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Using relationship-focused reflection to improve teacher–child relationships and teachers' student-specific self-efficacy

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ABSTRACT

The present study evaluated whether LLInC (Leerkracht-Leerling Interactie Coaching in Dutch, or Teacher-Student Interaction Coaching), a teacher-based coaching-intervention, yielded improvements in dyadic affective teacher–child relationships in elementary school (Grades 2–6). Based on attachment theory, LLInC aims to foster more flexible and differentiated mental representations of teachers' relationships with individual children with whom they experience relationship difficulties. Using a quasi-experimental design, we compared an intervention group of teachers (n = 46 teachers and 92 children) receiving LLInC with a control group receiving no form of intervention (n = 32 teachers and 88 children). To investigate possible transfer effects, we asked teachers from the intervention group to report on their relationships and self-efficacy beliefs regarding two other children with whom they experienced relationship difficulties as well (n = 46 teachers and 81 children). Multilevel models were used to examine intervention effects on teachers' perceptions of relationship quality (i.e., Closeness, Conflict, Dependency), and teachers' student-specific self-efficacy beliefs for Behavior Management and Emotional Support. Teachers receiving LLInC reported short-term improvements in Closeness and self-efficacy beliefs for Emotional Support and decreases in Conflict as compared to control teachers. Similar improvements in Closeness and self-efficacy for Emotional Support were found for the intervention-transfer group as compared to control teachers. Also, teachers receiving LLInC had short-term and longer-term improvements in self-efficacy beliefs for Behavior Management as compared to control teachers. These improvements regarding Behavior Management were not found for the intervention-transfer group.

1. Introduction

Recent reviews (Roorda et al., 2017, 2020; Zee & Koomen, 2016) have shown that dyadic teacher–child relationship quality and teachers' self-efficacy beliefs are associated with children's school adjustment and teachers' functioning. More specifically, longitudinal studies have indicated that when teachers experience poor affective teacher–child relationships with children that are characterized by low closeness, high conflict, or high dependency, these children are more likely to be at risk for motivational, behavioral, and academic maladjustment (e.g., Bosman et al., 2018; Engels et al., 2016; Hamre & Pianta, 2001; Jerome et al., 2009). Teachers' perceptions of conflict, disrespect, and anger in dyadic teacher–child relationships may also relate to feelings of helplessness and stress in teachers (e.

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g., Corbin et al., 2019; Spilt & Koomen, 2009; Yoon, 2002). In other research, poor teacher self-efficacy beliefs have also been found to be negatively associated with children's school adjustment (e.g., Caprara et al., 2006; Chang, 2011), and with teachers' job satisfaction and commitment (e.g., Klassen & Chiu, 2010; Skaalvik & Skaalvik, 2010; Zee & Koomen, 2016).

The impact of low-quality teacher–child relationships and poor teacher self-efficacy can thus be detrimental both for children and teachers, and therefore, researchers have called for interventions that can break these negative relationship patterns (e.g., Hughes, 2012; Jerome et al., 2009) and improve teachers' self-efficacy beliefs (e.g., Klassen & Chiu, 2010; Woolfolk Hoy & Davis, 2006). One such method to improve dyadic teacher–child relationship quality and teachers' self-efficacy is LLInC (Leerkracht-Leerling Interactie Coaching in Dutch, or Teacher Student Interaction Coaching; Koomen & Spilt, 2015). LLInC was previously referred to as the Relationship-Focused Reflection Program (Spilt, Koomen, Thijs, & van der Leij, 2012). This intervention aims to stimulate teachers to reflect on their feelings, cognitions, and associated behaviors in interactions with individual children (e.g., Pianta, 1999; Spilt, Koomen, Thijs, & van der Leij, 2012). In the current study, we evaluated the effects of LLInC on teachers' relationship experiences with and self-efficacy toward children in elementary school. Theoretically, LLInC is based on an extended attachment perspective in which teachers' mental representations about relationships include affective components of teacher–child relationship quality and cognitive-behavioral components including teachers' self-efficacy beliefs. In what follows we discuss relationship-focused reflection as a tool to alter teachers' mental representations and describe empirical research into the effects of LLInC.

1.1. The role of mental representations in relationships

Teacher–child relationships are often examined from an extended attachment perspective. Extended attachment theory is based on parent–child attachment theory, which postulates that an affectional relationship between a parent and a child contributes to children's emotional security. The experiences gained in these relationships become internalized into mental representational models of parents and children (Bowlby, 1982; Bretherton, 1990). Following attachment theory focusing on parent–child relationships, it is believed that dyadic teacher–child relationships are also shaped by each individual's mental representation of this relationship, which in turn guides behavior and expectations in the relationship (Pianta et al., 2003). Mental representations of teachers and children are believed to be formed by previous experiences with attachment figures and include feelings of the self, the other, and relationships with others, to maintain security. Accordingly, teachers' mental representations are considered to be formed by previous experiences in relationships and contain, besides overall feelings and thoughts about themselves, beliefs, feelings, and expectations about themselves as teachers, about interacting with all children in the classroom and interacting with individual children (Pianta, 1999).

Experiences in relationships are thought to be internalized at different levels of generalization (Mikulincer & Shaver, 2003; Sibley & Overall, 2008). At the lowest level, mental representations can be *relationship-specific* for relationships with specific persons. For example, teachers are believed to develop relationship-specific models for individual children in their classrooms (Pianta et al., 2003; Spilt et al., 2011). Relationship-specific models reflect teachers' images of an individual child, and specific feelings and self-efficacy beliefs that accompany these images of the child (Zee et al., 2017). These models also include teachers' affective feelings about interacting with that individual child. At a higher level, mental representations of relationships are *domain-specific* (Sibley & Overall, 2008). Such models consist of sets of feelings and cognitions that refer to a particular domain of relationships. More specifically, teachers develop mental representations of their relationships with children, which comprise generalized expectations and beliefs about themselves as a teacher, about how children relate to a teacher, and self-efficacy beliefs about their role as a teacher (Pianta et al., 2003; Spilt et al., 2011). This domain-specific representational model also includes teachers' feelings about and their capability to interact with all children in the classroom (O'Connor, 2008). At the highest level, mental representations can be considered *global.* These models consist of sets of feelings, beliefs, and cognitions that are similar across various relationship contexts. They are referred to as a global interpersonal orientation about relationships (Spilt et al., 2011). For instance, teachers may develop mental representational models that are similar for them across different roles (e.g., as a teacher, romantic partner, child, and possibly as a parent). It is believed that these three hierarchically organized mental representations function alongside each other, with the global relationship representation as default or automatic representation. The more specific representations (i.e., the domain-specific and relationship-specific representations) may be activated depending on context and relationships. These specific representations are believed to be more useful and to contain more accurate attachment information than global representations (e.g., Collins & Read, 1994; Overall et al., 2003).

