socioeconomic status; Int = students' internalizing behavior; Ext = students' externalizing behavior. \* $p < 0.05$ . \*\* $p < 0.01$ .

issues. This is important given that meaningful comparisons between students and teachers cannot be made without establishing at least partial strong invariance across members of the dyad (e.g., Little, 2013; Meredith & Teresi, 2006).

Notwithstanding measuring near-equivalent constructs, intraclass correlations, referring to the degree to which teachers and students have similar scores on the closeness and conflict constructs, appeared to be relatively low. This suggests that teachers' and students' relationship views may be quite different from one another within dyads. Yet, and largely in line with previous studies (Hughes et al., 2008; Jerome et al., 2009; Pianta & Stuhlman, 2004), we found students and teachers to be more likely to agree in their experiences of conflict than in their experiences of closeness in their mutual relationship. Methodologically, this higher level of student–teacher agreement for conflict can be ascribed to the notion that struggles between teachers and students are more easily recognized within the relationship than experiences of warmth and affection, which may require a greater sense of knowing the feelings and needs of the other member of the dyad (cf. Hughes, 2011). These more *internalized* qualities of the relationship may be especially difficult to identify for students, whose awareness of their own and their teachers' thoughts, beliefs, desires, and emotions may not yet be fully developed. Indeed, patterns of correlation in the present study indicated that students' views of relational closeness and conflict were more dependent on each other than teachers' perceptions of closeness and conflict in the relationship. This evidence could imply that students may be somewhat less able to differentiate among relationship dimensions, causing them, in part, to simultaneously report higher levels of conflict and lower levels of closeness, and vice versa (Hughes, 2011).

Theoretically, the greater consensus for conflict may also be elucidated by the suggestion that conflict, more than any other relationship dimension, is the product of an accumulation of reciprocal interactions between stable child characteristics, including students' temperament and behavior, and the expectations, beliefs, and behaviors of their teacher (e.g., Hamre et al., 2008; Jerome et al., 2009; Myers & Pianta, 2008; Rudasill, 2011; Valiente et al., 2012). Some studies have implied that students' disruptive behavior may reflect a poor fit with teachers' beliefs about appropriate classroom behavior and decorum (Gresham & Kern, 2004; Zee, de Jong and Koomen, 2016; Zee, Koomen, et al., 2016). Such behavioral misalliances might exacerbate students' and teachers' experiences of conflict in the relationship that only further reinforce their expressions of frustration and anger toward one another (cf. Stipek & Miles, 2008). These suggestions substantiate the dynamic systems view that the role of teacher and student features in producing differences between students' and teachers' perceptions of their mutual relationship should not be discounted (e.g.,

Myers & Pianta, 2008; Pianta et al., 2003).

#### 4.2. Associations between students' own attributes and relationship views

With the exception of students' age, all student characteristics included in this study appeared to be predictive of their own views of the relationship with their teacher, and conflict in particular. We first found students with a lower socioeconomic status to perceive the relationship with their teacher as less close and more conflictual. These negative relationship perceptions might have arisen out of the less positive attention and reinforcement for good performance students from lower social strata tend to receive (McLoyd, 1998). Such a lack of encouragement from their teachers may cause low-SES students to view their teachers as more negative and less available in times of stress and need. Based on this result, teachers should be made aware of the potential impact their behaviors and actions in class may have on students' perceptions about teachers' roles in the relationship.

In addition to SES, we found support for associations between students' gender and student-perceived conflict, thereby complementing the vast majority of studies relying on teacher-reports of the relationship (e.g., Hamre & Pianta, 2001; Jerome et al., 2009; O'Connor, 2010). As expected, boys were more likely to report high levels of negativity and discordance in the relationship with their teacher than girls. This finding echoes previous theory and research indicating that boys, due to their higher risk of having social-emotional and academic difficulties, may engage in conflictual relationships more frequently than girls (e.g., Hamre & Pianta, 2001; Spilt et al., 2010). The hypothesis that boys also perceive their relationship to be marked by low levels of closeness could not be supported. A possible explanation may be that relational closeness, at least from teachers' perspective, tends to gradually decline as students move through the elementary grades, whereas levels of conflict may remain relatively stable over time (e.g., Jerome et al., 2009; Spilt et al., 2012). Such declining levels of closeness for boys and girls may be due to students' growing independence from their teachers, possibly leading them to rely more on their peers for social-emotional support, and making a lack of closeness in the student–teacher relationship less of an issue (e.g., Ang et al., 2008).

