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# 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

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**Background.** The constructs of closeness, conflict, and dependency, which are derived from attachment theory, are widely used to qualify teachers' perceptions of relationships with individual children.

**Aims.** Our main aim was to reveal whether similar and reliable dimensions could be identified in middle childhood with a newly developed student measure Student Perception of Affective Relationship with Teacher Scale (SPARTS). Additional validity support was sought by examining gender differences and associations with (1) teacher relationship perceptions and (2) problem and prosocial behaviours in children.

**Sample(s).** Factor structure was determined in a sample of 586 children (46.5% boys) from 26 regular elementary Dutch classrooms (grade 4–6). Associations with teacher relationship reports ( $n = 82$ ) and child behaviours ( $n = 64$ ) were analysed in random subsamples.

**Methods.** Students' relationship perceptions were assessed with the SPARTS; teachers' relationship perceptions with the Student–Teacher Relationship Scale (STRS; closeness, conflict, and dependency); and problem and prosocial behaviours in children with the teacher-reported Strengths and Difficulties Questionnaire.

**Results.** Exploratory factor analysis and confirmatory factor analysis supported a 3-factor model of conflict, closeness, and a third factor, unexpectedly reflecting negative expectations of the student instead of dependency. Satisfactory internal consistency was found for all three scales. Additional validity evidence included the following: Substantial student–teacher agreement for conflict and closeness; meaningful associations with problem and prosocial behaviours in children; and expected gender differences showing that, compared to boys, girls share more favourable relationships (more closeness and less conflict) with teachers.

**Conclusions.** The 3-dimensional SPARTS comes close to the attachment-derived teacher STRS, as far as conflict and closeness are concerned. The third dimension, negative expectations, represents a new and relevant attachment-related dimension reflecting a lack of confidence of students in the relationship with their teacher.

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In the past two decades, increasing emphasis has been placed on the importance of the affective quality of dyadic teacher–child relationships for children’s school adjustment and future development. Positive relationships with teachers are thought to provide children with emotional support and security, thereby enhancing their emotional well-being, positive social behaviour, and engagement in school, whereas negative relationships are considered to act as stressors for children, increasing emotional insecurity and undermining successful school adjustment (Connell & Wellborn, 1991; Pianta, Hamre, & Stuhlman, 2003). In line with these ideas, it has been amply demonstrated that supportive teacher–child relationships facilitate the mastery of academic skills and positively affect social-emotional and cognitive outcomes (e.g., Roorda, Koomen, Spilt, & Oort, 2011; Sabol & Pianta, 2012).

Most of this evidence, however, rests on teacher reports of affective and dyadic relationship quality. The student’s experience of affect and support in the relationship is considered a critical aspect of their school success as well (Den Brok, Brekelmans, & Wubbels, 2004; Furrer & Skinner, 2003; Hughes, 2011). However, student perspectives of the dyadic relationship are less frequently assessed. When they are assessed, the focus is narrower than in teacher reports, and underlying constructs do not concur. Attaining complete insight into student–teacher relationships and their impact requires understanding the view of the teacher, as well as that of the student (cf. Pianta *et al.*, 2003). These different relationship views may make different contributions to child adjustment in different developmental stages (Hughes, 2011; Sabol & Pianta, 2012). However, it is difficult to really understand the relative contributions of teachers’ and students’ relationship perceptions, as well as to gain insight into the changing role of teachers throughout children’s development, in the absence of consistent constructs and measures throughout childhood (cf. Sabol & Pianta, 2012). Additionally, this lack of consistency may represent an obstacle in clinical practice for situations in which school psychologists deem it important to compare the views of the student and teacher on problems in their mutual relationship. Therefore, this study aims to investigate the student’s perspective on the relationship with the teacher using a new multidimensional measure reflecting affective and dyadic aspects similar to those in teacher reports.

### **A new student measure for middle childhood**

In particular, in the early school years, evidence for the beneficial effects of supportive teacher–child relationships is primarily based on teacher reports on the Student–Teacher Relationship Scale (STRS; Koomen, Verschueren, van Schooten, Jak, & Pianta, 2012; Pianta, 2001), a questionnaire derived from the attachment literature. Although this measure was originally designed for teachers with preschool and lower elementary children, in recent years, it has been successfully applied throughout elementary school (e.g., Jerome, Hamre, & Pianta, 2009; Koomen *et al.*, 2012; O’Connor, Dearing, & Collins, 2011). Hence, many scholars qualify the relationship of specific student–teacher dyads by their position on teacher-reported and attachment-related dimensions, namely closeness, conflict, and dependency (Verschueren & Koomen, 2012). Closeness represents the degree of openness, warmth, and security; conflict represents the degree of negativity, discordance, unpredictability, and unpleasantness; and dependency represents the developmentally inappropriate degree of overreliance and possessiveness of the child in the relationship. Accordingly, a favourable relationship between the child and teacher, reflecting both a safe haven and secure base from which to explore, is conceptualized as high on closeness and low on conflict and dependency (Verschueren & Koomen, 2012).

From a developmental perspective, it has been argued that the meaning and predictive value of these teacher-reported relationship dimensions may change with increasing age, for example, with children's increasing self-control (Jerome *et al.*, 2009). The benefits of high closeness and low conflict, however, are shown to be significant throughout middle childhood, as witnessed by predictive relations with various school outcomes (e.g., Baker, Grant, & Morlock, 2008; O'Connor *et al.*, 2011). Only the relevance of dependency is disputed for older students (see Ang, 2005 vs Koomen *et al.*, 2012).