Attachment-based research has primarily focused on relationship-specific mental representations and dyadic teacher–child relationship quality (e.g., Hamre & Pianta, 2001), thus emphasizing a teacher's mental representational model of a specific child from their classroom. The affective quality of these dyadic teacher–child relationships is usually qualified using teacher reports of three attachment-related dimensions: conflict, dependency, and closeness (Pianta, 1999; Spilt et al., 2011). Representational models about primarily negative relationships are generally marked by high levels of conflict or dependency (Pianta, 1999). *Conflict* refers to negativity, anger, and discordance in the relationship. *Dependency* refers to a teacher's interpretation of how a child can be overly reliant on the teacher as a source of support, even when this is not necessary. Although this dimension has received less attention in prior research, recent studies have shown that it is important to consider dependency as a unique relationship dimension affecting children's functioning in elementary school (Bosman et al., 2018; Roorda et al., 2020; Zee et al., 2013). Representational models that are mostly positive reflect relationships that are generally *close*: there is warmth, trust, and open communication between a teacher and a child (Pianta, 1999; Spilt et al., 2011).

From a cognitive-behavioral perspective, mental representational models of relationships include not only affective dimensions but also self-efficacy beliefs. In parent–child relationships, it is believed that self-efficacy beliefs are part of domain-specific representational models that guide relationships with children (e.g., Grusec et al., 1994). Grusec et al. suggested that individuals have cognitive

structures that represent regularities in their representational models, including beliefs about relating to others. They even found that parents' self-efficacy beliefs were positively related to a secure attachment style.

These notions and findings of parents' self-efficacy beliefs may also apply to teachers' representational models of relationships. Teachers' self-efficacy on a classroom level refers to beliefs or cognitions about their confidence in their ability to organize and execute daily teaching activities in their classroom (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2001). Such beliefs are considered important for teachers' abilities to continuously motivate, manage, and emotionally support all children in their classroom (Zee & Koomen, 2016). Classroom-level teacher self-efficacy beliefs are considered relatively stable character traits that develop through multiple experiences and cognitions about interacting with children (Tschannen-Moran & Woolfolk Hoy, 2001; Zee et al., 2016). In that sense, teachers' domain-specific mental representations of relationships may either include or result in certain classroom-level self-efficacy beliefs.

Recently, research on self-efficacy has taken a more interpersonal focus, which is better aligned to teachers' relationship-specific mental representational models instead of teachers' domain-specific representational models. Research has indicated that teachers' self-efficacy beliefs vary across individual children in their classroom (Zee et al., 2016). This is referred to as teachers' student-specific self-efficacy. Teachers seem to construct a unique sense of self-efficacy for different children in their classrooms. For instance, when a child is displaying disruptive behavior or undermines the authority of the teacher, the teacher may experience more difficulty in dealing with this child's behavior as. compared to dealing with other children in the classroom (see also Zee et al., 2017). Teachers may feel, despite their efforts, less effective in teaching and motivating this child (Zee et al., 2017). Research with this interpersonal focus on self-efficacy beliefs relates to the idea that teachers' student-specific self-efficacy may be part of the relationship-specific mental representational model. In the current study, we predominantly focused on improving teachers' student-specific self-efficacy beliefs by creating more flexible relationship-specific mental models.

1.2. Creating more flexible mental representational models

Teachers are believed to interact in stable patterns based on existing beliefs. Teachers' relationship-specific mental representations can act as self-fulfilling prophecies over time, resulting in fixed interaction patterns and self-reinforcing self-efficacy beliefs (Pianta, 1999). Consequently, teachers may be more focused on behavior similar to the beliefs they already have (cf., Bandura, 1997). For instance, when teachers feel that interactions with a child are mainly negative, teachers will be more focused on negative aspects of the child's behavior instead of having a more open mindset about the child. Stimulating more flexible and differentiated mental representations in teachers is suggested as a way to improve relationship patterns (Pianta, 1999; Spilt, Koomen, Thijs, & van der Leij, 2012). With a more flexible mental representation of the relationship, teachers may interpret interaction patterns in a variety of ways (e.g., positive, neutral, and negative; Spilt, Koomen, Thijs, & van der Leij, 2012). In that case, teachers may believe that both their behavior and the child's behavior contribute to their mutual relationship, whereas with a more constrained view of the relationship, they only blame negative relationship patterns on the child's relationship contribution and not on their interaction style toward the child. When teachers' mental representations become more flexible and differentiated, it is expected that this could promote more positive and secure relationship patterns (Pianta, 1999; Spilt & Koomen, 2009).

Creating more flexible and differentiated mental representational models of relationships may be accomplished via teachers' reflection about the individual relationship with a child (Pianta, 1999). Reflection, or reflective functioning, is often referred to as the capacity to think about desires, emotions, and ideas in an attempt to make sense of behavior that was displayed in the past and the present (Fonagy et al., 1991). In parent–child relationships, reflection was associated with the parents' ability to read their own intentions and mental states, as well as the intentions and mental states of the child (Fonagy et al., 1991). Teachers, similar to parents, often seem unaware of their mental representational model of the relationship, and thus reflection can be an important tool to create awareness of the feelings, beliefs, and cognitions that they have about a child. In empirical research on parent–child attachment, parents' ability to reflect on the relationship with their child has been found to result in more secure relationships (Slade et al., 2005; Suchman et al., 2008). Based on the findings in parent–child research, relationship-focused reflection could also alter teachers' mental representations of relationships (Suchman et al., 2008). An altered mental representation of a specific relationship may consist of improvements in both affective (i.e., teacher–child relationship quality) and cognitive-behavioral components (i.e., teachers' student-specific self-efficacy beliefs) of the relationship. It is also conceivable that reflection leads to declines in perceived relationship quality as teachers become more aware of their own (negative) emotions and interactions with children (Spilt, Koomen, Thijs, & van der Leij, 2012). This increased awareness of negative aspects of the relationship could possibly lead to acknowledging relational problems during reflections and becoming more motivated to improve relationships with specific children. However, based on ample research in parent–child relationships, it is expected that teachers' mental representations of relationships improve after relationship-focused reflection (Camoirano, 2017; Stacks et al., 2014; Suchman et al., 2008).