Our results also give reason to believe that students' social-emotional behaviors add to their perceptions of the quality of the relationship with their teacher. Largely in line with hypotheses, students rated as having characteristics congruent with externalizing conduct generally experienced more conflict, but not less closeness in the student–teacher relationship. This can be explained by the fact that such externalizing behaviors are mainly reflected in students' conflictual interactions with their teachers (see Appendix A). Thus, despite the fact that students' externalizing behavior may motivate them to engage in negative and conflictual interactions and relationships with their teachers, such behaviors do not necessarily seem to hamper their opportunities for student–teacher closeness. This is notable, given that warm and nurturing relationships seem to become more important as students transfer to secondary school (e.g., Roorda et al., 2011). Intriguingly, students who were nominated by their peers as displaying internalizing, socially withdrawn behavior were likely to experience less conflict in the student–relationship. Although these findings are in slight contrast with both meta-analytical work (Nurmi, 2012) and upper elementary research (Jellesma et al., 2015), they generally seem to concur with teacher-report studies conducted among younger children (e.g., Rudasill, 2011; Rudasill & Rimm-Kaufman, 2009; Rydell, Bohlin, & Thorell, 2005). A theoretical justification for this finding is that students with anxious or withdrawn patterns of behavior usually do not disturb their teachers' lessons or challenge their authority (Keogh, 2003; Zee, de Jong, & Koomen, 2016). As such, students' internalizing behaviors are probably not very likely to evoke feelings of frustration or anger in their teachers, resulting in fewer instances of conflict during reciprocal student–teacher exchanges (e.g., Rudasill & Rimm-Kaufman, 2009; Stuhlman & Pianta, 2002). Possibly, socially withdrawn behavior may function as a protective factor against relational conflict in the upper elementary grades.

#### 4.3. Associations between teachers' own attributes and relationship views

In seeking to explore associations between teachers' own features and their perceptions of the student–teacher relationship, we noted that experienced teachers reported somewhat more closeness in the relationship than their less experienced counterparts, but not less conflict. One of the scenarios that may account for this finding is that teachers may need experience to develop more sensitive and responsive interactions with students, and look beyond the presence of blatantly disruptive behaviors in class (cf. Kokkinos, Panayiotou, & Davazoglou, 2004). Indeed, there is some modest evidence to suggest that teachers with more years of experience tend to be more responsive and stimulating in interactions with the child, at least in Prekindergarten (Pianta et al., 2005). Yet, given the generally mixed evidence supporting the potentially beneficial role of teaching experience for teachers' relationships with students, both in the early grades and beyond, replication of these results is evidently needed.

Somewhat unexpectedly, we did not find any association between teachers' gender and the student–teacher relationship quality, neither from students' nor from teachers' perspective. This is unlike the results of Spilt et al. (2012), who noted that female teachers generally tend to report higher-quality relationships with their students than male teachers. However, the reported associations might have been confounded by the unequal number of male and female teachers included in this study. The generally large number of female teachers in primary education may explain, in part, why only a handful of studies have included teachers' gender as a predictor of the student–teacher relationship quality (e.g., Quaglia et al., 2013; Spilt et al., 2012).

#### 4.4. Associations between student and teacher attributes and relationship perceptions of the other within the dyad

Results of the current investigation indicated that characteristics of students and teachers are not only associated with their own perceptions of the student–teacher relationship, but also with the perceptions of the other within the dyad. Taking the

interdependence that exists between students and teachers in the dyad into account, we noted that students' socioeconomic status may play a role in teachers' perceptions of the student–teacher relationship quality. This evidence that teachers view their relationship with lower-SES students as less close and more conflictual makes plausible the hypothesis that personal student features and teacher beliefs within the dynamic, student–teacher relationship system may interact in reciprocal exchanges (Myers & Pianta, 2008). Indeed, various studies have indicated that teachers' beliefs about students with poorer socioeconomic backgrounds, including the expectation of these students having a lower intelligence and more disruptive behavior, may negatively affect students' feelings and reactions toward the teacher (Bradley & Corwyn, 2002; McLoyd, 1998; Tschannen-Moran & Woolfolk Hoy, 2007).