Researchers have also drawn attention to the importance of *students'* affective experiences with teachers by disclosing the impact on children's academic engagement (Furrer & Skinner, 2003) and, recently, the unique effect on academic achievement (Hughes, 2011). This research has primarily been conducted with older students and is often rooted in theoretical ideas about children's *perceived support*, referring to conceptions of being cared for, valued, and provided with assistance by the teacher (e.g., Hughes, Cavell, & Jackson, 1999; Mantzicopoulos & Neuharth Pritchett, 2003; Rey, Smith, Yoon, Somers, & Barnett, 2007; Wentzel, 1997). According to this perspective, it is *perceived* emotional support that makes students inspired, willing to invest time and energy, and emotionally engaged in learning processes.

In terms of content, there are obvious similarities between the two relationship approaches (see Connell & Wellborn, 1991; Furrer & Skinner, 2003). However, the attachment theory has led to a multidimensional teacher measure covering both positive and negative relationship qualities, whereas assessments based on the support perspective are often limited to single-construct student scales that primarily focus on positive relationship qualities (see Mantzicopoulos & Neuharth Pritchett, 2003; for an overview). According to Furrer and Skinner (2003), research could benefit from more elaborated student measures to identify the construct domain. In addition, there has been a call for student measures that are more directly comparable to teacher measures (cf. Rey *et al.*, 2007; Sabol & Pianta, 2012). In this study, we respond to these calls by investigating the dimensionality in students' perceptions of the affective and dyadic relationship with their teacher, which are based on relationship constructs from an attachment perspective, in middle childhood. By adopting this approach, our focus is on the emotional support dimensions of the relationship. Alternative frameworks concentrating on other important dimensions, such as autonomy support, structure, control, behavioural management, and instructional support, are not considered here (see also Verschueren & Koomen, 2012).

### ***Dimensionality in student perceptions and concordance with teacher perceptions***

In the existing literature, we found three multidimensional instruments assessing older students' perceptions of the positive and negative features of affective relationships with their teacher: The Child-Report Student-Teacher Relationship Scale (Child-STRS; Koepke & Harkins, 2008), the Relatedness scales (Lynch, 1992), and the Network of Relationships Inventory (NRI; Hughes, 2011). Only the Child-STRS was directly derived from the original STRS and measured the attachment-based constructs of closeness, conflict, and dependency. However, none but the closeness dimension showed acceptable reliability, and the child reports were unrelated to teacher reports on the STRS (Koepke & Harkins, 2008). The student-reported Relatedness scales contain two dimensions, Emotional Quality (EQ) and Psychological Proximity Seeking (PPS), which can be reliably measured (Lynch, 1992). In normative research, a higher EQ score was associated with a lower PPS score in student reports, which is consistent with the authors' interpretation of these dimensions as indicators of the attachment-related concepts of felt security and insecurity,

respectively (Connell & Wellborn, 1991; Lynch, 1992). We did not find information about associations with teachers' perceptions of the relationship. Finally, the NRI was initially used as a 1-dimensional student scale to measure perceived support from the teacher (Hughes *et al.*, 1999), but recently, three reliable subscales – Warmth, Intimacy, and Conflict – were empirically distinguished, of which the first two show similarity to the attachment-based closeness construct and the latter resembles attachment-based conflict (Hughes, 2011; Hughes & Villarreal, 2008). The validity of student-reported warmth and conflict has been supported by unique associations with measures of school adjustment in the expected directions. Student-reported warmth and intimacy appeared to be unrelated, and student-reported conflict was moderately related ( $r = .43$ ) to the teacher's report on parallel scales (Hughes, 2011; Hughes & Villarreal, 2008).

Although the dimensional structure of the teacher STRS has not yet been reliably replicated with the above-mentioned child measures, there are parallels on the level of separate constructs. The attachment-based features of closeness and conflict are clearly recognizable in the student-reported NRI and – to a lesser extent – in the student-reported EQ scale. Children's relationship reports, however, usually do not cover the construct dependency (cf. Rey *et al.*, 2007) – that is, insecurity which is indicated by not being able to use the teacher as a secure base and expressed in overly reliant behaviour – and if it does, it is not reliably measured (Koepke & Harkins, 2008). We do not know why dependency usually does not exist in child measures. It is possible that the student-reported PPS scale, which aims at measuring *felt* insecurity, is in some way related.

Despite conceptual connections, student and teacher reports of their mutual relationship usually show only small (Rey *et al.*, 2007; Spilt, Koomen, & Mantzicopoulos, 2010) to occasionally moderate (Hughes, 2011) associations. Moreover, relative agreement is often revealed for only part of the relationship dimensions studied. Koepke and Harkins (2008) even found no significant correlations at all. This relative discordance might reflect actual differences in the perceptions of teachers and children. Guided by attachment notions about internal working models (Bowlby, 1969/1982), it is believed that children and teachers may appraise their mutual relationship differently due to each individual's unique history of relational experiences. Additionally, both relationship perceptions appear to uniquely contribute in the cross-year prediction of child adjustment (Hughes, 2011). Still, low agreement between child and teacher reports may also reflect a problem with content validity. This means that the lack of congruence may be partly attributable to the use of dissimilar measures, based on different underlying constructs (cf. Rey *et al.*, 2007). For both future research throughout children's development (cf. Sabol & Pianta, 2012) and clinical practice, it would be of interest to know how comparable child and teacher perceptions are if they focus on the same relationship aspects and, to the extent that they do not, to know which relationship information is source specific. We therefore also verified whether a child instrument, based on similar theoretical constructs, resulted in higher concordance with teacher reports than the measures discussed.