Two domains of student-specific self-efficacy beliefs may be especially important when reflecting on self-reinforcing self-efficacy beliefs: (a) self-efficacy beliefs for behavior management (i.e., teachers' perceptions of their ability to guide behaviors of individual children) and (b) emotional support (i.e., teachers' perceptions of their ability to establish caring relationships with an individual child and to create a setting in which this child can explore; Zee et al., 2016). The domains of behavior management and emotional support are concerned with how well teachers interact with and relate to individual children. In contrast, other domains of student-specific self-efficacy, such as self-efficacy beliefs for instructional strategies, are aimed at teachers' perceptions of their ability to use various instructional methods (Zee et al., 2016). Teachers' mental representations mainly comprise beliefs, attitudes, and thoughts of themselves in relationships with others. Therefore, teachers' self-efficacy for behavior management and emotional support especially may be activated by reflecting on relationships with specific children.

1.3. LLInC

Following the ideas of Pianta (1999), Koomen and Spilt (2015) developed the relationship-focused reflection program (RFRP), which is now known as LLInC (Leerkracht-Leerling Interactie Coaching in Dutch, or Teacher Student Interaction Coaching). LLInC is aimed at altering teachers' mental representations about their relationship with individual children, with the goal of enhancing dyadic teacher–child relationship quality and teachers' self-efficacy beliefs. During two series consisting of two sessions, a consultant (i.e., a school psychologist) guides a teacher in becoming aware of their mental representational models about the relationship with two different children from their classroom. Subsequently, the consultant encourages the teacher to reflect on thoughts, actions, and feelings about these children.

Spilt, Koomen, Thijs, and van der Leij (2012) evaluated whether LLInC yielded changes in dyadic relationships between teachers and behaviorally at-risk kindergartners. They compared a group of teacher–child dyads who received LLInC with a group of teacher–child dyads who received an Interpersonal Skills Training (IST). Whereas LLInC tries to promote teacher–child relationships by creating more flexible mental representations of relationships in teachers, IST aims to improve teachers' behaviors in interactions with individual children. This comparison was made to investigate whether teachers' reflection on internalized beliefs, feelings, and attitudes resulted in better teacher–child relationships as compared to an intervention that was directed at changing teachers' behavior. Using independent observations, Spilt, Koomen, Thijs, and van der Leij (2012) found that receiving LLInC resulted in increased sensitive behavior in teachers (i.e., providing teacher support tailored to a child's academic, social, and emotional needs), whereas this was not found for IST. Mixed results were found for teachers' perceptions of affective teacher–child relationship quality. Only half of the teachers receiving LLInC had increased levels of closeness regarding the at-risk kindergartners. The other half of the teachers either had a high, stable level of closeness or a slight decrease after LLInC, indicating that a ceiling effect could have affected the results. For teacher–child conflict, a decrease was only found in teachers with high domain-specific self-efficacy beliefs before the start of LLInC, whereas for IST a decrease in conflict was found for the entire group. No prior research investigated the effects of LLInC on dimensions of teachers' student-specific self-efficacy beliefs.

The mixed results regarding perceived teacher–child relationship quality could be explained by how teacher–child dyads were selected. In Spilt, Koomen, Thijs, and van der Leij (2012), children were selected based on the degree of disruptive behavior. Although relationship problems and children's disruptive behaviors are correlated, it seems unlikely that all relationships with children showing disruptive behavior are of low quality (cf. Bosman et al., 2019). Indeed, many children had less teacher–child conflict than was predicted by the degree of disruptive behavior (cf. Hamre et al., 2008). Therefore, it may be relevant to select teacher–child dyads based on teachers' judgments of relational difficulties with individual children.

1.4. Present study

Teacher–child relationships matter for children's functioning during the elementary school years. Although most research has focused on teacher–child relationship quality in kindergarten, many studies have indicated that children's relationships with teachers remain important throughout the elementary school years (Bosman et al., 2018; Roorda et al., 2011; Spilt, Koomen, Thijs, & van der Leij, 2012). In middle childhood, typically between Grade 2 and Grade 6, children develop the necessary skills for building social relationships, become more sensitive to their environments, develop a personal identity, and face more demanding academic tasks in school (Mah & Ford-Jones, 2012). Researchers have argued that high-quality teacher–child relationships may play an important role in helping children navigate this developmental period (Malecki & Demaray, 2006; Zee et al., 2013). Positive teacher–child relationships have been associated concurrently and prospectively with a variety of important school outcomes, such as behavioral adaptions, motivational beliefs, and school adjustment (Roorda et al., 2017, 2011). These positive relationships allow children to develop the necessary skills to explore the school environment and feel good in school (Hamre & Pianta, 2001).

High levels of teacher–child closeness are associated with better school liking, cognitive skills, and task behavior (Birch & Ladd, 1997; Buyse et al., 2009; Howes, 2000; Palermo et al., 2007; Peisner-Feinberg et al., 2001; Thijs et al., 2008). Also, negative qualities of teacher–child relationships have demonstrably adverse consequences on children's functioning. High levels of conflict are associated with hyperactivity, aggressive behaviors, more negative school attitudes, less school liking, lower motivation, and less academic success (Birch & Ladd, 1997, 1998; Bosman et al., 2018; Hamre & Pianta, 2001; Palermo et al., 2007; Thijs et al., 2008). In addition, high levels of dependency are associated with less academic readiness and self-directed behavior in the initial phase of school, as well as less academic success and lower motivation in upper elementary school (Birch & Ladd, 1997, 1998; Bosman et al., 2018; Hamre & Pianta, 2001; Palermo et al., 2007; Thijs et al., 2008).

