From externalizing student behavior to student-specific teacher self-efficacy
The role of teacher-perceived conflict and closeness in the student–teacher relationship

Zee, M.; de Jong, P.F.; Koomen, H.M.Y.

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From externalizing student behavior to student-specific teacher self-efficacy: The role of teacher-perceived conflict and closeness in the student–teacher relationship

Marjolein Zee *, Peter F. de Jong, Helma M.Y. Koomen

Research Institute of Child Development and Education, University of Amsterdam, The Netherlands

ABSTRACT

Data gathered from a longitudinal study within regular upper elementary schools were used to evaluate a theoretical model within which teachers' perceptions of conflict and closeness in the student–teacher relationship were considered as the intermediary mechanisms by which individual students' externalizing behavior generates changes in teachers' student-specific self-efficacy beliefs (TSE) across teaching domains. Surveys were administered among a Dutch sample of 524 third-to-sixth graders and their 69 teachers. Longitudinal mediation models indicated that individual students' externalizing behavior generally predicted higher levels of teacher-perceived conflict, which, in turn, resulted in lower student-specific TSE across teaching domains (i.e., instructional strategies, behavior management, student engagement, and emotional support). Teacher-perceived closeness, however, was not found to mediate the link between externalizing student behavior and student-specific TSE. Instead, support was found for an alternative model representing the hypothesis that TSE, irrespective of teaching domain, mediated behavior-related changes in teachers' perceptions of closeness in the student–teacher relationship.

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1. Introduction

Teachers' self-efficacy (TSE), or their belief in their capability to "organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3), has been acknowledged to be one of the most basic, yet potent, psychological resources for teachers' functioning in the classroom (Klassen, Tze, Betts, & Gordon, 2011). Accumulating evidence has indicated that teachers with a firm belief in their self-efficacy may translate their knowledge and abilities into proficient action, whereas those who lack such beliefs will probably not attempt to make things happen in class (e.g., Klassen & Tze, 2014). When teachers live up to their generalized sense of self-efficacy, they are more likely to provide high-quality instruction, adopt proactive approaches to managing disruptive student behavior, and convey supports that activate students' motivation and engagement in class (e.g., Zee & Koomen, 2016). Given the important role TSE might play in students' social-emotional and academic development, it is critical

to explore the sources and processes that may account for these beliefs.

Recently, several investigators (e.g., Morris, Usher, & Chen, 2016; Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010) have suggested that students' behaviors in class, and their externalizing behavior in particular, may function as a predictor of teachers' self-efficacy beliefs. Generally, such externalizing student behaviors are defined by ongoing patterns of overt and undercontrolled behavior that tend to be disruptive and frustrating for others (Merrell, 1999). Among the most common forms of externalizing behavior are hyperactivity, inattention, aggression, and conduct problems (Goodman, Lamping, & Ploubidis, 2010). Research has consistently shown that these forms of externalizing behavior may impose the most negative impressions on teachers and lower their self-efficacy (e.g., Brouwers & Tomic, 2000; Roehrig, Pressley, & Talotta, 2002; Tsouloupas et al., 2010). It should be noted, however, that the majority of research investigating the link between externalizing behavior and TSE has typically focused on teachers' *general* perceptions of student misbehavior and self-efficacy (e.g., Tsouloupas et al., 2010). As such, these studies have not yet addressed the possibility that there is much intra-individual variability in teachers' appraisals of individual students' behaviors and self-efficacy beliefs (see Zee, de Jong, & Koomen, 2016a). Moreover, insufficient attention has been paid to the ways

* Corresponding author at: Research Institute of Child Development and Education, University of Amsterdam, P.O. Box 15776, NL-1001 NG Amsterdam, The Netherlands.

E-mail address: M.Zee@uva.nl (M. Zee).

in which individual students' externalizing behavior may become informative to TSE across time. Following Morris et al. (2016), there is a need for research to move away from cross-sectional examinations of general TSE and its underlying sources and to explore the role of mediating processes through which such sources may generate changes in teachers' capability beliefs in various teaching domains and with diverse students.

To address this need, the current study aims to evaluate an interpersonal social-cognitive model in which teachers' perceptions of relationships with individual students are hypothesized to form the intermediary mechanisms by which students' externalizing behavior may affect teachers' self-efficacy toward these students over time. Theoretical and empirical knowledge in this direction may help educational researchers and practitioners identify levers to increase teachers' self-efficacy toward students who display externalizing behavior and thereby improve these students' classroom experiences and academic adjustment.

1.1. An interpersonal social-cognitive model of teachers' self-efficacy

Teachers' self-efficacy beliefs have commonly been embedded in the concepts of Bandura's (1997) social-cognitive framework. As with other psychological frameworks, the emphasis in this theory is on human agency, the idea that individuals are able to exercise control over actions that affect their lives. According to Bandura (1997), one of the key factors in human agency is self-efficacy. Specifically, if individuals believe they have the power to realize desired achievements, they are more likely to act on those beliefs than when they lack a sense of self-efficacy. As such, self-efficacy judgments, including those of teachers, are now commonly believed to be more-powerful predictors of motivation, behavior, and action than what is objectively true.

Although TSE has long been regarded as a fixed ability, there is a growing consensus that these beliefs may be highly differentiated and context-specific (e.g., Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Zee, Koomen, Jellesma, Geerlings, & de Jong, 2016b). Indeed, the majority of conceptualizations and instruments of TSE are currently based on the breadth of teachers' role in the classroom, including such domains as classroom and behavior management (e.g., Brouwers & Tomic, 2000; Tsouloupas et al., 2010), inclusive practices (Malinen et al., 2013), and relationship building (Yoon, 2002). Yet, since the studies of Tschannen-Moran and Woolfolk Hoy (2001), the well-validated three-factor model of TSE for instructional strategies, classroom management, and student engagement has dominated the field. Generally, the instructional strategies domain captures teachers' self-efficacy in using various instructional methods that enable and enhance student learning. The TSE domain of student engagement is useful in measuring the extent to which teachers feel able to activate students' interest in their schoolwork. The TSE domain of classroom management, lastly, encompasses teachers' judgments of their capability to organize students' time, behavior, and attention. Hence, these domains seem to capture the broad range of activities that are most germane to teachers' daily activities. Thereby, Tschannen-Moran and Woolfolk Hoy's (2001) multifaceted model may provide insight into teachers' judgments of their own capabilities in diverse teaching areas.

Recent empirical research has indicated that TSE, despite reflecting some degree of trait variance, may vary across teaching domains and *individual students* (Zee et al., 2016b). This conception of TSE as being both *student-* and *domain-specific* maintains, generally, that features of individual students, such as their background characteristics and behaviors, may serve as key sources of information about whether teachers can muster whatever it takes to adequately instruct, manage, motivate, and emotionally support a particular student (Bandura, 1997; Pianta, Hamre, & Stuhlman,

2003; Zee et al., 2016a; Zee et al., 2016b). Among the many background features that may affect TSE, students' externalizing behavior has been most frequently been suggested as a source of stress and self-efficacy (e.g., Brouwers & Tomic, 2000; Kyriacou, 2001; Tsouloupas et al., 2010). These overt and undercontrolled behaviors can be considered overly disruptive and can involve aggression, hyperactivity, inattention, off-task behavior, or antisocial conduct (Keil & Price, 2006). Prior research from Roehrig et al. (2002) has indicated that both beginning and experienced teachers tend to be most regularly hassled by angry, uncontrollable, or hyperactive students. Such students generally fail to comply with classroom rules, try teachers' patience, and negatively affect student learning time and academic achievement in class (Bru, 2009; Clunies-Ross, Little, & Kienhuis, 2008). Not surprisingly, externalizing student behaviors have thus far been demonstrated to achieve the highest explanatory and predictive power for both classroom-level and student-specific TSE. Lambert, McCarthy, O'Donnell, and Wang (2009), for instance, have indicated that highly overactive and distractible students hamper their general sense of self-efficacy in dealing and establishing positive relationships with challenging students. Similarly, Tsouloupas et al. (2010) demonstrated that teachers' perceived disruptive behavior in the classroom may negatively affect their self-efficacy in handling student misbehavior in class. Other studies on teachers' general efficacy (e.g., Gabriele & Joram, 2007; Phan & Locke, 2015) have demonstrated that TSE is influenced by students' conduct and on-task behavior.

A modest body of research on TSE in relation to individual students generally substantiates these findings. Spilt and Koomen (2009) revealed that teachers perceive themselves as angrier and less self-efficacious in relation to individual students with disruptive behavior. Moreover, in a recent study from Zee et al. (2016a), individual students' externalizing behavior, including hyperactivity-inattention and conduct problems, appeared to be the strongest predictor of teachers' self-efficacy toward these students. Across TSE domains of instructional strategies, behavior management, student engagement, and emotional support, the externalizing behavior coefficients ranged from −0.28 to −0.74.