### **Present study**

The purpose of this study was to investigate whether the teacher-reported dimensions of closeness and conflict could be replicated, and dependency, additionally, could be identified in student relationship reports in middle childhood. As argued, none of the existing student instruments were fully suitable for this research, nor was the teacher STRS without considerable adaptation (cf. Koepke & Harkins, 2008). Therefore, a new

child measure, the Student Perception of Affective Relationship with Teacher Scale (SPARTS), was developed.

As a starting point, we used the collected items from instruments that covered both positive and negative relationship qualities. In particular, items from the teacher STRS scales Closeness, Conflict, and Dependency (Pianta, 2001), that were considered suitable, were adapted to parallel student items (STRS-based). In addition, items from the NRI (NRI-based) and Relatedness scales (EQ-based and PPS-based) were included that were considered potentially indicative of closeness, conflict, or dependency. We partly rephrased items for the sake of uniformity and the variation of positive and negative items. Finally, additional items were constructed. The resulting set of 34 items was initially piloted with 21 sixth graders from an elementary school not participating in the larger study described below. Based on their records and brief evaluative interviews with 7 of these 21 sixth graders, some items were slightly reformulated. The definitive item set is presented in the first column of Table 1, with the measure of origin represented in the second column.

We investigated the dimensional structure of the SPARTS. Because the items were derived from various sources, we first explored the factor structure on a random half of the sample and then cross-validated the structure that was found with confirmatory analysis on the other half. In addition, the internal reliability of the resulting factors was evaluated, and validity support was sought by examining relations between the student-rated SPARTS scales and teacher reports of (1) relationship dimensions, (2) different forms of problem behaviour in children, and (3) prosocial behaviour. We expected better student–teacher agreement on parallel relationship dimensions than in previous research, because of the increased similarity between the underlying constructs. Considering the broadly accepted view of closeness as a positive relational factor and conflict and dependency as negative relational factors, we anticipated closeness to be positively related to prosocial behaviour and negatively related to problem behaviours, and we predicted the opposite to be true for conflict and dependency. Lastly, we examined student gender differences. In line with research based on teacher reports (Jerome *et al.*, 2009; Spilt, Koomen, & Jak, 2012), we expected girls to report more closeness and boys to report more conflict.

## Methods

### *Participants and procedure*

In three consecutive school years (2006–2009), a total sample of 586 children (46.5% boys) with a mean age of 10.89 years ( $SD = 0.93$ ) was recruited from eleven regular Dutch elementary schools, located in urban (seven) and suburban (four) areas. Six schools were predominantly white, three schools were predominantly black, and two schools had a mixed population. The children came from Grade 4 (228), Grade 5 (260), and Grade 6 (98), and they were distributed over 26 classrooms. Parental informed consent was obtained. The children filled out the SPARTS in the second or third trimester of the school year, without the teacher being present. In each classroom, two graduate students gave the whole class instructions. They explained that the SPARTS consisted of statements about the student's individual relationship with his or her regular teacher and underlined that answers would be kept strictly confidential. The children received individual instruction when they did not understand certain details. Simultaneously, their regular teachers (16 female and 10 male) filled out the STRS and Strengths and Difficulties Questionnaire for random subsamples of 82 (51.2% boys;  $M$  age = 10.97 years,

**Table 1.** Factor loadings EFA and standardized factor loadings CFA of SPARTS items in development and cross-validation sample

Item	Adapted from	1 Closeness		2 Negative expectations		3 Conflict	CFA Development sample	CFA Cross-validation sample
		EFA	Sample	EFA	Sample			
15. I feel most at ease when my teacher is near.	New	<b>.734</b>	.077	.038				
13. I tell my teacher things that are important to me.	STRS: C	<b>.714</b>	.032	-.159			.43	.51
6. When I feel uncomfortable, I go to my teacher for help and comfort.	STRS: C	<b>.684</b>	.015	-.032			.52	.47
28. If I have a problem I can share it with my teacher.	New	<b>.610</b>	-.119	.141			.74	.72
19. I think I have a good relationship with my teacher.	STRS: C	<b>.532</b>	.066	.364			.77	.81
1. I feel relaxed with my teacher	EQ	<b>.525</b>	-.116	.268			.78	.78
21. I ask my teacher for help, also when I know it isn't really necessary.	STRS: D	<b>.524</b>	.106	-.282				
9. I try to do the things just as my teacher does them.	STRS: C	<b>.521</b>	.216	.048				
25. I don't like it when my teacher comes near me.	STRS: C	<b>-.371</b>	.246	-.093				
18. I wish my teacher knew me better.	PPS	.100	<b>.767</b>	.290				
24. I wish my teacher could spend more time with me.	PPS	.071	<b>.711</b>	.041			.52	.50
27. I wish I could talk about more things with my teacher.	PPS	.341	<b>.663</b>	.050				
33. My teacher gives me the feeling that I'm not important.	EQ	-.271	<b>.615</b>	-.222				
30. I feel sad if my teacher tells me that I do something wrong.	STRS: D	.062	<b>.580</b>	-.154			.62	.42
12. I don't like it when my teacher pays attention to other children.	STRS: D	.068	<b>.530</b>	-.011			.44	.64
7. When I'm with my teacher, I feel nervous.	New	.069	<b>.456</b>	-.111			.50	.47
3. I wish my teacher would listen to me better if I have something to say or tell.	New	-.124	<b>.429</b>	-.217			.72	.81
22. Sometimes I'm scared of my teacher.	EQ	-.197	<b>.402</b>	-.105			.60	.59

Continued

Table 1. (Continued)