Given this vital role of teacher–child relationships in children's functioning in elementary school, it is important to investigate interventions specifically aimed at relationships between teachers and children. However, most available interventions are not specifically focused on improving teacher–child relationship quality but rather are focused on changing children's behavior (Sutherland et al., 2018) or teachers' relationships with the entire classroom (Cappella et al., 2012). To date, only a few studies have examined the effects of interventions that aim to improve dyadic teacher–child relationships (Driscoll & Pianta, 2010; Vancraeyveldt et al., 2015). These earlier interventions mainly concentrated on altering teachers' behaviors in relationships with children. However, Pianta (1999) argued that rather than immediately focusing on changing teachers' practices, interventions could better start with influencing teachers' mental representational models of relationships instead. One such program that does stimulate teachers to reflect on mental representations of relationships is LLInC. However, LLInC was only evaluated in kindergarten and not in other elementary school grades. Given the importance of high quality teacher–child relationships during middle childhood, it is important to also evaluate LLInC in other elementary school grades.

Graphical Display of the Study Design

Fig. 1. Graphical display of the study design.

Therefore, in the current study, we examined whether LLInC was successful in enhancing affective teacher–child relationship quality and teachers' student-specific self-efficacy in Grade 2 through Grade 6. We included an intervention group of teachers receiving LLInC and a control group of teachers who did not receive any form of intervention. When teachers in the intervention group receive LLInC targeted at *two* individual children, teachers may realize that interactions with an individual child are also based on more general expectations of what they believe to be important as a teacher (Sibley & Overall, 2008). This implies that teachers' domain-specific mental representations, comprising more general beliefs and expectations about themselves as a teacher and about relationships with other children in the classroom, could also be activated instead of only relationship-specific mental representations, comprising the teacher's beliefs, feelings, and attitudes about a specific relationship with an individual child. Consequently, the intervention effects of self-efficacy beliefs and perceptions of relationship quality may be transferred to relationships with other children in the classroom. To investigate such transfer effects of LLInC, we asked teachers in the intervention group to also report on their affective relationships and self-efficacy beliefs about two other children from their classroom with whom they experienced difficulties. We refer to these teacher–child dyads as intervention-transfer dyads.

We addressed the following research questions: (a) Does LLInC influence teachers' perceptions of teacher–child relationship quality (i.e., conflict, closeness, dependency)?, (b) Does LLInC influence teachers' feelings of student-specific self-efficacy (i.e., behavioral management, emotional support) with children directly targeted during LLInC? and (c) Does LLInC influence teachers' perceptions of relationship quality and self-efficacy beliefs about children in the classroom that were not directly targeted during LLInC? Based on the theoretical framework and previous research, we expected that LLInC would result in more positive perceptions of teacher–child relationship quality and increased student-specific self-efficacy beliefs of teachers. Furthermore, we expected that the effects of LLInC would also transfer to teachers' perceptions of relationships with other children from their classroom with whom they experienced relational difficulties.

2. Method

2.1. Design and selection

The present study was conducted in the school years 2015–2016 and 2017–2018 in elementary schools across the Netherlands. Data for the intervention group and the control group were separately collected. For both the intervention group and the control group, a substantial list of schools, randomly selected from a website with all schools in the Netherlands, was contacted for the study. Also, messages in professional journals for teachers and on social media invited teachers and schools to contact the researchers for participation in the intervention group. The large majority of teachers and school principals contacted the first author via social media messages. School principals selected teachers from their schools who were teaching in Grades 2–6 for at least two days per week in the same classroom. As a result, not all teachers from all participating schools were included in the study. Data for the control group were collected as part of another longitudinal study focusing on teacher–child relationship quality in elementary school. The data collection was identical to that of the intervention group. Data for the control group and intervention group were collected in different schools. We ensured that measurements of the control group were administered at the same time as compared to the measurements for the intervention group. Data were collected at three time points during the school year: pretest data were collected in Fall, post-test in Winter, and follow-up in Spring. There were two months in between each school visit for the intervention and control groups. Teachers in the intervention group received LLInC after the pretest. Teachers started with LLInC two to three weeks after the first school visit depending on their availability. LLInC was scheduled for four consecutive weeks. Two to three weeks after ending LLInC, and exactly two months after the pretest, the posttest was scheduled. This was done to ensure exactly two months between measurements for both the intervention and control groups. A graphical display of the design is illustrated in Fig. 1.

Each participating teacher selected four children from their classroom with whom they experienced difficulties in the relationship. Teachers received examples for clarification of relationship problems, such as teachers experiencing many conflicts, low levels of warmth, or problems getting through to the child. For teachers in the intervention group, two of the four children were randomly selected by the researchers. These two teacher–child dyads were subjects of LLInC (i.e., the intervention group). The other two teacher–child dyads functioned as intervention-transfer condition: teachers received LLInC, but they did not reflect on the dyadic relationship with these children (i.e., the intervention-transfer group). The teachers in the intervention-transfer group were thus the same teachers as in the intervention group. A third group consisted of teachers who did not receive any form of intervention; however, these teachers still reported on their relationships with the four selected children (i.e., the control group). This resulted in three separate teacher–child groups, consisting of (a) intervention, (b) intervention-transfer, and (c) control groups.

The intervention group consisted of 46 teachers and 92 children (i.e., 92 teacher–child dyads). The intervention-transfer group consisted of the same 46 teachers and 81 other children from their classrooms (i.e., 81 teacher–child dyads). The control group consisted of 32 teachers and 88 children (i.e., 88 teacher–child dyads). The numbers of selected children in the intervention-transfer group, but especially in the control group, were somewhat smaller than expected based on the number of teachers participating. Reasons for this included that some teachers found it difficult to select four children with whom they experienced difficulties in the relationship and were therefore not willing to select a fourth child from their classrooms ($n = 3$ teachers). In addition, for some selected children (predominantly in the control group), parents were not willing to sign an informed consent for participation in the study ($n =$ 48 children). Therefore, teachers could not report about these children. The most common reason for parents not signing the informed consent form was the lack of an intervention for the teacher of their child. When informed consent was not signed, we did not ask teachers to select another child as this could have led to the selection of children with whom they did not experience difficulties in the relationship.

2.2. Participants

A total of 45 elementary schools participated in the present study. The sample included children in Grades 2–6 ($N = 261$) and their teachers ($N = 78$; see also Table 1). Participating teachers were on average 38.9 years of age ($SD = 12.0$, ranging from 21 to 65 years) and had an average of 13.2 years of teaching experience ($SD = 10.2$, ranging from 0 to 40 years). Most teachers were female (78.2%). Children (63.6% boys) were in Grade 2 ($n = 7$), Grade 3 ($n = 42$), Grade 4 ($n = 62$), Grade 5 ($n = 66$), and Grade 6 ($n = 84$), respectively. Children were on average 9.86 years of age ($SD = 1.30$, ranging from 7 to 13 years). Based on both parents' country of origin, 41% of the children had at least one parent with an ethnic minority background. There were no significant differences between groups for teacher demographic variables and child demographic variables (see Table 1), except for children's age. Children in the control group appeared to be somewhat older than children in the intervention group ($b = -0.50$, $p < .01$) and the intervention-transfer group ($b = -0.43$, $p = .03$; see Table 1).