It should be noted, however, that externalizing student behaviors, as experiential sources of student-specific TSE, may not per se be enlightening to the formation of these beliefs (cf. Bandura, 1997). Rather, individual students' conduct can be presumed to become informative to TSE only through teachers' *subjective evaluations* of these behaviors in the context of their daily interactions with individual students. Recent theory on TSE (e.g., Morris et al., 2016), as well as theory and research on student–teacher interactions (e.g., Pianta et al., 2003; Spilt, Koomen, & Thijs, 2011), has indicated that teachers' perceptions of student behavior may derive from many types of previous experiences with individual students. Such experiences are combined and stored in underlying representational models of relationships with these students and may, in turn, inform teachers' sense of self-efficacy. This idea is premised on the attachment-based assumption that relationship representations may yield internalized and relatively stable patterns of beliefs, feelings, and expectations about the self as a teacher and the student in the relationship (Pianta et al., 2003; Spilt & Koomen, 2009). Such belief systems can be primarily positive or predominantly negative. Positive relationship representations generally reflect experiences of *close* student–teacher relationships, in which positive expectations of self and individual students, trust, and open communication in the relationship play a major role. Such positive relationship representations also reflect a greater sense of responsivity and sensitivity toward the child and are therefore likely to be more proximal to stable teacher characteristics than to student characteristics, including externalizing behavior (e.g., Hamre, Pianta, Downer, & Mashburn, 2008).

Negative relationship representations, in contrast, incorporate a history of *conflict* in the relationship with a particular child (e.g., Verschueren & Koomen, 2012). Such negative relationship representations indicate that teachers are likely to struggle with an individual student, experience a lack of trust, and may feel emotionally drained or inefficacious when dealing with the child (Pianta, 1999). Accordingly, teachers' representations, or perceptions, of closeness and conflict in the student–teacher relationship can be considered powerful cognitive tools, as they largely guide their interpretations of individual students' underlying intentions, behaviors, and actions in the relationship and provide teachers with vital information about their capability to deal with the child (Howes, Hamilton, & Matheson, 1994; Pianta, 1999; Pianta et al., 2003; Spilt et al., 2011).

Guided by the interpersonal and social-cognitive principles proposed above, we primarily aim to explore a model (see Fig. 1a) in which teachers' perceptions of closeness and conflict in the student–teacher relationship are considered the intermediary mechanisms that could explain why teachers may develop a positive or negative sense of self-efficacy toward individual children who display externalizing behavior. Theoretical and empirical justifications for the sequence of linkages delineated by our hypotheses are provided in the next sections.

1.2. Linkages between externalizing behavior and teachers' relationship perceptions

Multiple sources of evidence have increasingly indicated that externalizing student behavior matters for teachers' perceptions of conflict and closeness in the student–teacher relationship (e.g., Mejia & Hoglund, 2016; Roorda, Verschueren, Vancraeyveldt, Van Craeyevelt, & Colpin, 2014). Drawing on both attachment and developmental systems frameworks, these studies have postulated that teachers generally have more difficulty forming relationships with students with externalizing behavior that are marked by warmth, trust, and affection (i.e., *closeness*); instead, they develop relationships that reflect high levels of negativity, discordance, and distrust (i.e., *conflict*; Pianta, 1999). In line with this assumption, both cross-sectional and longitudinal studies have convincingly disclosed the negative effect of disruptive, aggressive, or antisocial student behavior on teachers' experiences of student–teacher conflict (Birch & Ladd, 1998; Henricsson & Rydell, 2004; Jerome, Hamre, & Pianta, 2009; Murray & Murray, 2004; Murray & Zvoch, 2011). Some studies (Doumen et al., 2008; Roorda et al., 2014) have even concluded that students' displays of externalizing behavior may be sufficient to commence a vicious cycle of disharmonious relationships and escalating problem behaviors. These outcomes are consistent with the idea that student behavior and teachers' perceptions of the student–teacher relationship are reciprocally related to one another. Hence, it can be suggested that externalizing student behavior may generate negative changes in teachers' perceptions of conflict in the student–teacher relationship.

Less consistent are the findings regarding the linkage between externalizing student behavior and teachers' perceptions of closeness in the student–teacher relationship. Specifically, several primarily *cross-sectional* studies have identified externalizing student behavior as a negative predictor of teachers' perceptions of relational closeness (Birch & Ladd, 1998; Mejia & Hoglund, 2016; Thijs, Westhof, & Koomen, 2012). Following these investigations, teachers may thus experience lower concurrent levels of closeness in the relationship with students who display externalizing behavior in the classroom. The handful of prior *longitudinal* studies, in addition, has generally indicated that the modest association between individual students' externalizing behaviors and teacher-reported degrees of closeness may remain relatively stable over time (Henricsson & Rydell, 2004; Jerome et al., 2009; Mejia & Hoglund, 2016; Roorda et al., 2014). For example, some cross-lagged panel studies (Mejia & Hoglund, 2016; Roorda et al., 2014) have revealed significant within-time correlations between individual students' externalizing behavior and teacher-reported closeness, but no additional effects of these behaviors on prospective levels of relational closeness, after accounting for the stability in both constructs. Whether the link between students' externalizing behavior and teachers' subsequent student-specific self-efficacy beliefs can be explained by changes in teachers' perceptions of closeness thus remains to be explored.

1.3. Linkages between teachers' relationship perceptions and self-efficacy

To date, only a scant amount of literature has provided empirical illustrations of our hypothesis that teachers' experiences in relationships with individual students may generate changes in their student-specific self-efficacy. In part, this lack of research may stem from the fact that TSE, in contrast to the dyadic constructs of closeness and conflict, is usually defined at the classroom-level of analysis, thereby reflecting the collective valence of teachers' sense of self-efficacy toward their students in the classroom. Yet, regarding conflict, the results of these studies seem to yield a fairly consistent picture, pointing to negative associations between student–teacher conflict and general classroom-level TSE (e.g., O'Connor 2008; Spilt et al., 2011). In a sample of secondary school teachers, for instance, Yeo, Ang, Chong, Huan, and

Fig. 1a. *Hypothesized mediational model. Note.* IS = Instructional Strategies, BM = Behavior Management, SE = Student Engagement, ES = Emotional Support. Coefficients *a* and *b* reflect associations between predictor and mediators, and mediators and outcome measures, respectively. The product *ab* reflects the hypothesized indirect effect of individual students' externalizing behavior on domains of student-specific self-efficacy, through teachers' perceptions of conflict and closeness. Coefficient *c* reflects the direct association between predictor (externalizing student behavior) and outcome variables (domains of student-specific self-efficacy).

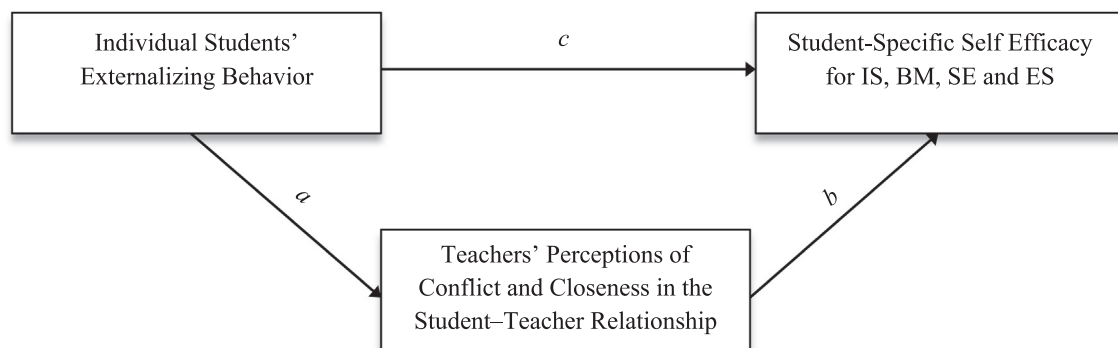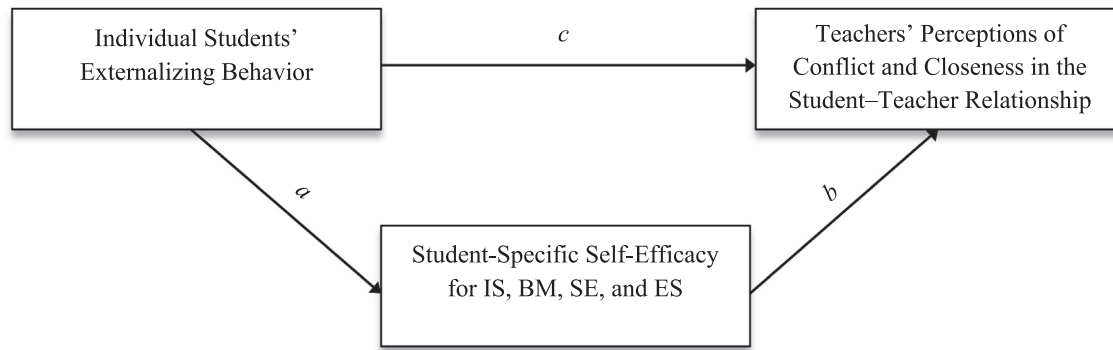**Fig. 1b.** *Alternative mediational model. Note.* IS = Instructional Strategies, BM = Behavior Management, SE = Student Engagement, ES = Emotional Support. Coefficients *a* and *b* reflect associations between predictor and mediators, and mediators and outcome measures, respectively. The product *ab* reflects the hypothesized indirect effect of individual students' externalizing behavior on teachers' perceptions of conflict and closeness, through domains of student-specific self-efficacy. Coefficient *c* reflects the direct association between predictor (externalizing student behavior) and outcome variables (teachers' perceptions of conflict and closeness).