Item	Adapted from	1 Closeness		2 Negative expectations		3 Conflict		CFA Development sample	CFA Cross-validation sample
		EFA Development Sample		EFA Development Sample		EFA Development Sample			
16. In the classroom my teacher doesn't know how I feel	STRS: C	-.131	<b>.364</b>	-.146			.56	.61	
17. I guess my teacher thinks I whine a lot.	STRS: Cf	.205	-.084	<b>-.833</b>			.62	.69	
8. I easily have quarrels with my teacher.	STRS: Cf	-.201	-.075	<b>-.782</b>			.84	.74	
26. I guess my teacher gets tired of me in class.	STRS: Cf	.121	.015	<b>-.765</b>			.68	.63	
29. I feel my teacher doesn't trust me.	New	-.156	.125	<b>-.651</b>			.80	.78	
20. My teacher thinks I do things sneaky.	STRS: Cf	.031	.020	<b>-.650</b>			.64	.69	
34. If the teacher says something is not allowed, I often do it anyway.	New	-.183	-.165	<b>-.589</b>			.59	.57	
32. I can be very angry with my teacher.	STRS: Cf	-.273	.094	<b>-.460</b>			.68	.62	
14. My teacher treats me unfairly.	STRS: Cf	-.277	.227	<b>-.444</b>			.73	.80	
11. My teacher particularly tells me what I do wrong and not what I do right.	STRS: Cf	.147	.049	<b>-.261</b>			.19	.43	
5. Other children are less punished. Previously removed	New	-.070	.152	<b>-.249</b>			.39	.63	
4. I don't like my teacher.	New								
2. Me and my teacher often agree about the class rules.	NRI								
10. My teacher likes me.	NRI								
23. My teacher has little respect for me.	NRI								
31. I think my teacher likes having me in class.	NRI								

Notes. STRS, Student-Teacher Relationship Scale; C, Closeness; Cf, Conflict; D, Dependency; NRI, Network of Relationship Inventory; EQ, Emotional Quality; PPS, Psychological Proximity Seeking. The factor loadings of items that were used for further analyses after the EFA are printed in bold.



$SD = 0.90$ ; 31 fourth graders, 35 fifth graders, and 16 sixth graders) and 64 (51.6% boys;  $M$  age = 10.72 years,  $SD = 0.91$ ; 29 fourth graders, 27 fifth graders, and 8 sixth graders) children, respectively.

## Measures

### SPARTS

Children rated the extent to which they thought each of the 34 statements applied to their relationship with the teacher on a 5-point Likert scale, derived from Hughes' student measure (2011) (1 = *No, that is not true*; 2 = *That is usually not true*; 3 = *Sometimes*; 4 = *That is usually true*; and 5 = *Yes, that is true*). These response options slightly differed from those in the teacher measure (STRS). The reason is that the word 'apply', used in the teacher measure options, was judged to be not understandable for many children from the age group at issue. Response options using 'true' were considered good substitutes. The items can be found in Table 1.

### STRS

Teachers' perception of closeness, conflict, and dependency in the relationship with individual children was assessed with an authorized Dutch-translated and slightly adapted version of the STRS (Koomen *et al.*, 2012). The Closeness scale comprises 11 items, for example, 'I share an affectionate, warm relationship with this child'. The Conflict scale also consists of 11 items, for example, 'This child and I always seem to be struggling with each other'. The Dependency scale comprises six items, for example, 'This child asks for my help when he/she really does not need help'. Teachers rated each item on a 5-point Likert scale ranging from 1 (*Definitely does not apply*) to 5 (*Definitely applies*), derived from the original STRS (Pianta, 2001). Good results were revealed with respect to the reliability and validity of the adapted STRS scales in applications with upper elementary school children (Koomen *et al.*, 2012). In this study, Cronbach's  $\alpha$  was .89 for Closeness, .92 for Conflict, and .84 for Dependency.

### Strengths and difficulties questionnaire (SDQ)

Teachers completed a brief measure of children's adjustment and psychopathology (Goodman, 2001). The SDQ consists of 25 items describing positive and negative attributes, which were divided over five scales of five items each: Emotional symptoms, Conduct problems, Hyperactivity-inattention, Peer problems, and Prosocial behaviour. Prosocial behaviour scores reflect strengths, whereas scores on the other subscales represent difficulties. Teachers judged the degree to which each attribute applied to the target child on a 3-point Likert scale (0 = *Not true*, 1 = *Somewhat true*, and 2 = *Certainly true*). Researchers reported satisfactory reliability and validity for the SDQ (e.g., Goodman, 2001). In this study, all scales showed sufficient reliability: Cronbach's  $\alpha$  values ranged from .64 for Peer problems to .85 for Hyperactivity-inattention; the average  $\alpha$  was .74.

## Data analysis

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were employed using Mplus version 6 (Muthén & Muthén, 1998–2010) to find a factor structure that

represented the data well. Because fitting models to one data set can yield sample-specific results, we randomly selected 50% of the participants as a *development sample* for which we started with EFA and followed with CFA in the next step. In the final step, we performed CFA on the remaining 50% of the participants (*cross-validation sample*) for cross-validation.

Because the items of the SPARTS are on an ordinal scale, we applied robust weighted least squares (RWLS) estimation in the EFA (as recommended by Finney & DiStefano, 2006). We based our decision for the number of factors to retain on two criteria: (1) an eigenvalue  $>1$  and (2) an adequate fit as indicated by the Root Mean Square Error of Approximation (RMSEA). The literature suggests that RMSEA values  $\leq .06$  represent close fit; values  $\leq .08$  represent sufficient fit (Browne & Cudek, 1993; Yuan, 2005). In this EFA, we decided to use the model with the fewest number of factors that met these criteria in order to ensure a parsimonious solution. To interpret the factors, we used promax rotation (Cureton & Mulaik, 1974).