2.3. Procedure

Human subjects' approval was granted from the Ethics Review Board of the Faculty of Social and Behavioral Sciences of the University of Amsterdam (project 2017-CDE-8653). Teachers and school directors received an information letter and were asked to sign an informed consent form. Similarly, parents of selected children received an information letter and were asked for consent to allow their child to participate in the current study. After receiving all consent forms, data were collected from the teachers. During planned school visits at pretest, posttest, and follow-up, teachers were asked to fill out an online questionnaire about their relationships with and self-efficacy toward the four selected children from their classrooms. Completing the teacher-questionnaire required approximately 30 minutes.

Depending on the teachers' time schedules, teachers from the intervention group started with LLInC either one or two weeks after the first planned measurement. A trained consultant visited the teacher's school after school hours. At the start of the first session, teachers were informed by the consultant about which of the four selected children the intervention was focused on (i.e., two sessions about one child, and the other two sessions about a second child). After the last school visit (follow-up), all participating teachers received a voucher of €20 and were informed about the findings of the study.

2.3.1. LLInC

LLInC (Koomen & Spilt, 2015) consisted of four sessions. The first two sessions were about teachers' relationship with one individual child, and the third and fourth sessions were focused on another individual child. During the first (and third) session of LLInC, a semi-structured interview consisting of 12 questions about the teacher–child relationship took place (Teacher Relationship Interview, TRI; Koomen & Lont, 2004; Pianta, 1999). These interview sessions ranged from 30 to 45 minutes. Teachers were interviewed about recent specific interaction experiences with the child in question and accompanying feelings that they had during these interactions. By talking about various recent experiences and feelings in the relationship with the child, reflection was already stimulated. After this first session, the consultant labeled the teacher's narratives of the relationship in more general, scientifically substantiated terms. The TRI gives insight into four aspects of the teacher's beliefs about interacting with the child, including the teacher's self-efficacy toward an individual child (i.e., sensitivity of discipline, secure base, perspective-taking, intentionality) and four aspects of the teacher's feelings about the child (i.e., feelings of helplessness, negative affect, positive affect, and neutralizing of negative affect). These aspects were coded by the consultant immediately after the interview was conducted (Spilt & Koomen, 2009). All sessions were audio-recorded so that the consultant was able to listen carefully to the teacher's answers. The eight different aspects of the relationship were then depicted in a relationship profile consisting of the strengths and weaknesses of the separate constructs (see Figure A1).

During the second (and fourth) session, this relationship profile was used extensively. These sessions were 40–60 minutes in length. The consultant stimulated the teacher to reflect on dissonances between theory and narrated practices, on feelings or affect toward the individual child, on the connection between teaching practices and feelings, and on ways in which improvement could be achieved. During these sessions, the consultant started by explaining what each construct of the relationship profile means. The consultant additionally explained why the teacher had a high, low, or medium-level score for each construct by relating these scores to examples

Table 1
Participant demographics.

			Intervention group	Intervention-Transfer group	Control group	Total
Teachers	*N*		46		32	78
	Gender	Female	36 (78.3%)		24 (75.0%)	60 (76.9%)
		Male	10 (21.7%)		5 (15.6%)	15 (19.2%)
	Working Experience	Mean (SD)	13.76 (11.27)		11.43 (7.49)	13.2 (10.2)
Children	*N*		92	81	88	261
	Gender	Female	29 (31.5%)	32 (39.5%)	34 (38.6%)	95 (36.4%)
		Male	63 (68.5%)	49 (60.5%)	54 (61.4%)	166 (63.6%)
	Age at entry	Mean (SD)	9.67 (1.21)	9.74 (1.41)	10.17 (1.25)	9.86 (1.30)
	Ethnicity	Majority	60 (65.2%)	51 (63%)	43 (48.9%)	154 (59%)
		Minority	32 (34.8%)	30 (37%)	45 (51.5%)	107 (41%)

of teacher–child interactions that were discussed during the interview session. Next, the consultant explained for each construct why other teachers may score lower or higher on certain constructs. For example, the consultant could explain that the level of Secure Base is lower when a teacher does not even respond to emotional cues of the child, whereas the level of Secure Base would be higher when a teacher explains that he or she helps the child sufficiently to cope with emotional stressors. With all positively stated constructs, such as Secure Base, the consultant always started by giving an example of a fictive teacher that scored lower, whereas for negatively stated constructs, such as Helplessness, an example was given about a teacher that scored higher. This was done to give the teacher a better feeling about what the teacher was doing. After that, the consultant always gave an example of a fictive teacher that already was scoring a bit higher (or lower, based on the construct) than the teacher. This was done to motivate the teacher to think about possibilities to change their behaviors toward the child. Next, the teacher was invited to react to the consultant's interpretation of each of the constructs.

In connection with discussing all constructs separately, the consultant further stimulated reflection by asking multiple questions about the teacher's overall view of the relationship profile. Examples of these questions include “Can you see connections between the four aspects of the interactions with the child and the feelings you have about the child?” and “What do you think are strengths or weaknesses of your relationship with the child?” Next, the consultant stimulated the teacher to reflect on potential changes in their behaviors and feelings that contribute to relationship quality by asking questions such as “Do you want to change certain aspects in your interactions or feelings regarding this child?” and “When you enter the classroom tomorrow, which aspects of the relationship do you want to be different?” At the end of the session, the consultant asked the teacher to give a summary of the potential changes that were discussed to improve teacher–child relationship quality.

At the end of the Session 4, the two relationship profiles from Session 2 and Session 4 were compared with each other. The consultant asked the teacher to identify similarities and differences between the relationships with the two children. By explicitly comparing both relationships, it was intended for the teacher to learn more about their style of relating to children. In this way, not only was it possible for a relationship-specific representational model to be activated, but it was also possible to activate the domain-specific mental representational model about relationships with other children in the classroom.