Quek (2008) indicated that teachers who experience high levels of conflict in the relationships with their students are likely to develop unhealthy classroom-level self-efficacy beliefs in the teaching domains of classroom management and instructional strategies. Other research explicates that poor relationships with students may lead to increases in emotional vulnerability in teachers and result in feelings of professional and personal failure (Hargreaves, 2000; Newberry & Davis 2008; Spilt et al., 2011). Together, these findings lend credence to the idea that teachers, through their perceptions of conflict in the student–teacher relationship, come to see the task of teaching students with externalizing symptoms as more difficult and consequently adjust their self-percepts of self-efficacy toward these students downward.

Counter to student–teacher conflict, high levels of relational closeness can be assumed to provide teachers with the affective cues, performance successes, and persuasive boosts that convince them they have whatever it takes to succeed with a child. In the study of Yeo et al. (2008), however, this hypothesized association could not be confirmed. Their findings revealed that positive aspects of student–teacher relationships, including teachers' instrumental help and satisfaction, were not associated with teachers' general sense of self-efficacy for instructional strategies, classroom management, and student engagement. Patterns of bivariate correlations from a study by Spilt, Koomen, Thijs, and van der Leij (2012) largely mirror these findings. Their results indicated that the linkage between teachers' reports of closeness in their relationships with disruptive kindergartners and general TSE was not significant.

Several studies have also accumulated some evidence for the *alternative hypothesis* that teachers' self-efficacy beliefs may affect their perceptions of student–teacher relationships, although the results are a bit mixed (e.g., Chung, Marvin, & Churchill, 2005; Spilt et al., 2011; Yoon, 2002). Specifically, Mashburn, Hamre, Downer, and Pianta (2006) indicated that generally self-efficacious teachers were likely to experience closer, but not less conflictual, relationships with individual regular preschool students. When explicitly focusing on problematic students, Hamre et al. (2008) found that preschool teachers with generally low self-efficacy judgments at the classroom-level experienced higher degrees of conflict with individual students than would be expected based on their judgments of these students' problem behaviors. For this reason, we also aimed to explore an alternative model, in which teachers' self-efficacy in relation to individual students' externalizing behavior may feed back into their perceptions of the student–teacher relationship in confirming or disconfirming ways.

1.4. Present study

The present study aims to broaden the purview of primarily cross-sectional research on teachers' general sense of self-efficacy at the classroom-level by testing a theoretical model describing teachers' student–teacher relationship perceptions (i.e., closeness and conflict) as the processes through which individual students' externalizing behavior may contribute to teachers' subsequent student-specific self-efficacy beliefs across various domains of teaching and learning (i.e., instructional strategies, behavior management, student engagement, and emotional support). To our knowledge, this is one of the first empirical studies in which these pathways are investigated longitudinally. Guided by our interpersonal social-cognitive model, we first examined whether teachers' perceived level of closeness and conflict in the student–teacher relationship mediates the longitudinal association between individual students' externalizing behavior and student-specific TSE in various domains of teaching and learning (see Fig. 1a). Based on the current body of knowledge on externalizing student behavior, student–teacher relationships, and TSE, we expected teacher-perceived conflict to mediate the negative association between externalizing student behavior and student-specific TSE. In addition, due to mixed results in previous studies, we did not have clear expectations about the mediating role of closeness in the association between externalizing student behavior and student-specific TSE.

As an additional test of validity for the hypothesized model, we secondly tested an alternative model in which student-specific TSE mediates the association between externalizing behavior and teachers' perceptions of closeness and conflict in the student–teacher relationship (see Fig. 1b). Support for these alternative models would consist of evidence indicating that individual students' externalizing behavior leads to changes in teachers' sense of self-efficacy in relation to individual students across teaching domains, which, in turn, would lead to changes in their perceptions of conflict and closeness.

2. Method

2.1. Participants

The present study involved Dutch elementary school teachers and third- to sixth-grade students who participated in a two-wave longitudinal study on teachers' dealings with diversity. Sample selection proceeded in three phases. First, 350 randomly selected schools across the Netherlands were contacted by telephone and e-mail, after obtaining ethical approval from the Ethics

Review Board of the Faculty of Social and Behavioral Sciences, University of Amsterdam (project no. 2013-CDE-3188). Of these schools, 24 agreed to participate in the study. This sample of schools appeared to closely parallel the larger population of schools in the Netherlands in terms of geographical region, school composition, denomination, school size, and urbanicity (CBS Statline, 2015). Second, all teachers from participating schools received a letter about the study's purposes and an informed consent form, which was ultimately signed by 70 teachers (response rate = 70%). Information letters describing the nature and purposes of the research project were also sent to students' homes. Third, after parental consent was obtained, we randomly selected four boys and four girls from participating teachers' classrooms. The decision to randomly select eight students per classroom was based on guidelines from Snijders and Bosker (1999), who have shown that relatively high intra-class correlations may decrease the benefits of including whole classes in the sample. Moreover, including more students per class would make the data collection excessively burdensome for teachers and would compromise their willingness to participate.

The initial sample included 550 students. However, data were missing both cross-sectionally and longitudinally due to teacher and student non-response, long-term absence or sickness during data collection, or students moving to another school. Of all teachers assessed, 4.4% had missing data during the first wave and 10.6% during the second wave. Because cases with incomplete data for the main study variables in both waves were excluded, we decided to retain participants with incomplete data at only one time point. These missing data were treated using full information maximum likelihood estimation. This resulted in a final sample of 69 teachers in relation to 524 students.

Participating teachers were predominantly female (72.6%), having a mean age of 41.42 years (SD = 12.34, range = 23–63 years). Most teachers could be considered veteran teachers, with an average professional teaching experience of 16.67 years (SD = 11.87, range = 1.5–44 years). The average tenure in teachers' current job ranged from only half a year to 36 years (M = 10.64; SD = 9.09). Demographic data were not available for four teachers.

Students attended third (n = 53), fourth (n = 157), fifth (n = 165), and sixth (n = 149) grade. Their age ranged from 7.71 to 13.04 years (M = 10.57, SD = 1.11), and the gender composition was equally distributed, with 262 boys (50.0%) and 262 girls (50.0%). Based on parents' working status and educational level, the majority of students were considered to have an average to high socioeconomic status: both parents were employed in 76.8% of the families, 20.4% had only one employed parent, and 2.5% of the families had two unemployed parents. Additionally, teachers indicated that the majority of parents had finished senior vocational education (49.0%) or higher education (46.2%), leaving less than 5% to have finished only primary education.

2.2. Instruments

2.2.1. Teachers' perceptions of the student–teacher relationship

Teachers' perceptions of the quality of their relationships with each of the eight selected students were measured using a short form of the authorized translated Dutch version of the Student–Teacher Relationship Scale (STRS; Koomen, Verschueren, Van Schooten, Jak, & Pianta, 2012). This instrument estimates specific teacher-perceived student–teacher relationship patterns of Closeness, Conflict, and Dependency, using a 5-point Likert-type scale (1 = *definitely does not apply*; 5 = *definitely applies*). In the present study, we made use of the Closeness and Conflict dimensions of the STRS. The Closeness dimension (5 items) evaluates the extent to which teachers perceive the student–teacher relationship to be warm, open, and secure, with items such as "I share an affec-

tionate 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. 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 STRS were demonstrated to be adequate (Zee, Koomen, & van der Veen, 2013). In the present investigation, the alpha coefficients at the first and second waves of the measurement were satisfactory, with 0.85 and 0.86 for Closeness and 0.89 and 0.88 for Conflict, respectively.