In the CFA, we also used the RMSEA to evaluate model fit. Additionally, we calculated the Comparative Fit Index (CFI). Conventional guidelines suggest that CFI values  $\geq .90$  indicate an adequate fit (Kline, 2005). The estimator we used in the analyses was WLSMV (weighted least square parameter estimates using a diagonal weight matrix with standard errors and mean-adjusted chi-square test statistics that use a full weight matrix).

## Results

### Factor structure

#### *EFA development sample*

In the preliminary analyses, all four NRI items and one new item showed cross-loadings in various factor solutions that could be explained based on their general content (e.g., 4. *I don't like my teacher* could theoretically refer to conflict and to a lack of closeness in the relationship). We chose to remove these five items in advance (Table 1). The EFA on the resulting 29 items revealed a 3-factor solution with a satisfactory fit,  $RMSEA = .036$ ,  $\chi^2(322) = 452.448$ ,  $p < .001$ . The eigenvalues of the first three factors were 8.13, 4.07, and 1.67. The factor loadings of this model are presented in Table 1.

The three factors did not fully correspond to the dimensions that were previously found for the STRS. The first factor mainly included items that measure closeness. The second factor included items that reflect a desire for more positive teacher attention: One STRS-based Dependency item (12. *I don't like it when my teacher pays attention to other children*), one new item (3. *I wish that my teacher would listen to me better if I have something to say or tell*), and the three PPS items (24. *I wish my teacher could spend more time with me*; 27. *I wish I could talk about more things with my teacher*; and 18. *I wish my teacher knew me better*). Additionally, the two EQ items (33. (reversed) *My teacher gives me the feeling that I'm not important*; and 22. *Sometimes I'm scared of my teacher*), one STRS-based Closeness item (16. (reversed) *In the classroom my teacher doesn't know how I feel*), one STRS-based Dependency item (30. *I feel sad if my teacher tells me that I do something wrong*), and one new item (7. *When I'm with my teacher, I feel nervous*) loaded on this factor, which all reflect uncertain feelings about the relationship with the teacher. We named this new factor Negative Expectations. The third factor included only items indicating conflict: All STRS-based Conflict items and three new items, reflecting distrust from the teacher, breaking rules by the student, and being

punished by the teacher, loaded on this factor. To summarize, the Closeness and Conflict dimensions in the child reports were similar to those found in teachers, but instead of Dependency, we found a new factor, which was labelled Negative Expectations.

#### *CFA development sample*

We first performed a CFA on the development sample by defining three factors, based on the highest factor loading of each item in the EFA. This CFA showed that improvement of the model was necessary,  $\chi^2(148) = 1062.007$ , RMSEA = .081, CFI = .809. We then looked at the content of items that seemed to measure, to some extent, aspects of a factor to which they did not belong. We used the modification indices (MIs) to help identify these items, but theory was the principal guide to our decisions. There were two items in the Closeness factor that refer to a very high need for attention, which is definitely not considered to be part of healthy closeness (15. *I feel most at ease when my teacher is near* and 21. *I ask my teacher for help, also when I know it isn't really necessary*). In addition, there were three items in the Negative Expectations factor that referred to a need for more teacher attention in the sense of disclosure and respect (18. *I wish my teacher knew me better*; 27. *I wish I could talk about more things with my teacher*; and 33. (reversed) *My teacher gives me the feeling that I'm not important*). Therefore, these items did not necessarily reflect negative expectations because they could also indicate closeness. Finally, the content of two items, in retrospect, is more connected with the closeness needs of *younger* children, and therefore, they are not good indicators of closeness in middle childhood (9. *I try to do things just as my teacher does them* and 25. (reversed) *I don't like it when my teacher comes near to me*). In other words, we used the MIs to help us understand what caused the poor fit but decided to remove items only after we were able to theoretically explain their 'psychometric behaviour'. Our decisions to delete these items improved the model to acceptable fit values,  $\chi^2(206) = 410.745$ , RMSEA = .059, CFI = .926.

#### *Cross-validation of the model*

Finally, we examined the generalizability of the model by fitting it on the cross-validation sample. The pattern coefficients were not fixed. The CFI revealed a model fit in the cross-validation sample that was slightly poorer but still acceptable,  $\chi^2(206) = 445.209$ , RMSEA = .062, CFI = .923. The standardized item loadings for the final model are separately presented in Table 1 for the development and cross-validation sample.

#### **Internal consistency**

The internal consistencies of the scales based on the found factor structure were determined with Cronbach's  $\alpha$  coefficients. The Cronbach's  $\alpha$  values were .79, .70, and .74 for Conflict, Negative Expectations, and Closeness, respectively, indicating satisfactory internal consistency for research purposes ( DeVellis, 2003) for all scales. For subsequent analyses, subscale scores were calculated by averaging the scores of the corresponding items.

#### **Data nesting**

Because children share a teacher, we investigated with multilevel modelling whether children's relationship reports (Closeness, Conflict, Negative Expectations) on the same

teacher were more similar than the relationship reports of children with different teachers. With baseline models, we found that children's reports of Closeness showed the largest percentage of variance at the teacher level (23.3%) against 10.9% and 11.0% for children's reports of Conflict and Negative Expectations, respectively. Despite the shared variance, we did not use multilevel analyses to investigate associations with teacher relationship reports, student behaviour, and gender, because of insufficient statistical power due to the small subsample sizes (at level 2, we would have needed at least 30 teachers in our analyses, which is more than our total number of participating teachers; Maas & Hox, 2004). We used Pearson correlations instead.

A preliminary test for age differences, using multilevel analysis, revealed that age had no significant effect on Closeness, Conflict, or Negative Expectations.