2.3.2. Training of consultants

Consultants ($n = 9$) in the present study were master's or doctoral graduate students in psychology, educational psychology, educational sciences, or anthropology. They were all trained extensively before administering LLInC to teachers. This training of the consultants is documented in the guide for trainers of LLInC (Koomen & Spilt, 2015), which provides detailed information on the content and method of the training. The trainer guide also refers to a series of materials that are available to make sure that each trainer follows the same guidelines. For the current study, the last author, who is also one of the developers of LLInC, trained each of the consultants and made sure that the training was performed in the way that it was intended. The training consisted of four sessions in which consultants practiced with the TRI and discussed how to code teachers' answers and how to stimulate reflection during the sessions. Consultants practiced the TRI with a real teacher or colleague, of which an audio-recording was made. Consequently, the consultants received oral and written feedback on the quality of their recorded interviews and their coding. Additionally, they were shown good and bad practices of presenting the relationship profile to teachers and they practiced asking questions that stimulated reflection. Consultants received extensive oral and written feedback throughout the training from one of the developers of LLInC, who ultimately decided, based on their performance of multiple exercises, when consultants were ready to give LLInC to teachers.

2.3.3. Treatment fidelity

To test whether LLInC was administered correctly, we evaluated the total duration of each interview session. Ideally, the interview sessions of LLInC ranged from 30 to 45 minutes. This was dependent on how quickly teachers were able to talk about recent experiences and specific situations as compared to utilizing explanations in general terms about their relationship with a child. When these sessions were 20% shorter than expected (less than 24 minutes), the sessions were not executed following the guidelines of the program. We found that two sessions were too short and of poor quality ($n = 2$ teacher–child dyads). Therefore, we excluded these two teacher–child dyads from our data analysis.

In addition, because the LLInC-manual was somewhat less structured regarding Session 2 (and Session 4), we evaluated these sessions more thoroughly to ensure that teachers were challenged enough by the consultant to think about the relationship with the selected children. According to the manual, at least 15 questions should be asked that invite critical thinking by the teacher. With these questions, the consultant stimulates the teacher to (a) change perspectives on relational matters, (b) think of situations from the child's perspective, and (c) explore changes in pedagogical practices and feelings. A research assistant listened to all sessions and noted for each session the number of questions and type of questions that were asked by the consultant. When the consultant asked less than 15 questions stimulating critical thinking, the session was listened to again by the first author to inspect if manual guidelines were accurately followed. In six sessions, the guidelines were not appropriately followed ($n = 3$ teacher–child dyads). Therefore, these teacher–child dyads were excluded from the final analyses. In total, five teacher–child dyads were not included in the data analysis.

2.4. Measures

2.4.1. Teachers' perception of relationship quality

A short version of the Dutch adaptation of the Student–Teacher Relationship Scale (STRS; Koomen et al., 2012; Pianta, 2001) was used to measure teachers' perceptions of teacher–child relationship quality. Three different dimensions can be distinguished in the STRS. *Closeness* (five items, e.g., “I share an affectionate and warm relationship with this child”) refers to warmth, trust, and open

communication. *Conflict* (five items, e.g., "This child and I always seem to be struggling with each other") refers to negativity and discordance. *Dependency* (five items, e.g., "This child asks for my help when he/she really does not need help") refers to the overly dependent behavior of the child on the teacher. All items were rated on a 5-point Likert scale, ranging from 1 (*Definitely does not apply*) to 5 (*Definitely applies*).

Prior research has shown satisfactory test-retest reliability, construct validity from preschool to upper elementary school, and internal consistencies for the Dutch version of the original version of the STRS (Koomen et al., 2012). The shortened Dutch version showed high internal consistencies ranging from 0.77 to 0.95 in previous Dutch samples (Bosman et al., 2018; Zee et al., 2013). Evidence for the factorial validity of the STRS was reported by Zee et al. (2013), who found standardized factor loadings higher than 0.50 for the three-factor model. A confirmatory factor analysis using MLR (Muthén & Muthén, 1998–2012) provided a reasonable fit to the present study's data, after adding theoretically plausible correlation residuals, $\chi 2\ (88) = 200.14$, $p < .001$, RMSEA = 0.08, 90% CI [0.06, 0.09], CFI = 0.91, SRMR = 0.09. Although the SRMR was above the conventional threshold of 0.08, the model showed adequate goodness of fit according to RMSEA and CFI values (Hu & Bentler, 1999; Kline, 2015). The model fit was considered sufficient given the specifically selected sample that was used in the present study. Factor loadings ranged from 0.59 to 0.95 in the three-factor model. Cronbach's alpha coefficients in the present study were 0.81, 0.83, and 0.84 for Closeness, 0.84, 0.85, and 0.88 for Conflict, and 0.83, 0.88, and 0.88 for Dependency at pretest, posttest, and follow-up test, respectively.

2.4.2. Teachers' student-specific self-efficacy

Teachers rated their student-specific self-efficacy beliefs toward the selected children using the Student–Specific Teacher Self-Efficacy Scale (Zee et al., 2016). This questionnaire is comprised of four subscales: Instructional Strategies, Student Engagement, Behavior Management, and Emotional Support. As the first two subscales were highly correlated in previous research (Zee et al., 2016), their uniqueness could not be guaranteed. Additionally, we only focused on the two subscales of student-specific self-efficacy that were most likely to be influenced by LLInC (i.e., Behavior Management, Emotional Support), as these are predominantly aimed at cognitive-affective experiences of teachers in relationships with individual children. Therefore, we did not include the subscales Instructional Strategies and Student Engagement in our final analyses.

Behavior Management includes teachers' judgments of their ability to accurately manage the behavior of the child (e.g., "How well can you control disruptive behavior in this student?"). The *Emotional Support* dimension refers to teachers' judgments of their ability to establish a caring relationship with the child and taking the child's perspective and feelings into account (e.g., "How well can you provide a safe and secure environment for this student?"). The two subscales each consist of four items that were rated on a 7-point Likert scale, ranging from 1 (*Not at all able to*) to 7 (*Completely able*). Prior research provided support for the specific dimensions of the student-specific TSES (Zee et al., 2016), with standardized factor loadings higher than 0.55 and internal consistencies ranging from 0.85 to 0.94. A confirmatory factor analysis using MLR (Muthén & Muthén, 1998–2012) provided a reasonable fit to the present study's data after adding three theoretically plausible correlation residuals, $\chi 2(99) = 218.28$, RMSEA = 0.07, 90% CI [0.06, 0.08], CFI = 0.94, SRMR = 0.11. Again, the SRMR was above the conventional threshold of 0.08, whereas the RMSEA and CFI values indicated sufficient model fit (Hu & Bentler, 1999; Kline, 2015). In addition, model fit was sufficient given the highly selected sample that was used in the present study. Factor loadings in the present study ranged from 0.70 to 0.91. Cronbach's alpha coefficients in the present study were 0.91, 0.93, and 0.93 for Behavioral Management, and 0.83, 0.85, and 0.88 for Emotional Support at the pretest, posttest, and follow-up, respectively, showing adequate internal consistency in the current study.