Consistent with our assumptions was the association between students' gender and teachers' reports of closeness in the relationship. Similar to previous findings (e.g., Hughes, 2011; Kesner, 2000; Spilt et al., 2012; Zee et al., 2013), teachers appeared to experience more closeness in dyadic relationships with girls than with boys. On the one hand, such positive relationship experiences with girls may be the result of the generally more nurturing, tender-minded, and altruistic nature of girls, which may be valued higher than the assertive and energetic behaviors of boys (cf. Ewing & Taylor, 2009; Weisberg, DeYoung, & Hirsh, 2011). On the other hand, however, there is some reason to believe that boys experience lower-quality relationships with teachers due to the predominantly female workforce (cf. Cushman, 2010). This feminization of education has been suggested to result in school environments that are more in line with female stereotypes, thereby potentially hampering male students' academic and social-emotional adjustment in school (ibid.).

Despite boys reporting higher levels of conflict in the student–teacher relationship, students' gender did not appear to uniquely predict their teachers' views of conflict. Presumably, this lack of association may be explained by the fact that we controlled for students' externalizing behavior. Indeed, Murray and Murray (2004) also found non-significant associations between students' gender and teacher-reported conflict in the relationship, after accounting for students' externalizing conduct. In addition, it may be that teachers tend to be relatively tolerant of dominant and assertive behaviors in boys in the upper elementary years (e.g., Basow, 2004).

Of students' social-emotional behaviors, only their peer-nominated externalizing conduct appeared to be negatively associated with their teachers' perceptions of conflict. Such a strong association was to be expected, given that over half of the variance in teacher-reported conflict in the relationship has previously been demonstrated to be explained by students' disruptive behavior (Hamre et al., 2008). Unlike prior investigations, however, we used peer-reports of students' externalizing behavior, instead of the typically employed teacher-ratings of such conduct. In so doing, we were able to cancel out any influences that teachers themselves might have on ratings of problematic student behavior (cf. Konold & Pianta, 2007). Thus, even when teachers did not report on their students' externalizing conduct, these behavior patterns uniquely predicted 30% of the variance in teachers' perceptions of conflict within the student–teacher dyad. This is important, given that the distinction between externalizing behavior and conflict, which also partly emphasizes students' behavior in the dyadic relationship, may not always be clear (Hamre et al., 2008).

Results from this study supported teachers' years of teaching experience as a significant predictor of their students' views of closeness within the dyad. Remarkably, though, whereas students reported less closeness in the relationship with their experienced teachers, those experienced teachers perceived their dyadic relationships with students as more close. This distinction in associations seems to coincide well with the stages of teachers' professional life cycle (e.g., Day & Gu, 2007; Huberman, 1989), suggesting that highly experienced teachers tend to compensate their gradual loss in energy and enthusiasm by a greater sense of confidence and self-acceptance. Hence, it is possible that experienced teachers' confidence in their teaching abilities may account for their positive views of relational closeness. Yet at the same time, their lack of motivation and enthusiasm may clarify why their students experience less closeness in their mutual relationship.

Last, we noted that teachers' sense of general self-efficacy was positively associated with mean levels of closeness, and negatively associated with mean levels of conflict across members of the dyad. Thereby, this study complements the generally mixed evidence base on younger student samples (e.g., Hamre et al., 2008; Mashburn et al., 2006), by suggesting that teachers' general self-efficacy beliefs matter for the quality of student–teacher relationships between dyads.

#### 4.5. Limitations and future directions

Although this study employed a relatively large sample, gathered information from different sources, and took the interdependence between students and teachers in the dyad into account, some limitations were present. First, the cross-sectional nature of this study prevents us from making definite claims about the suggested direction of effects. Indeed, from a developmental systems perspective, it can be suggested that the nature of associations found in this study are reciprocal (Pianta et al., 2003). Future longitudinal studies could deepen our understanding of how students' and teachers' background features and relationship perceptions influence one another in a reciprocal way, and how such relationship views may change across the school year.

Additionally, caution is warranted when generalizing these results to other populations and settings. More precisely, we examined a sample of primarily experienced female teachers and students from relatively high socioeconomic backgrounds, who generally perceived the student–teacher relationship to be relatively close and conflict-free. The large majority of these students and teachers had the Dutch nationality and filled out Dutch versions of the STRS and SPARTS. As such, it remains to be explored whether our results also generalize to students and teachers with other backgrounds and from other countries. By relying on a more heterogeneous sample, future investigators may provide a more detailed account of the underlying factors that may influence students' and teachers' perceptions of their mutual relationship.