2.2.2. Externalizing student behavior

Teachers completed the Dutch version of the Strengths and Difficulties Questionnaire (SDQ; Van Widenfelt, Goedhart, Treffers, & Goodman, 2003) to judge selected students' externalizing behaviors in the classroom. This behavioral screening questionnaire was originally intended to yield 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). For purposes of the present study, however, we only used the broader Externalizing Behavior domain proposed by Goodman, Lamping, and Ploubidis (2010), which combines the Conduct Problems (5 items) and Hyperactivity-Inattention (5 items) subscales. This more comprehensive domain has been shown to have more-adequate psychometric properties than the original SDQ factors in low-risk samples (Goodman et al., 2010; Van Leeuwen, Meerschaert, Bosmans, De Medts, & Braet, 2006). Teachers responded to the SDQ-items on a 5-point Likert scale, ranging from 1 (*not true*) to 5 (*certainly true*). Example items are "Restless, hyperactive, cannot sit still for long", "Good attention span, sees work through to the end", "Often has temper tantrums or hot tempers", and "Generally well behaved, usually does what adults request". The internal consistency of the Externalizing Subscale of the SDQ was satisfactory, α = 0.87. Moreover, several researchers (Goodman et al., 2010; Van Leeuwen et al., 2006) have provided sufficient evidence for the construct validity of the scale.

2.2.3. Domain- and student-specific teacher self-efficacy

Teachers rated their self-efficacy beliefs toward each of the eight selected students using the Student-Specific Teacher Self-Efficacy Scale (Zee et al., 2016b). This 24-item self-report instrument, adapted from Tschannen-Moran and Woolfolk Hoy's (2001) original measure, has been shown to represent teachers' capability beliefs in relation to individual students across four comprehensive domains of teaching and learning, including Instructional Strategies (IS), Student Engagement (SE), Behavior Management (BM), and Emotional Support (ES). Of these domains, the first two mainly focus on aspects of academic delivery. The IS subscale (6 items) captures the extent to which teachers feel capable of using various instructional methods that enable and enhance individual students' learning, including "How well can you respond to difficult questions from this student?" In addition, the SE domain (6 items) reflects items that tap into teachers' perceived ability to activate the interest of a particular student in his or her schoolwork. A sample item of this domain is "How much can you do to get this student to believe he/she can do well in schoolwork?" Next to these two subscales, the BM domain (5 items) encompasses teachers' judgments of their ability to organize and guide the behaviors of a particular student, with items such as "How much can you do to get this child to follow classroom rules?" Lastly, inspired by the CLASS-framework (for an overview, see Pianta, La Paro, & Hamre, 2008), the domain of ES (7 items) is related to how well teachers can establish caring relationships with students, acknowledge students' opinions and feelings, and create settings in which students feel free to explore and learn

(e.g., "How well can you establish a safe and secure environment for this student?").

All items were rated by teachers on a seven-point Likert-type scale, ranging from 1 (*nothing*) to 7 (*a great deal*). Support for the construct validity of the student-specific TSES has been provided by Zee et al. (2016b). The internal consistency scores of the student-specific TSES domains across the first and second waves were 0.89 and 0.92 for IS, 0.90 and 0.92 for SE, 0.94 and 0.94 for BM, and 0.85 and 0.86 for ES, respectively.

2.3. Procedure

Data were collected from the teachers in two waves (January–March and May–July), with a three-month interval. During each wave, teachers completed a two-part survey on demographic background factors, the quality of the student–teacher relationship, and their sense of student-specific self-efficacy for the eight selected students from their classroom. Teachers were asked to fill out the first, written part of the survey during two planned school visits. This part contained items regarding teachers' perceived quality of their relationships with the eight selected students and students' and teachers' background characteristics, which served as covariates in this study. Directly after the school visits, teachers received an e-mail invitation with a personal link to the second part of the survey that contained, among others, items regarding externalizing student behavior and the student-specific self-efficacy questionnaire about the eight selected students. Teachers were requested to return this digital survey within two weeks after the invitation was sent. To improve the participation rate, regular reminders were sent to non-responding teachers. Once all questionnaires were collected, we discarded the cover sheet of the written part of the survey (encompassing participants' names) and assigned all teachers a unique respondent number. This unique respondent number was used to match data from both waves and to ensure anonymity and confidentiality for all participating teachers.

2.4. Data analysis

Given that mediation, by definition, implies change over time, we specified a series of two-wave longitudinal structural equation models of mediation (see Fig. 2) in M*plus* 7.11 (Muthén & Muthén, 1998-2012). Although models with at least three time-points would essentially be required to establish a true indirect pathway across time, two-wave models have previously been recognized as a relatively valid method to test for mediation (Cole & Maxwell, 2003; Little, 2013). Specifically, similar to full-longitudinal models with three waves, two-wave mediation models rely on the assumptions that the causal parameters are constant over time (i.e., *stationarity*) and that the relationships among the predictors (*X*), mediators (*M*), and outcome variables (*Y*) are unchanging in terms of their variances and covariances (i.e., *equilibrium*; Cole & Maxwell, 2003; Little, 2013). Under these two assumptions, the hypothesized associations between the mediators at Wave 1 and the outcome variables at Wave 2 (mediation parameters *a* and *b* and the direct effect *c* in Fig. 2) can be expected to be equal to the same associations measured at later time-points, and estimates of the effects of *X* on *Y* through *M* in the two-wave model can be expected to be the same as in the three-wave model. Additionally, two-wave models allow the modeling of prior levels of *M* and *Y* to isolate the amount of change variance in these variables (Little, 2013). As such, these models can generally be considered superior to cross-sectional research on mediation, in which this change information is not an explicit part of the design. Notably, this technique also allowed us to control for potential shared-source bias caused by using teacher reports. By investigating unique longitudinal associations above and beyond autoregressive paths and within-time associations, we could prevent overestimation of the strength of associations due to shared source variance (cf. Doumen et al., 2008).

2.4.1. Modeling procedure

To ensure adequate statistical power, separate two-wave longitudinal mediation models were fitted for each of the relationship dimensions (i.e., closeness and conflict) in relation to each of the domains of student-specific TSE (i.e., instructional strategies, student engagement, behavior management, and emotional support), resulting in eight different models. In all models, the dependency among the sampled observations (students) within clusters (teachers)[1] was taken into account by employing the complex analysis option in M*plus*. Importantly, this feature handles both the nested data structure and the generally skewed nature of the student–teacher relationship dimensions by adjusting both the chi-squares and the standard errors of the estimated coefficients (Muthén & Muthén, 1998-2012).

Based on Cole and Maxwell's (2003) recommendations, all eight models were specified in three steps (see Fig. 2). First, we estimated path *a* in the regression of M_2 (student–teacher conflict or closeness at Wave 2) onto X_1 (individual students' externalizing behavior at Wave 1), controlling for the effects of M_1 and path *b* in the regression of Y_2 (student-specific TSE domain at Wave 2), after taking prior levels of Y_1 into account (Cole & Maxwell, 2003; Little, 2013). The product of paths *a* and *b* then offered an estimate of the mediation effect of *X* on *Y* via *M*. This first model pertained to the hypothesized full-mediation model depicted in Fig. 1a. Second, as an additional test of validity for the hypothesized model, we tested the alternative proposition that student-specific TSE has a mediational effect on the association between externalizing student behavior and teachers' student–teacher relationship perceptions (see Fig. 1b). Third, we performed follow-up tests to explore the possible existence of direct effects of individual students' externalizing behavior on the outcome variable of interest (i.e., domains of student-specific TSE or teacher-perceived closeness and conflict) over time. To this end, we estimated path *c* in the regression of Y_2 onto X_1. The statistical significance of this direct path would indicate that the longitudinal association between *X* and *Y* is only partially mediated by *M*.

After estimating all models, we employed the Monte Carlo simulation approach developed by MacKinnon et al. (2004; see also Preacher & Selig, 2012) to formally test the statistical significance of the mediation effects. This method involves directly spawning sample statistics based on the joint asymptotic distribution of the component statistics to obtain multiple estimates of the mediating pathway (Little, 2013). As such, the Monte Carlo method largely resembles other recommended approaches for testing the significance of the indirect effects, including bootstrap estimation (Preacher & Hayes, 2008). In line with our specific hypotheses regarding Conflict and no expectations regarding Closeness, we conducted one-tailed tests of significance for all Conflict models, corresponding to the use of 90% confidence intervals, and two-tailed tests of significance for the Closeness models, corresponding to 95% confidence intervals, based on 5000 simulated draws for the indirect effects. If the confidence interval around the point estimate of the indirect effect covers zero, this effect is considered non-significant.