2.5. Data analysis

The longitudinal data were analyzed in R using multilevel modeling with maximum likelihood estimation using the nlme-package (Pinheiro et al., 2018). For all models, a three-level structure was used: Repeated measurements (pretest, posttest, follow-up) were nested in children, who, in turn, were nested in teachers. ICCs for the teacher-level ranged from 0.32 to 0.52 for all outcome variables. ICCs for the school level were negligible (ranging from <0.001 to 0.02). The school level was therefore not included in the models (Snijders & Bosker, 2012). Random intercepts and random slopes were included for all models except for the model of Conflict. For the model of Conflict, only random intercepts were included because the model-fit did not improve when random slopes were included. Furthermore, the variance of the random slope was very close to zero (< 0.001).

We dummy coded the three groups for each of the three waves, resulting in a total of nine dummy variables (see Table B1). First, we created a dummy variable that represented the control group at pretest. This dummy variable functioned as an intercept in our analyses (see Intercept in Table B1). The second dummy variable represented the difference between the control group and the intervention group at pretest (dI_{W1}). The third dummy variable represented the difference between the intervention-transfer group and the control group at pretest (dIT_{W1}). Next, we created three dummies for the posttest measurement consisting of the different groups (dC_{W2}, dI_{W2}, dIT_{W2}). By using these dummy variables at posttest and entering them in the hierarchical models after the three dummies of the pretest, we were able to control for pretest differences between the three groups. For instance, the dummy I_{W2} represented the difference between the intervention group and the control group at posttest when considering the group differences at pretest. Dummy IT_{W2} represented the difference between the intervention-transfer group and the control group at posttest when considering the group differences at pretest. Last, we created three dummy variables for the groups at follow-up, also taking into account pretest differences (dC_{W3}, dI_{W3}, dIT_{W3}). All nine dummy variables were entered into the hierarchical linear models as main effects. Considering our research questions, we were especially interested in the effects of dI_{T2} and dI_{T3} to inspect whether teacher–child dyads from the intervention group differed significantly from the control group when considering the pretest differences. We were also interested in the main effects of dIT_{T2} and dIT_{T3}. A significant effect of these dummy variables would imply that the intervention-transfer group also

significantly differed from the control group at either posttest or follow-up, and thus intervention effects may have transferred to other problematic teacher–child dyads.

We computed separate hierarchical linear models for each outcome variable from teachers' perspectives (i.e., Conflict, Closeness, Dependency; teachers' self-efficacy for Behavior Management, Emotional Support). All outcome variables were transformed to standard normal scores. The parameter estimates of a dummy variable can therefore be interpreted as effect sizes (i.e., Cohen's *d*). Effects were interpreted as small ($d = 0.2$), medium ($d = 0.5$), and large ($d = 0.8$; Cohen, 1988).

A slightly simplified a priori power analysis was conducted for the most important comparisons (i.e., intervention versus control group) using two-cluster levels, children, and teachers. This analysis was conducted using the program 'Optimal Design' (Spybrook et al., 2011). For the comparison between intervention and control group, the cluster size was two children for intervention teachers and four children for control teachers. When there is mild to moderate imbalance between groups, the power estimates that can be obtained in power analyses assuming equal sample sizes are close to estimates obtained in power analyses of imbalanced groups (Konstantopoulos, 2010). We therefore chose a cluster size level of three children per teacher. Based on prior research, we chose a rho-term at the teacher level of 0.25 (Spilt, Koomen, & Jak, 2012; Zee et al., 2016) and the proportion of explained variance (i.e., pretest as covariate) of 0.60 (Roorda & Koomen, 2020). Next, we calculated the smallest true effect that could be detected for a power of 0.80 and our sample size of 46 intervention teachers and 32 control teachers. The minimum detectable effect size for this model was 0.38 (small to moderate effect).[1]

3. Results

3.1. Data screening

Before analysis, data were checked for missing values. Two teachers (and their selected children) dropped out after the first wave because of scheduling issues and were removed from the final sample. One child dropped out after the second wave because he moved to a different city and transferred schools. Seven teachers did not complete the entire questionnaire at follow-up, but they did have complete data on the first two measurements. Therefore, this child and the teachers were still included in the analysis. For all variables, missing data on outcome variables ranged from 0% to 14.2%. These data appeared to be missing completely at random (MCAR; Little's test, $\chi^2(364) = 378.55$, $p = .289$). As maximum likelihood estimation takes into account all available information for each case in the data (Snijders & Bosker, 2012), we did not apply an imputation method. There were no outliers and all variables were normally distributed according to acceptable ranges of skewness and kurtosis (values were all between −1.5 and +1.5; Tabachnick & Fidell, 2007). Means and standard deviations of outcome variables for each group are depicted in Table 2. Correlations between outcome variables ranged from 0.13 to 0.50, except for the correlation between Behavioral Management and Conflict ($r = 0.70$) and between Behavioral Management and Emotional Support ($r = 0.60$). Therefore, a modified alpha level of $p < .025$ was applied to these models to account for testing specific outcome variables in separate models. Furthermore, although children were randomly divided into the intervention group and the intervention-transfer group, there still appeared to be meaningful differences between these groups at pretest (see Table 2). As children's ages differed in the three groups, we included this variable as a covariate in our models. However, age was never a significant predictor and therefore we excluded it from our final models.

3.2. Effects of LLInC

Separate hierarchical linear models were used for each respective outcome variable. Parameter estimates and significance tests are reported in Table 3.