### **Correlations SPARTS and STRS**

The subscales of the SPARTS showed substantial intercorrelations in the expected directions (Table 2). The pattern of Pearson correlations was to a large extent similar to that reported for the STRS (Koomen *et al.*, 2012; Pianta, 2001). Conflict and Closeness were negatively related ( $r = -.50, p < .01$ ), and Conflict and Negative Expectations were positively related ( $r = .51, p < .01$ ). However, whereas teacher-reported Closeness and Dependency were unrelated, student-reported Closeness and Negative Expectations showed a modest negative association ( $r = -.27, p < .01$ ). This negative association supports the idea that Closeness is a positive relational factor and Negative Expectations is a negative relational factor in the SPARTS.

The convergent validity of the SPARTS was investigated by correlating its subscales with the STRS subscales (Table 2). The Conflict and Closeness subscales of the SPARTS showed significant associations in the expected direction that were moderate ( $r = .59, p < .01$ ) and weak ( $r = .38, p < .01$ ), respectively, with the corresponding STRS subscales. The difference between these correlations was significant,  $t(79) = 2.32, p < .05$ . Student Conflict was also negatively associated with teacher Closeness ( $r = -.44, p < .01$ ), but this association was weaker than that with teacher Conflict,  $t(79) = -1.68, p = .049$ , 1-tailed. Furthermore, student Closeness was negatively related to teacher Conflict ( $r = -.22, p < .05$ ). Although this correlation was not significantly lower than the correlation between student and teacher Closeness, the difference did approach significance,  $t(79) = -1.55, p = .06$ , 1-tailed. Student Negative Expectations was unrelated to the teacher Dependency scale.

### **Correlations SPARTS and problem and prosocial behaviours in children**

The validity of the SPARTS scales was further supported by correlations with teacher reports on the SDQ subscales (Table 2). Closeness was related to fewer hyperactivity/attention problems. As expected, the negative relational factors were associated with less prosocial behaviour and more difficulties. The discriminant validity of these scales is apparent by the exclusive positive relationships between Negative Expectations and Emotional problems ( $r = .25, p < .05$ ) as well as between Conflict on the one hand and Conduct problems ( $r = .34, p < .01$ ) and Peer problems ( $r = .34, p < .01$ ) on the other. In addition, both Conflict and Negative Expectations were related to more hyperactivity/attention problems ( $r = .41$ , and  $r = .33, p < .01$ ), and less prosocial behaviour ( $r = -.32$ , and  $r = -.26, p < .01$ ). Unexpectedly, the correlation between Closeness and Prosocial behaviour did not reach significance.

**Table 2.** Pearson correlations between SPARTS, STRS, and SDQ

	SPARTS (Student)		STRS (Teacher)		SDQ (Teacher)					
	Neg. Expect.	Closeness	Conflict	Dependency	Closeness	Emotional	Conduct	Hyperactivity	Peer	Prosocial
	<i>n</i> = 586		<i>n</i> = 82		<i>n</i> = 64					
SPARTS										
Conflict	.51**	-.50**	.59**	.14	-.44**	.00	.34**	.41**	.34**	-.32**
Neg. Expect.		-.27**	.14	.13	-.19	.25*	.16	.33**	.12	-.26**
Closeness			-.22*	.13	.38**	.03	-.06	-.34**	.02	.12
STRS										
Conflict				.33**	-.51**					
Dependency					-.02					

Notes. Neg. Expect., Negative Expectations; Emotional, Emotional problems; Conduct, Conduct problems; Hyperactivity, Hyperactivity/Attention problems; Peer, Peer problems; Prosocial, Prosocial behaviour; \**p* < .05; \*\**p* < .01 level (2-tailed).

### Student gender differences

A multivariate analysis of variance was used to determine whether there were student gender differences in the SPARTS and teacher STRS scales. We found a significant gender effect,  $F(6,75) = 4.74, p < .01$ . The results were similar for the child and teacher reports. Girls reported more Closeness ( $M = 3.50, SD = 0.89$ ) and less Conflict ( $M = 1.81, SD = 0.59$ ) than boys ( $M = 3.01, SD = 0.89$  and  $M = 2.13, SD = 0.75$ ),  $t(583) = -6.69, p < .01$  and  $t(583) = 5.72, p < .01$ , respectively. Teachers also reported more Closeness and less Conflict in their relationships with girls ( $M = 4.20, SD = 0.50$  and  $M = 1.46, SD = 0.53$ ) than in their relationships with boys ( $M = 3.69, SD = 0.60$  and  $M = 1.99, SD = 0.91$ ),  $t(80) = -4.22, p < .01$  and  $t(80) = 3.17, p < .01$ , respectively. We found no gender differences in Negative Expectations and Dependency.

### Discussion

In the present study, we found partial support for the presence of the intended attachment-based relationship dimensions in the newly developed student questionnaire. The *Conflict* scale tapped into students' perceptions of distrustful feelings and negative behaviours from the teacher, as well as angry feelings and discordant behaviours of the student him/herself. Therefore, this scale clearly corresponds to its STRS counterpart and also connects to the concept of disharmony and resistance that characterizes insecure parent-child relationships (Verschueren & Koomen, 2012). The *Closeness* scale assessed students' disclosing behaviours, positive feelings, and reliance on the teacher in times of stress. This scale also shows similarities with the corresponding STRS scale and fits well with the idea of openness to communication and availability in times of stress being important characteristics of secure relationships in middle childhood (Kerns, Klepac, & Cole, 1996). However, we have not succeeded in assessing *dependency* through the child report. Instead, another negative relationship dimension was revealed that primarily referred to students experiencing uncertain feelings and unfulfilled needs. This dimension was labelled *Negative Expectations*. With this scale, the negative side or lack of confidence in a teacher's availability and responsiveness seems to be assessed, which could be considered characteristic of *insecure* relationships in middle childhood (cf. Kerns *et al.*, 1996). In comparison with the other SPARTS scales, this scale appears to be the only one that does not predominantly consist of adapted items from the corresponding STRS scale.