2.4.2. Model goodness-of-fit

The overall fit of each of the specified models was gauged by using a number of absolute and relative fit indices. Absolute fit

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[1] In the present study, intraclass correlations at the teacher level ranged between 0.07 and 0.39.
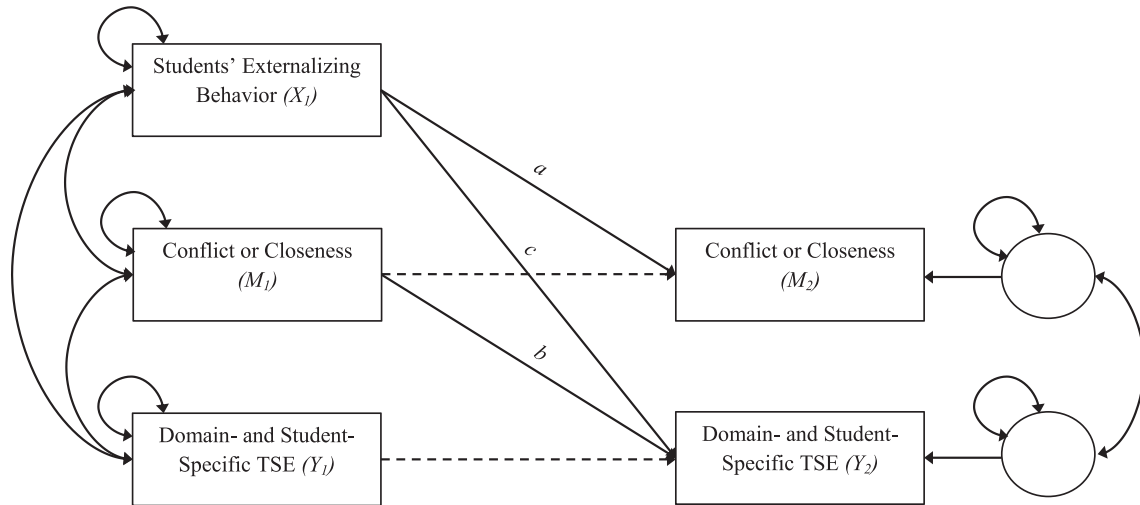
Fig. 2a. *The hypothesized longitudinal mediation model. Note.* X_1 = Predictor at Wave 1; M_1, M_2 = Mediators at Waves 1 and 2; Y_1, Y_2 = Outcome variables at Wave 1 and 2. Coefficients *a* and *b* reflect associations between predictor and mediators, and mediators and outcome measures, respectively. The product *ab* reflects the indirect effect of individual students' externalizing behavior on domains of student-specific self-efficacy, through teachers' perceptions of conflict and closeness. Coefficient *c* reflects the direct association between predictor (students' externalizing behavior) and outcome variables (domains of student-specific self-efficacy). Dashed lines represent autoregressive paths.
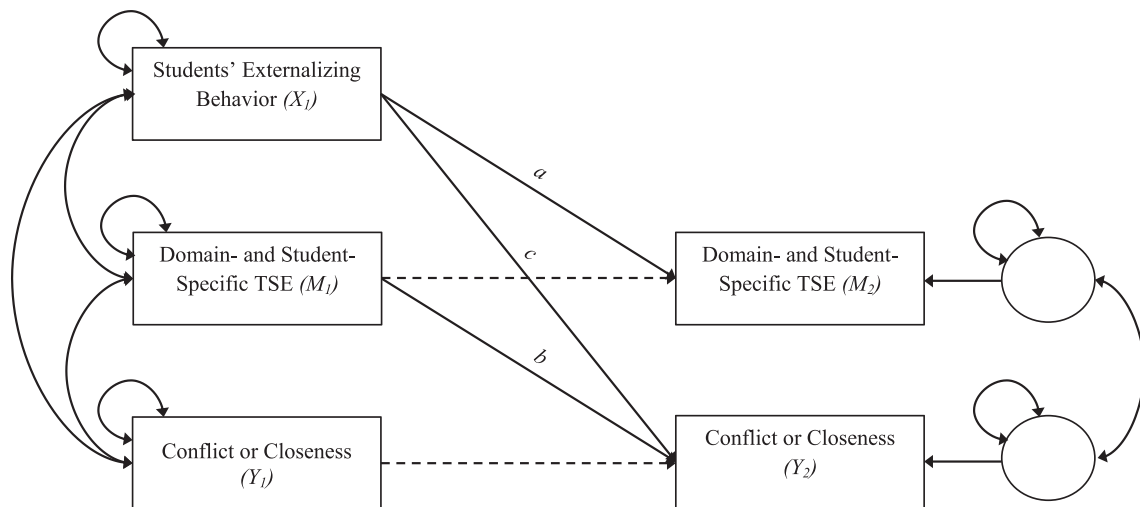

Fig. 2b. *The alternative longitudinal mediation model. Note.* X_1 = Predictor at Wave 1; M_1, M_2 = Mediators at Waves 1 and 2; Y_1, Y_2 = Outcome variables at Wave 1 and 2. Coefficients *a* and *b* reflect associations between predictor and mediators, and mediators and outcome measures, respectively. The product *ab* reflects the indirect effect of individual students' externalizing behavior on teachers' perceptions of conflict and closeness, through domains of student-specific self-efficacy. Coefficient *c* reflects the direct association between predictor (students' externalizing behavior) and outcome variables (teacher-perceived conflict and closeness). Dashed lines represent autoregressive paths.

was evaluated with the (mean-adjusted) model χ^2. Generally, non-significant χ^2 tests are considered indicative of good model fit, implying that the reproduced variance-covariance matrices are statistically equal to the observed matrices (Kline, 2011; Little, 2013). However, because even trivial discrepancies between the expected and the observed model may lead to the model's rejection (Chen, 2007), other fit indices were consulted as well. Among these were the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), and the comparative fit index (CFI). The RMSEA and SRMR are absolute fit indices of the degree of misfit in the model, with values ≤0.05 reflecting a close fit and ≤0.08 a satisfactory fit (Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2011). The CFI essentially reflects the ratio of misfit of the specified model, with values ≥0.95 indicating close fit and values ≥0.90 indicating acceptable fit (Bentler, 1992). Based on these model fit criteria, parameter

estimates, modification indices, and theoretical considerations, the most parsimonious and best-fitting models were chosen as final models.

3. Results

3.1. Data screening and descriptive statistics

Prior to main analysis, all variables used in this study were examined for conformity to multivariate regression assumptions. Means, standard deviations, and bivariate correlations (see Table 1) were inspected to determine whether the main constructs correlated in the expected directions. The correlation coefficients supported a priori expectations. Specifically, both teachers' Student-Specific Self-Efficacy and Student–Teacher Relationship judgments

Table 1
Descriptive statistics and correlations.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
Student behavior																	
1. Externalizing Behavior	1.00																
Student–teacher relationship																	
2. Closeness T1	−0.25**	1.00															
3. Conflict T1	0.69**	−0.38**	1.00														
4. Closeness T2	−0.23**	0.70**	−0.35**	1.00													
5. Conflict T2	0.64**	−0.25**	0.81**	−0.36**	1.00												
Student-specific TSE																	
6. TSE for IS T1	−0.46**	0.31**	−0.41**	0.34**	−0.35**	1.00											
7. TSE for BM T1	−0.74**	0.32**	−0.73**	0.33**	−0.66**	0.50**	1.00										
8. TSE for SE T1	−0.57**	0.34**	−0.48**	0.36**	−0.42**	0.87**	0.56**	1.00									
9. TSE for ES T1	−0.55**	0.46**	−0.51**	0.48**	−0.47**	0.80**	0.66**	0.81**	1.00								
10. TSE for IS T2	−0.39**	0.27**	−0.33**	0.38**	−0.32**	0.65**	0.34**	0.65**	0.57**	1.00							
11. TSE for BM T2	−0.60**	0.22**	−0.58**	0.28**	−0.59**	0.37**	0.66**	0.42**	0.50**	0.52**	1.00						
12. TSE for SE T2	−0.49**	0.27**	−0.39**	0.35*	−0.39**	0.62**	0.40**	0.70**	0.59**	0.90**	0.60**	1.00					
13. TSE for ES T2	−0.46**	0.38**	−0.39**	0.48**	−0.40**	0.56**	0.47**	0.59**	0.66**	0.82**	0.69**	0.83**	1.00				
Covariates																	
14. Teacher Gender	−0.08	0.08	−0.04	0.13**	−0.09*	−0.04	0.00	−0.04	0.01	0.02	0.06	−0.00	0.042	1.00			
15. Teaching Experience	−0.04	0.09*	−0.05	0.13**	−0.02	0.15**	0.11*	0.18**	0.17**	0.10	0.14**	0.13**	0.13**	−0.28**	1.00		
16. Student Gender	−0.26**	0.30**	−0.17**	0.30**	−0.19**	0.15**	0.27**	0.16**	0.26**	0.11*	0.22**	0.13**	0.20**	0.03	−0.02	1.00	
17. Student Age	−0.03	−0.15**	0.02	−0.14**	0.05	−0.18**	−0.05	−0.15**	−0.17**	−0.13**	−0.02	−0.13**	−0.11*	−0.28**	0.05	−0.07	1.00
Descriptive statistics																	
Mean	1.96	3.91	1.55	4.00	1.58	5.53	6.14	5.57	5.81	5.56	6.16	5.56	5.85	–	16.67	–	10.57
Standard Deviation	0.82	0.81	0.88	0.78	0.87	0.91	0.99	1.00	0.78	0.94	0.95	1.00	0.79	–	11.87	–	1.11

Note. Gender: 0 = boys/male teachers, 1 = girls/female teachers. TSE = Teachers' student-specific self-efficacy; IS = Instructional strategies; BM = Behavior management; SE = Student engagement; ES = Emotional support.
* $p < 0.05$.
** $p < 0.01$.

appeared to be relatively stable over time, with correlations between time-adjacent variables ranging from 0.65 (Student-Specific TSE for IS) to 0.81 (Conflict). Individual students' Externalizing Behavior was negatively associated with Closeness and positively associated with Conflict, both concurrently and predictively. Moreover, statistically significant negative correlations were documented between students' Externalizing Behavior and all domains of Student-Specific TSE, and the domain of BM in particular.