Last, although we took great care to adequately match teacher-reported items with student-reported items of the student–teacher relationship, it should be noted that some closeness items (items 2 and 5) and conflict items (items 4 and 5) were not entirely similar with respect to content. This lack of similarity in item content may have led to intercept non-invariance across students and teachers.

Other combinations of parallel items, however, appeared to result in largely similar results. Yet, to rule out any methodological differences between student- and teacher-reports of student–teacher qualities, replication of these results is evidently warranted. Another recommendation that investigators might like to pursue is to further improve the SPARTS items, such that they bear even more resemblance with the STRS.

#### 4.6. Practical implications and conclusion

Despite these limitations, this study might provide some promising avenues for educational researchers and practitioners alike. First, this study is one of the first to indicate that teachers' and students' views of their mutual relationship, although reflecting largely similar constructs, may vary within dyads. Markedly, students seemed to perceive the student–teacher relationship as somewhat less close and more conflictual than their teachers did. This may be important given that students are likely to benefit from warm and conflict-free relationships in the upper elementary grades (e.g., [Roeser et al., 1996](#); [Roorda et al., 2011](#)). Teachers ought to be made aware of the potential influence their interpersonal behaviors and actions have on individual students. Providing frequent and explicit signs of warmth and respect in daily interactions with upper elementary students may help teachers improve the quality of their relationship with these students. Potentially, this may help students better deal with the social, emotional, and academic challenges of the upper elementary years.

Second, results of the present study seem to suggest that students' perceptions of the student–teacher relationship, and conflict in particular, are more likely to be the result of their own behaviors and characteristics than demographic teacher characteristics. This substantiates the supposition that conflict in the relationship is mainly driven by stable child characteristics (cf. [Silver, Measelle, Armstrong, & Essex, 2005](#); [Spilt et al., 2012](#)). Teachers' views of the student–teacher relationship, in contrast, appear to be the product of teacher and child features. Notably, students' SES, gender, and externalizing conduct appeared to contribute most to teachers' relationship perceptions, suggesting that teachers hold more negative representations in relation to boys, students from lower socioeconomic strata, and students with symptoms of externalizing behavior. Such negative representations may have serious implications for the academic adjustment of these particular students. Several studies on teacher expectations suggest that easily manageable students, including girls, high achievers, and students who show no signs of behavior problems in the classroom tend to receive more emotional support and instruction than students who are perceived as problematic by their teacher (e.g., [Nurmi, Viljaranta, Tolvanen, & Aunola, 2012](#); [Stipek & Miles, 2008](#)). Without such supports, these students may become frustrated or angry, thereby further confirming teachers' already negative relationship representation of them. Therefore, teacher training programs should provide teachers with deeper insights into various student characteristics that potentially and subtly bias their perceptions of their relationship with individual students, and help teachers overcome such biases by reflecting on their own relationship experiences (cf. [Spilt, Koomen, Thijs, & van der Leij, 2012](#)). Such reflective practices may be a step forward in the process of improving the quality of student–teacher relationships with students at-risk of academic maladjustment.

#### Appendix A. Student- and teacher-reported closeness and conflict items

Teacher report	Student report	Factorial invariance
Closeness		
1. This child openly shares his/her feelings and experiences with me.	1. My teacher usually knows how I feel	Intercept invariant
2. If upset, this child will seek comfort from me.	2. My teacher understands me.	Loading invariant
3. I share an affectionate, warm relationship with this child.	3. I think I have a good relationship with my teacher.	Intercept invariant
4. This child seems to feel secure with me.	4. I feel relaxed with my teacher	Intercept invariant
5. My interactions with this child make me feel effective and confident.	5. If I have a problem I can share it with my teacher.	Loading invariant
Conflict		
1. This child and I always seem to be struggling with each other.	1. I easily have quarrels with my teacher.	Intercept invariant
2. This child feels that I treat him/her unfairly.	2. My teacher treats me unfairly.	Intercept invariant
3. When this child is in a bad mood, I know we're in for a long and difficult day.	3. My teacher thinks I do things sneaky.	Intercept invariant
4. This child's feelings toward me can be unpredictable or can change suddenly	4. I can be very angry with my teacher.	Loading invariant
5. Dealing with this child drains my energy.	5. I feel my teacher doesn't trust me.	Loading



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