Although three separate dimensions can be distinguished in children's experience of the teacher-child relationship, our analyses revealed that several thoughts and feelings belong to multiple dimensions. This is true for feelings of like and dislike that refer to specific relationship characteristics (Hughes, 2011) but may also indicate a more general characteristic that can probably be a consequence of conflict and closeness. In addition, the wish to share more feelings with or receive more attention from a teacher can, as we observed, derive from multiple dimensions, namely closeness and negative expectations. This finding is understandable because, on the one hand, feelings of closeness can result in a desire to share, as we see in all types of relationships in the literature on self-disclosure (e.g., Tolstedt & Stokes, 1984). On the other hand, teachers have only limited time, and such experiences could bring about negative expectations in students, with their basic psychological need of relatedness being unfulfilled (Connell & Wellborn, 1991). Thus, in addition to closeness, negative expectations may underlie a wish for more emotion sharing or positive attention. Future research could add to the existing theoretical

framework by addressing the processes that lead to certain feelings and desires that children express.

In the present study, the removal of items due to loadings on multiple dimensions has affected, in one way or another, the content of the student measure for closeness and negative expectations. Although key aspects of closeness, such as open and warm communication and the use of the teacher as safe haven (Verschueren & Koomen, 2012), are present, the removal of several items could have led to this relationship dimension being not fully covered. Therefore, future research is recommended for further refinement, for example, by adding adequate indicators of closeness in middle childhood and/or items with a focus on students' perception of how teachers think and feel about the relationship. The consequences of finding negative expectations instead of dependency will be discussed later.

Another criterion to verify that, indeed, similar dimensions are measured in students' relationship reports is the concordance with teachers' relationship reports. We expected similarities in the pattern of interrelations between the student-rated and teacher-rated dimensions, as well as student–teacher agreement for corresponding dimensions. The moderate negative interrelation between student-reported conflict and closeness and the positive association between the negative relationship dimensions were roughly similar to those of the teacher-rated STRS (see also Koomen *et al.*, 2012; Pianta, 2001) and support conceptual similarities between these scales. Whereas closeness and dependency are unrelated in the STRS, child-reported closeness and negative expectations were modestly negatively associated in the SPARTS. This finding could point to negative expectations being a more clear-cut negative relational factor than dependency in the teacher questionnaire. Whereas dependency primarily refers to an insufficiency in the secure-base function of the relationship with the teacher (cf. Verschueren & Koomen, 2012), negative expectations seem to cover shortcomings in the safe-haven function as well.

Our results with respect to student–teacher agreement were better than in previous research. The associations between the corresponding student and teacher Conflict and Closeness scales were stronger than previously reported correlations. Moreover, the associations of student-reported conflict and closeness with the corresponding teacher scales tended to be stronger than those with teacher scales measuring other relationship dimensions. The consensus for conflict was significantly higher than that for closeness, which is consistent with previous research (Hughes, 2011). This greater concurrence for conflict has been ascribed to the more easily observed interactions that are generally represented in conflict items (see Hughes).

The validity of our student measure was further substantiated by associations with different forms of problem and prosocial behaviour in children as rated by teachers. Overall, the pattern of associations with student behaviours was as expected. Student reports of conflict and negative expectations were both associated with more behaviour difficulties in the form of hyperactivity and attention problems, as well as less prosocial behaviour. Moreover, these two scales also appeared to clearly capture different negative relationship features judged by the exclusive relations of conflict with both conduct and peer problems versus negative expectations with emotional problems. This latter relation supports our label of the scale, because in previous research, negative expectations revealed in the attachment narratives of young children were found to predict later internalizing problems (Warren, Emde, & Sroufe, 2000).

However, regarding closeness, our findings were somewhat in disagreement with our expectations. Although we did find a negative association with behaviour difficulties (i.e., hyperactivity/attention problems), no additional associations were found with problem

behaviours or prosocial behaviour. Following ideas about developmental changes in the relative importance of different social relationships throughout childhood (cf., Bierman, 2011), it is conceivable that closeness with teachers has different correlates at different ages. Research indicates that teacher–child closeness decreases towards the end of elementary school (Jerome *et al.*, 2009), whereas peer relationships become more important (Wentzel, 2009). It is possible that through these opposing trends, associations with peer relationships and prosocial behaviour are less strong in middle childhood. Our findings, however, could also indicate that this scale, as said before, has become too limited in focus and needs further refinement.

Our findings with respect to student gender differences were fully in accordance with our expectations: Children and teachers presented the same opinion that girls show more closeness and less conflict than boys and therefore share more favourable relationships with their teachers, on average. These findings are consistent with what was already known from teacher reports on relationship quality (e.g., Jerome *et al.*, 2009; Spilt *et al.*, 2012).

Overall, the results showed that we were quite successful in measuring conflict and closeness but not dependency through the student report: The third factor did not reflect this construct and also did not correlate with teacher-reported dependency. Why did we not obtain dependency with the student report, and why did we find a different dimension (negative expectations) instead? Part of the explanation is probably that, compared to closeness and conflict, we found only a few suggestions from previous research to inform the measure of dependency by student report (cf. Rey *et al.*, 2007) and therefore started out with a weak set of items. Our starting point, in fact, was a very small set of (three) items based on teacher-reported dependency. It was also not helpful that teacher-reported dependency has, for a long time, been the least developed and investigated factor in teacher report-based relationship research. Only recently have the findings of a STRS validation study, using a slightly adapted dependency scale, shown that dependency can be reliably and meaningfully measured by teacher report throughout elementary school (Koomen *et al.*, 2012). In fact, in that study, dependency was the only relationship factor that showed strong factorial invariance across the full age range from 3 through 12 years. Additionally, recent research with this adapted scale revealed that dependency was the most relevant teacher-reported relationship predictor of students' academic adjustment in Grade 6 (Zee, Koomen, & Van Veen, 2013). Therefore, we do not have much doubt about the developmental relevancy of this construct for older students (cf. Ang, 2005) but rather experienced difficulties in constructing items suitable for the student report.