Associations between teacher-perceived Closeness and Conflict and Student-Specific TSE were also in the expected direction. Whereas Closeness was associated with a stronger sense of Self-Efficacy toward individual students in all teaching domains, Conflict was found to be negatively correlated with these capability beliefs. Notably, the highest correlations were revealed between student-specific TSE for BM and Conflict. Lastly, the correlations among the domains of Student-Specific TSE were all moderate to high, suggesting potential multicollinearity among the dimensions of teachers' Student-Specific Self-Efficacy. To circumvent issues related to multicollinearity, we estimated separate models for each of the Student-Specific TSE domains.

Students' Age and Gender and teachers' years of Teaching Experience and Gender served as the study's covariates. The correlations showed that teachers were likely to report higher levels of Closeness and Student-Specific TSE domains in relation to girls and younger students and higher levels of Conflict and Externalizing Behavior in relation to boys. Teaching Experience, lastly, was positively associated with both teacher-perceived Closeness and teachers' sense of Student-Specific TSE, irrespective of teaching domain.

3.2. Longitudinal mediation models

Model fit indices of the Hypothesized Mediation Models (step 1), Alternative Mediation Models (step 2), and, when relevant, Partial Mediation Models (step 3) per domain of Student-Specific TSE and dimension of the Student–Teacher Relationship are provided in Table 2. Based on the fit criteria of these models, parameter estimates, and theoretical considerations, we chose the most parsimonious and best-fitting models as final models. In all models, teachers' Gender and Teaching Experience and students' Gender and Age were entered first into the regression equation to accurately gauge the unique effect of the model's predictors and mediators on the outcome variables. Notably, though, none of these covariates appeared to be statistically significant, nor did these variables alter the direction and magnitude of the coefficients in

our models. For reasons of parsimony, we report the parameter estimates of the models without covariates.

3.2.1. Longitudinal mediation models for conflict

Fit indices and parameter estimates of the four models for teachers' perceptions of Conflict in the Student–Teacher Relationship (see Table 3) generally seemed to support our expectation that Conflict tends to mediate the negative association between Externalizing Student Behavior and student-specific TSE. Specifically, the generally smaller and non-significant chi-square test statistics for the Hypothesized Models of Student-Specific TSE for IS, SE, and ES suggested that these models were to be preferred over their Alternative equivalents. Moreover, the CFI values of these Hypothesized Models were all above 0.95, and the RMSEA and SRMR values were below Hu and Bentler's (1999) cutoff of 0.08, suggesting adequate fit.

After accounting for prior levels of teacher-perceived Conflict, individual students' Externalizing Behavior predicted more subsequent Conflict ($\beta = 0.18$, $p < 0.01$). In turn, these perceptions of Conflict appeared to predict lower prospective levels of Student-Specific TSE for IS ($\beta = -0.11$, $p < 0.05$), SE ($\beta = -0.10$, $p < 0.05$), and ES ($\beta = -0.11$, $p < 0.05$). Using the Monte Carlo simulation approach, the estimates of the indirect effects were -0.025 (Monte Carlo 90% CI [-0.045 to -0.004]) for Student-Specific TSE for IS, -0.023 (Monte Carlo 90% CI [-0.044 to -0.003]) for SE, and 0.021 (Monte Carlo 90% CI [0.002 – 0.041]) for ES. Because these confidence intervals did not cover zero, the indirect effect of Externalizing Student Behavior on the respective Student-Specific TSE domains, through Conflict, can be assumed to be statistically significant.

Contrary to our expectations, the Alternative Model with Student-Specific TSE for BM as the mediator produced better parameter estimates and yielded a slightly better fit than the Hypothesized Model for this TSE domain (see Table 2). To be precise, the chi-square values of this Alternative model were significantly lower than those of the Hypothesized Model, and the lower CFI, RMSEA, and SRMR values pointed to a better fit of the Alternative Model of the data. Nevertheless, follow-up tests suggested some further improvement in model fit by adding a direct path from students' Externalizing Behavior to teacher-perceived Conflict in the Student–Teacher Relationship. This suggests that the association between Externalizing Student Behavior and Conflict is partially mediated by Student-Specific TSE for BM.

Table 3 displays the standardized coefficients for this final Alternative Partial-Mediation Model. Teachers were found to

Table 2
Comparison of Fit Indices between Hypothesized and Alternative Models for Closeness and Conflict in the Student–Teacher Relationship.

	Conflict				Closeness			
	χ² (df)	RMSEA (90% CI)	CFI	SRMR	χ² (df)	RMSEA (90% CI)	CFI	SRMR
Student-specific TSE for IS								
Step 1: Hypothesized Model	3.34 (2)	0.036 (.000–0.101)	0.996	0.014	19.80 (2)**	0.130 (0.082–0.185)	0.942	0.052
Step 2: Alternative Model	20.62 (2)**	0.133 (0.085–0.188)	0.941	0.021	3.91 (2)	0.043 (0.000–0.106)	0.994	0.021
Student-specific TSE for BM								
Step 1: Hypothesized Model	11.50 (2)*	0.095 (0.047–0.152)	0.959	0.026	19.04 (2)**	0.127 (0.079–0.183)	0.931	0.037
Step 2: Alternative Model	8.70 (2)*	0.080 (0.031–0.138)	0.971	0.024	0.64 (2)	0.000 (0.000–0.062)	1.00	0.010
Step 3: Alternative Partial Mediation Model	3.05 (1)	0.063 (0.000–0.148)	0.991	0.019	–	–	–	–
Student-specific TSE for SE								
Step 1: Hypothesized Model	4.14 (2)	0.045 (0.000–0.108)	0.994	0.014	18.44 (2)*	0.125 (0.077–0.180)	0.950	0.043
Step 2: Alternative Model	16.89 (2)**	0.119 (.071–0.175)	0.955	0.019	0.66 (2)	0.000 (0.000–0.062)	1.00	0.009
Student-specific TSE for ES								
Step 1: Hypothesized Model	8.27 (2)*	0.077 (0.028–0.135)	0.980	0.023	35.89 (2)**	0.180 (0.131–0.234)	0.901	0.070
Step 2: Alternative Model	12.43 (2)*	0.100 (0.052–0.156)	0.967	0.018	4.33 (2)	0.047 (0.000–0.109)	0.993	0.024

Note.
* $p < 0.05$.
** $p < 0.01$.

Table 3
Final longitudinal models with mediating effects among disruptive student behavior, conflict, and student-specific self-efficacy.

	Model 1 Student-Specific TSE for IS		Model 2 Student-Specific TSE for BM		Model 3 Student-Specific TSE for SE		Model 4 Student-Specific TSE for ES	
	Conflict T2	TSE for IS T2	Conflict T2	TSE for BM T2	Conflict T2	TSE for SE T2	Conflict T2	TSE for ES T2
Direct effects								
Externalizing Student Behavior T1	0.18**	–	0.12*	–0.25**	0.18**	–	0.18**	–
Conflict T1	0.69**	–0.11*	0.61**	–	0.70**	–0.10*	0.70**	–0.11*
Student-Specific TSE for IS T1	–	0.61**	–	–	–	–	–	–
Student-Specific TSE for BM T1	–	–	–0.16**	0.49**	–	–	–	–
Student-Specific TSE for SE T1	–	–	–	–	–	0.67**	–	–
Student-Specific TSE for ES T1	–	–	–	–	–	–	–	0.61**
Indirect effects								
Through Conflict	–	–0.03*	–	–	–	–0.02*	–	0.02*
Through TSE for BM	–	–	0.04*	–	–	–	–	–
R^2 statistics	0.68**	0.44**	0.69**	0.48**	0.68**	0.52**	0.69**	0.47**

Note. Standardized regression coefficients (β) are reported. Point estimates of the indirect effects are unstandardized.
* $p < 0.05$.
** $p < 0.01$.

Table 4
Final longitudinal models with mediating effects among disruptive student behavior, closeness, and student-specific self-efficacy.