Additionally, it should be mentioned that the difference in content between teacher and student items was much higher for dependency than for closeness and conflict. The dependency items in the teacher STRS focus merely on (over-reliant) student behaviour towards the teacher, whereas in our student items, we chose to capture the underlying insecure feelings of the student. There were two reasons for deviating from the wording of the teacher items: First, it seems difficult to measure dependent student behaviour by student reports in older elementary children. After all, their developmental stage represents the transition to early adolescence, presenting new social tasks emphasizing students' sense of autonomy and increasing psychological independence from adults (Crone & Dahl, 2012). Therefore, students will most likely not report behaviour indicating a developmentally inappropriate degree of overreliance on the teacher, even if they exhibit such behaviour in everyday practice. Second, and more important, measuring relationships is not so much about behaviour as it is about representations including feelings and beliefs (cf. Pianta *et al.*, 2003). Hence, although dependency may still be



considered a relevant relationship construct for older students from the teacher's perspective, sticking to dependency does not seem productive when we focus on the student's perspective. A shift from overly reliant behaviours to insecure feelings and beliefs then seems to offer new possibilities. This focus on feelings and beliefs generated another dimension or construct in this study: Negative expectations.

Finding this new relationship construct may be considered an important additional outcome of this study. The dimension negative expectations seems to reflect a basic lack of confidence in a teacher's availability and sensitive responsiveness, relating to insufficiencies in both the secure-base and secure-haven functions of the teacher–student relationship, which are key features according to the attachment perspective (cf. Verschueren & Koomen, 2012). Such characteristics of insecurity fit well with this developmental stage (cf. Kerns *et al.*, 1996) and are, until now, not covered by teacher reports (cf. Verschueren & Koomen, 2012). In addition to conflict and dependency, negative expectations appear to be another negative attachment-related dimension that may be useful for representing the quality of student–teacher relationships during middle childhood. The negative expectations scale could be of particular value for better understanding the relationships of internalizing children with their teachers (cf. Warren *et al.*, 2000). Another study (Jellesma, Zee, & Koomen, 2015) that used the same student questionnaire as described in the current study has recently revealed that student-reported conflict and negative expectations are associated with child depression through children's more negative interpretations of the interactions with their teacher. Moreover, only students' negative expectations showed unique direct associations with both child depression and somatic complaints in this study. Additionally, unique associations with anxiety were stronger for negative expectations than for student-reported conflict, whereas these were absent for student-reported closeness. Thus, the new student-reported dimension of negative expectations seems to represent a negative attachment-related construct that could bring important additional insights to the literature on teacher–student relationships, especially for internalizing children.

Three important qualifications of our research should be noted. First, although the model fit was acceptable overall, our analyses did reveal that items intended to measure the same overall concept may show little correlation with each other. This finding is probably connected to the complex nature of relationship constructs, as similar findings were reported for the teacher-rated STRS (Koomen *et al.*, 2012). After all, a student's relationship representation includes feelings and beliefs about the bond between the student and the teacher, the student's behaviour towards the teacher, and the teacher's behaviour and feelings towards the student (cf. Pianta *et al.*, 2003). Further testing and refinement of the instrument seem necessary. Second, the participating children were not equally divided across grades. More specifically, Grade 6 was underrepresented in the sample. In addition, the sample sizes were rather small in the part investigating associations between the SPARTS and other variables. As a result, we also had insufficient power to test these associations with multilevel analyses, even though there was some variance in children's relationship reports on the level of the teacher. Although the number of teachers was relatively large and children were randomly selected from student registers and balanced over teachers, participating classes, and gender, sixth graders were also clearly underrepresented here. Therefore, replication in other larger samples is needed. Third, it should be noted that the data were gathered in Dutch elementary schools and that we relied on Dutch adaptations of relationship measures originally designed in the United States. Because the Dutch educational system is similar to that in other Western countries and our results were largely consistent with previous research, we expect that

the generalizability to other Western countries will be good. However, more research needs to be conducted to replicate these findings in other populations.

Despite these potential limitations, our research supplements the literature on teacher–child relationships in several ways. First, we developed, tested, and validated a 3-dimensional child measure that comes close to the widely used teacher STRS. The availability of a good child measure is significant because the effects of teachers on students are thought to be largely determined by students' psychological responses to their teachers (Den Brok *et al.*, 2004). Conflict and closeness were shown to be conceptually and empirically related to corresponding dimensions in the teacher measure. More consistent constructs across teacher and child measures are important for future research (Sabol & Pianta, 2012), as well as clinical practice. The third dimension clearly represented a different, but possibly relevant, negative dimension for middle childhood. In comparison with conflict, this dimension referred to a type of insecurity that is more connected to internalizing problems than to conduct and peer problems (see also Jellesma *et al.*, 2015). A negative attachment-related dimension, specifically relevant for internalizing problems in middle childhood, was lacking to date (cf. Sabol & Pianta, 2012). Second, the SPARTS showed higher concordance with teacher reports than measures in previous research, thereby providing a better starting point for further research on different relationship views and their contributions to child adjustment. Third, the study revealed important gender differences in relationship qualities in favour of girls and showed that not only teachers but also children perceive these differences.

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