	Model 1 Student-Specific TSE for IS		Model 2 Student-Specific TSE for BM		Model 3 Student-Specific TSE for SE		Model 4 Student-Specific TSE for ES	
	Closeness T2	TSE for IS T2	Closeness T2	TSE for BM T2	Closeness T2	TSE for SE T2	Closeness T2	TSE for ES T2
Direct effects								
Externalizing Student Behavior T1	–	–0.13*	–	–0.25**	–	–0.14*	–	–0.15**
Closeness T1	0.65**	–	0.65**	–	0.64**	–	0.58**	–
Student-Specific TSE for IS T1	0.19**	0.60**	–	–	–	–	–	–
Student-Specific TSE for BM T1	–	–	0.16**	0.49**	–	–	–	–
Student-Specific TSE for SE T1	–	–	–	–	0.18**	0.64**	–	–
Student-Specific TSE for ES T1	–	–	–	–	–	–	0.26**	0.59**
Indirect effects								
Through TSE for IS	–0.02*	–	–	–	–	–	–	–
Through TSE for BM	–	–	–0.04*	–	–	–	–	–
Through TSE for SE	–	–	–	–	–0.03*	–	–	–
Through TSE for ES	–	–	–	–	–	–	–0.04*	–
R^2 statistics	0.52**	0.45**	0.52**	0.48**	0.52**	0.53**	0.54**	0.47**

Note. Standardized regression coefficients (β) are reported. Point estimates of the indirect effects are unstandardized.
* $p < 0.05$.
** $p < 0.01$.

experience lower TSE for BM ($\beta = -0.25$, $p < 0.01$) and more Conflict ($\beta = 0.12$, $p < 0.05$) in relation to individual students with Externalizing Behavior when controlling for initial levels of Student-Specific TSE. Additionally, teachers' Student-Specific capability beliefs for BM predicted less subsequent Conflict in the student–teacher relationship ($\beta = -0.16$, $p < 0.01$). The Monte Carlo confidence limits suggested that the indirect effect of Externalizing Student Behavior on Conflict through Student-Specific TSE for BM is statistically significant (point estimate = 0.044, Monte Carlo 90% CI [0.012 – 0.076]). Hence, Student-Specific TSE for BM partially mediated the association between Externalizing Student Behavior and teachers' perceptions of Conflict.

3.2.2. Longitudinal mediation models for closeness

Counter to Conflict, fit indices of the Closeness Models (see Table 2) provided clear evidence in favor of the alternative hypothesis, suggesting an indirect effect of Externalizing Student Behavior on Closeness through Student-Specific TSE across teaching domains. All chi-square values in these Alternative Models were significantly lower than those in the Hypothesized Models. Additionally, the RMSEA and SRMR values were all below the threshold of 0.05, and the CFI values reached 1.00, suggesting close fit to the data. Accordingly, the four Alternative Models could not be further

improved by adding direct paths between Externalizing Student Behavior and Closeness.

As displayed in Table 4, students' Externalizing Behavior, while controlling for initial levels of Student-Specific TSE across domains, was significantly related to subsequently lower levels of these capability beliefs in the domains of IS ($\beta = -0.13$, $p < 0.05$), BM ($\beta = -0.25$, $p < 0.001$), SE ($\beta = -0.14$, $p < 0.05$), and ES ($\beta = -0.15$, $p < 0.01$). In turn, higher levels of Closeness across time were predicted by teachers' Student-Specific Self-Efficacy beliefs for IS ($\beta = 0.19$, $p < 0.001$), BM ($\beta = 0.16$, $p < 0.001$), SE ($\beta = 0.18$, $p < 0.001$), and ES ($\beta = 0.26$, $p < 0.001$) after accounting for the stability in these positive relationship perceptions. The indirect effect of Externalizing Student Behavior on Closeness via Student-Specific TSE was also statistically significant. The point estimates were -0.024 (Monte Carlo 95% CI [-0.047 to -0.000]) for Student-Specific TSE for IS, -0.040 (Monte Carlo 95% CI [-0.067 to -0.013]) for BM, -0.026 (Monte Carlo 95% CI [-0.050 to -0.001]) for SE, and -0.039 (Monte Carlo 95% CI [-0.073 to -0.006]) for ES. Hence, these results suggest that Student-Specific TSE across teaching domains significantly mediates the association between Externalizing Student Behavior and teachers' perceptions of Closeness in the Student–Teacher Relationship.

4. Discussion

Following Bandura's (1997) social-cognitive principles, we aimed to explore a model within which teachers' perceptions of closeness and conflict in the student–teacher relationship acted as the intermediary mechanisms by which individual students' externalizing behavior may affect teachers' student-specific self-efficacy over time. Our approach departed from previous work on the sources of TSE in three essential ways. First, we adhered to and extended Bandura's original conceptualization of self-efficacy by embedding TSE in an interpersonal social-cognitive framework and measuring this complex construct both at the student- and domain-specific level. Second, rather than focusing on *direct* sources of TSE, we were explicitly interested in specifying mediating processes through which externalizing student behavior, as a source of self-efficacy information, may inform teachers' student-specific capability beliefs. Lastly, given that mediation essentially is a statement of change (Little, 2013), we used a longitudinal design to evaluate hypothesized and alternative models, controlling for prior levels of teachers' perceptions of student–teacher closeness and conflict, and judgments of student-specific TSE.

4.1. Linkages between externalizing behavior, conflict, and student-specific TSE

Generally, the results of our study provide a first indication that teachers' perceptions of relational conflict may function as the mediating or explaining mechanism whereby individual students' externalizing behavior leads to changes in student- and domain-specific TSE. To be specific, teachers seemed to experience slightly higher subsequent levels of conflict in relationships with individual students who initially displayed externalizing behavior in class, which, in turn, translated into lower levels of self-efficacy toward these students in various teaching domains. These associations held even after taking relatively stable prior levels of student–teacher conflict and student-specific teacher self-efficacy into account. Previous longitudinal studies with younger elementary school children (e.g., Mejia & Hoglund, 2016; Roorda et al., 2014) are largely in line with our findings, reporting cross-lagged paths between externalizing student behavior and teachers' perceptions of conflict that were similar in magnitude to the coefficients reported in the present study. However, no empirical studies have yet uncovered whether deleterious judgments of the student–teacher relationship quality may also serve as a *go-between*, passing on efficacy-relevant sources of information from individual students to the teacher. By unveiling these complex processes, our study gently corroborates and extends Bandura's (1997) longstanding belief that teachers not only have to manage various sources of self-efficacy during their interactions with students but also have to weigh and integrate this information via such common judgmental processes as their representations of relational conflict.

Interestingly, what our models seem to emphasize is that the role of teachers' percepts of conflict may vary across different domains of teaching and learning. More precisely, it appears that the associations between individual students' behavior and the more academic and affective domains of TSE are primarily mediated by teacher-perceived conflict. Through their perceptions of conflict, teachers may thus come to see the task of teaching, engaging, and emotionally supporting externalizing students as more problematic and may subsequently adjust their self-efficacy toward these students downward. This finding accords well with prior notions that, for most teachers, it is probably a major and time-consuming challenge simply to get externalizing students with whom they entertain conflictual relationships to learn and pay attention in class (e.g., Arbeau & Coplan, 2007; Yeo et al., 2008). The consequences of such challenges evidently are that

teachers, despite their sustained efforts, feel less effective in teaching and motivating externalizing students, thereby stimulating student–teacher interactions marked by even more anger, conflict, and externalizing student behavior over time (e.g., Spilt et al., 2011; Yeo et al., 2008). This is alarming, given that challenging students, especially those with conflictual student–teacher relationships, have been shown to be at risk for academic and social maladjustment (e.g., Hamre & Pianta, 2001; Roorda, Koomen, Spilt, & Oort, 2011).

Markedly, relational conflict did not appear to act as a mediator in the association between externalizing student behavior and student-specific TSE for behavior management. Rather, individual students who displayed externalizing behavior first seemed to hamper teachers' efforts to adequately manage these students' behavior in class which, in turn, resulted in higher levels of conflict in the student–teacher relationship. This relatively unexpected finding corroborates the idea that teaching tasks related to behavior management may be relatively distinct from other core responsibilities, such as providing the instructional, motivational, and emotional supports that generate learning gains (cf. Tschannen-Moran & Woolfolk Hoy, 2001). An explanation for this contrasting result that aligns with prior empirical work (e.g., Tsouloupas et al., 2010; Zee et al., 2016a) is that student-specific TSE for behavior management may serve as a strong and direct proxy for teachers' inability to deal with externalizing students' behavior. Thereby, these student-specific capability beliefs for behavior management may, more than any other domain of TSE, be more contiguous with students' externalizing behavior than perceptions of conflict. This is a notable outcome, given that students' externalizing behavior, among other child-level correlates, have been found to be most predictive of teachers' experiences of relational conflict and may even trigger vicious cycles of disharmonious relationships and escalating problem behaviors (e.g., Doumen et al., 2008; Hamre et al., 2008; Roorda et al., 2014).

Although the sequence of linkages described in the present study are only preliminary in nature and not fully consistent, they generally seem to suggest that teachers' student-specific capability beliefs are inextricably intertwined with their experiences of conflict in relationships with externalizing students. Helping teachers reflect on their actions and behaviors toward externalizing students and associated emotions and cognitions during daily interactions with these children may be a step forward to break negative relationship patterns between teachers and behaviorally at-risk elementary students (e.g., Spilt et al., 2012).

4.2. Linkages between externalizing behavior, closeness, and student-specific TSE

Initial evidence from this study corroborates the alternative premise that the association between individual students' externalizing behavior and teachers' perceptions of closeness in the relationship is mediated, or explained, by student-specific TSE. Specifically, teachers were consistently found to develop less-healthy self-efficacy beliefs toward externalizing students in *all* teaching domains, and consequently, to experience less closeness in the dyadic relationship with these students. The theoretical significance of these findings is substantial, given that there is a general shortage of evidence on how features of teachers may impact on the formation of their relationships with individual students (Pianta et al., 2003). Moreover, the observed differences between closeness and conflict in the sequence of associations appear to underscore that these constructs reflect two distinct qualities of the relationship, as opposed to falling along an underlying continuum.

We can only make a well-educated guess about why closeness and conflict play different roles in the development of teachers' sense of efficacy toward individual externalizing students. For

instance, sources of self-efficacy, including students' behaviors and characteristics, can be suggested to significantly vary in the degree of information they provide to teachers (cf., Bandura, 1997). It is probable that externalizing student behaviors are stronger and more reliable indicators of student–teacher conflict than closeness and may therefore contribute less information to teachers' representations of relational closeness and subsequent self-efficacy beliefs. Indeed, prior research (Hamre et al., 2008; Jerome et al., 2009) has indicated that conflict may depend more on stable student attributes (e.g., externalizing behavior), whereas closeness seems to be more proximal to dynamic teacher characteristics (e.g., student-specific TSE). This may explain why teachers' sense of student-specific self-efficacy may better account for the association between externalizing student behavior and closeness in the student–teacher relationship than closeness for the association between those challenging behaviors and student-specific TSE.

One other compelling proposition of Bandura (1997) is that the route to low-quality student–teacher relationships may go through teachers' perceived (social) *inefficacy* to develop affective relationships with students who bring stress to the teachers' job. Presumably, when teachers believe they cannot muster whatever it takes to support and deal with a disruptive child, they are apt to slacken their teaching efforts, avoid warm and open communications with the child, and settle for mediocre results or controlling actions. This presumption fits reasonably well with our findings that individual disruptive students may particularly hamper teachers' perceptions of relational closeness through their student-specific self-efficacy for emotional support and behavior management. Thus, teachers' lack of self-efficacy may ultimately come at the expense of trust, warmth and affect between teachers and children who display externalizing behavior.

Overall, the model evaluations in the current study seem to be in line with the social-cognitive and dynamic systems models advanced by Bandura (1997) and Pianta et al. (2003), suggesting that teachers' and students' personal characteristics and behaviors, as well as their daily interactions, may influence one another in a complex, reciprocal way. Future longitudinal research in which multiple methods and data sources are integrated is needed to spur further understanding of the complex relationships between externalizing student behavior, student–teacher conflict and closeness, and student- and domain-specific TSE.

4.3. Limitations

The methodology and design of the present investigation entailed several limitations that require further attention in future studies. First, analytic techniques such as longitudinal (multilevel) structural equation modeling are bound by several specific assumptions, including multicollinearity, stationarity, and equilibrium (Cole & Maxwell, 2003). Although we circumvented the issue of multicollinearity by evaluating separate models for the two student–teacher relationship qualities and the four domains of student-specific TSE, we cannot be sure whether the stationarity and equilibrium assumptions held. To be specific, with only two waves of data, it was virtually impossible to test whether the measured variables are invariant over time (i.e., *stationarity*) and whether the relationships among those variables are unchanging in terms of their variances and covariances (i.e., *equilibrium*; Cole & Maxwell, 2003; Little, 2013). Fortunately, however, several authors have argued that violating those two assumptions of mediation testing does not necessarily invalidate evidence of statistically significant mediation effects (Little, 2013). Nevertheless, future studies that incorporate analyses of stationarity and equilibrium over at least three time intervals could provide a stronger basis from which to discuss the complex mediating processes proposed in the present study.

Related to this, the lags for the measurement occasions might not have been optimal for detecting changes in teachers' judgments of student-specific self-efficacy and experiences of closeness and conflict. Empirical research from Roorda et al. (2014) has indicated, for instance, that students' externalizing behavior and teachers' relationship perceptions mainly affect one another during the first couple of months of the school year, when relationships between teachers and students have yet to be crystalized. Possibly, teachers' relationships with individual students and their student-specific self-efficacy beliefs in the present study were already relatively stabilized at the time of data collection (middle and end of the school year), making it more difficult to detect changes in teacher-perceived closeness and conflict and student-specific TSE. Therefore, longitudinal data on changes in teachers' perceptions of the student–teacher relationships and student-specific self-efficacy beliefs from the beginning to the end of the school year would probably provide a more fine-grained picture of the processes by which individual students' externalizing behavior may exert pressure to change teachers' self-efficacy beliefs toward these children in different domains of teaching and learning.

Third, we used teacher-reports in the present study, as we were particularly interested in teachers' own beliefs, relationship representations, and experiences with children who display externalizing behavior. Consequently, our findings might have been affected by shared source variance, resulting in an overestimation of the strength of associations in this study. We did attempt to control for this type of bias, however, by investigating unique longitudinal associations above and beyond autoregressive paths and within-time associations. As such, our analyses can be considered relatively stringent and conservative. Yet, given that there may be differences across raters of the student–teacher relationship quality (e.g., Hughes, 2011; Jerome et al., 2009), it may nevertheless be worthwhile for future researchers to investigate whether the results of this study also hold across different raters of the student–teacher relationship quality.

Fourth, the response rate among schools invited to participate was low. This may have biased the present study's results, since schools with self-efficacious teachers and an open mind to research were probably more likely to participate than schools with already full agendas or strenuous workloads. Nonetheless, a sincere attempt was made to increase the response rate among teachers within the participating schools by rewarding participation with school reports containing a conceptual overview of the study's results and gift vouchers. As a result, more than 70% of the teachers were prepared to participate, which may compensate for the low participation rate among schools.

Finally, this study concentrated only on teachers' perceptions of relational closeness and conflict as mediators of the association between externalizing student behavior and student-specific TSE. It is likely, however, that the mediation processes presented in the current study may be far more complex and that other cognitive or motivational factors or processes are responsible for changes in teachers' self-efficacy in relation to particular students with externalizing behavior. Examples of such factors may be teachers' beliefs about student control, their motivation to engage in high-quality interactions with the child, their (perceived) skill level, and their classroom goal orientations (cf. Cho & Shim, 2013; Deemer, 2004; Pianta et al., 2003; Tschannen-Moran et al., 1998). These and other potentially relevant factors and processes, measured either at a more general level or a dyadic level, may warrant consideration in future longitudinal studies.

4.4. Future directions

The present investigation is probably one of the first to shed empirical light on the ways in which individual students' external-

izing behavior, as a source of self-efficacy, may become informative to TSE across time. Given the limited body of research investigating such complex pathways, this study may provide several directions for educational research and practice. First, the present study's results seem to underscore the benefits of viewing TSE from a dyadic perspective. To date, most researchers have operationalized teachers' self-efficacy as a relatively stable, almost trait-like teacher characteristic. Yet, in line with prior theorizing (e.g., Bandura, 1997; Tschannen-Moran et al., 1998), our findings suggest that TSE is more likely a multifaceted phenomenon that fluctuates over teaching domains and individual students. This dyadic view of TSE may be particularly relevant for educational practitioners, as it may explain why teachers may feel, behave, and act differently in relation to students who display similar levels of externalizing behavior.

Second, our interpersonal social-cognitive model has emphasized the important multifaceted role of teachers' representations of relational closeness and conflict in the formation of their self-efficacy toward individual children. Consistent with Bandura's (1997) descriptions, such relationship representations are believed to function mainly outside teachers' conscious awareness and may become increasingly stable as teachers weigh and integrate various sources of efficacy-relevant information about a particular child over time. Hence, to advance understanding of the factors underlying the formation of TSE, future studies should not only consider *direct* sources of self-efficacy but also the mental processes that help teachers make sense of such sources (cf. Bandura, 1997; Morris et al., 2016).

Relatedly, data from this investigation provided initial support for the idea that teachers, through their poorer self-percepts of domain- and student-specific efficacy, are less capable of teaching and helping behaviorally externalizing students in ways that lead to closeness in the student–teacher relationship. This may be problematic, as a lack of closeness may further stymie teachers' personal investment in the student, block their flow of positive thoughts, and ultimately hamper the child's academic adjustment in class (Roorda et al., 2011). Helping teachers be aware of their behaviors and feelings toward individual students and reflect on their experiences may therefore be an important first step forward in the process of increasing both TSE and teachers' positive perceptions of the student–teacher relationship. To facilitate such a reflective process, the relationship-focused reflection program of Spilt et al. (2012) may be a helpful tool.

Acknowledgments

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