3.2.1. Teachers' perceptions of relationship quality

We examined whether LLInC affected intervention teachers' perceptions of Closeness, Conflict, and Dependency as compared to perceptions of control teachers. We also examined if transfer effects of LLInC could be identified for the intervention-transfer group. First, we estimated a model for teachers' perceptions of Closeness, in which nine dummy variables were included as main effects (Table 3). At pretest, the level of teacher–child Closeness in the control group did not differ significantly from the level of Closeness in the intervention group ($b = -0.11$, $p = .53$) and the intervention-transfer group ($b = 0.02$, $p = .90$). At posttest, teacher–child dyads in the intervention group had significantly higher levels of Closeness than teacher–child dyads in the control group ($b = 0.40$, $p < .001$), suggesting that LLInC seemed to have helped teachers improve their relationships with individual children. This effect could be considered small to medium. In addition, the level of Closeness reported by the intervention-transfer group significantly differed from that of the control group at posttest ($b = 0.46$, $p < .001$), indicating that LLInC led to improvements in teacher's perceptions of relationships with children who were not subject of LLInC. However, at follow-up, when controlling for pretest differences, teachers in the control group also had small increases in Closeness ($b = 0.28$, $p = .02$). The intervention group did not differ significantly from the control group anymore at follow-up ($b = 0.17$, $p = .27$). In addition, no transfer effects were found for the intervention-transfer group

[1] In addition, we conducted a three-level post-hoc power analysis with the parameters of the hierarchical models, using the R-package powerlmm. In these analyses, the power to detect a small effect (d = 0.2) was low (power = 50%) and the power to detect a small to moderate effect or higher (d ≥ 0.35) indicated satisfactory power (power ≥ 80%). These results were highly similar to the results of the power analysis using the simplified model.

Table 2
Descriptive statistics for all outcome variables of the intervention group, the control group, and the intervention-transfer group.

	Intervention group		Control group		Intervention-transfer group	
	M	*SD*	*M*	*SD*	*M*	*SD*
Pretest						
Closeness	3.35	0.87	3.47	0.76	3.40	0.95
Conflict	2.58	1.00	2.09	0.95	2.04	0.99
Dependency	2.53	0.90	2.27	0.98	2.04	0.90
Behavioral Management	4.85	1.25	5.40	1.15	5.24	1.30
Emotional Support	4.76	0.88	5.38	0.91	5.01	1.08
Posttest						
Closeness	3.70	0.85	3.50	0.87	3.83	0.77
Conflict	2.39	0.97	2.12	1.01	1.91	0.99
Dependency	2.44	1.05	2.20	1.07	2.04	0.88
Behavioral Management	5.16	1.18	5.41	1.27	5.58	1.29
Emotional Support	5.14	0.84	5.29	1.00	5.34	0.91
Follow-up test						
Closeness	3.71	0.75	3.65	0.84	3.85	0.87
Conflict	2.34	0.97	2.05	0.99	1.87	1.00
Dependency	2.29	1.02	2.21	1.08	1.96	0.88
Behavioral Management	5.32	1.21	5.55	1.13	5.64	1.20
Emotional Support	5.22	0.97	5.52	1.01	5.42	0.98

at follow-up ($b = 0.24$, $p = .12$). This indicated that the effects of LLInC were not present during follow-up. A graphical display of Closeness and all other outcomes is shown in Fig. 2.

Concerning Conflict, the intervention group had significantly higher levels of Conflict at pretest as compared to the control group ($b = 0.52$, $p = .001$). The intervention-transfer group did not differ from the control group at pretest ($b = -0.04$, $p = .80$). When controlling for these pretest differences, LLInC led to small decreases in the level of Conflict for the intervention group as compared to the control group at posttest ($b = -0.24$, $p = .01$). The level of Conflict in the intervention-transfer group did not significantly differ from the control group at posttest ($b = -0.14$, $p = .134$), indicating that the effects of LLInC did not transfer to the intervention-transfer group. The intervention group did not significantly differ from the control group at follow-up ($b = 0.21$, $p = .03$) given the adjusted alpha level for this model. Again, no transfer effects were found for the intervention-transfer group at follow-up ($b = -0.16$, $p = .13$).

At pretest, teachers in the control group reported lower perceptions of Dependency as compared to the intervention group ($b = 0.34$, $p = .035$). The intervention-transfer group did not differ from the control group at pretest ($b = -0.20$, $p = .22$). There were no group differences between pretest and posttest and between pretest and follow-up test.

3.2.2. *Student-specific self-efficacy*

We examined whether LLInC affected intervention teachers' beliefs in their self-efficacy for Behavior Management and Emotional

Table 3
Results of the multilevel models of teachers' perception of relationship quality and student-specific self-efficacy concerning the effects of time and groups.

	Closeness		Conflict		Dependency		Behavior Management		Emotional Support	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Fixed effects										
Intercept	−0.22	0.13	−0.09	0.12	−0.02	0.12	0.06	0.12	0.09	0.14
dI_{W1}	−0.11	0.18	0.52**	0.16	0.34*	0.16	−0.47**	0.17	−0.57**	0.19
dIT_{W1}	0.02	0.18	−0.04	0.16	−0.20	0.16	−0.13	0.17	−0.26	0.19
dC_{W2}	0.06	0.09	0.01	0.07	−0.03	0.08	0.00	0.09	−0.03	0.11
dI_{W2}	0.40**	0.12	−0.24**	0.10	−0.12	0.11	0.30*	0.12	0.49**	0.15
dIT_{W2}	0.46**	0.13	0.13	0.10	0.12	0.10	0.28	0.13	0.38*	0.16
dC_{W3}	0.28*	0.11	−0.02	0.07	0.04	0.10	0.07	0.11	0.13	0.16
dI_{w3}	0.17	0.15	−0.21	0.10	−0.16	0.13	0.33*	0.15	0.35	0.21
dIT_{W3}	0.24	0.16	−0.16	0.10	−0.15	0.13	0.28	0.15	0.30	0.21
Random effects	Variance		Variance		Variance		Variance		Variance	
Teacher-level										
Intercept	0.21**		0.09**		0.11**		0.13**		0.36**	
Slope	0.03**		–		0.01**		0.02**		0.10**	
Child-level										
Intercept	0.53**		0.69**		0.60**		0.58**		0.22**	
Slope	0.02**		–		0.03**		0.01**		0.02**	
Residual	0.25**		0.18**		0.19**		0.27**		0.33**	

Note. * $p < .025$ (adjustment of alpha level because of moderate correlations between Conflict, BM and ES), ** $p < .01$. C = control group, I = intervention group, IT = intervention-transfer group. W1 = first wave, W2 = second wave, W3 = third wave.

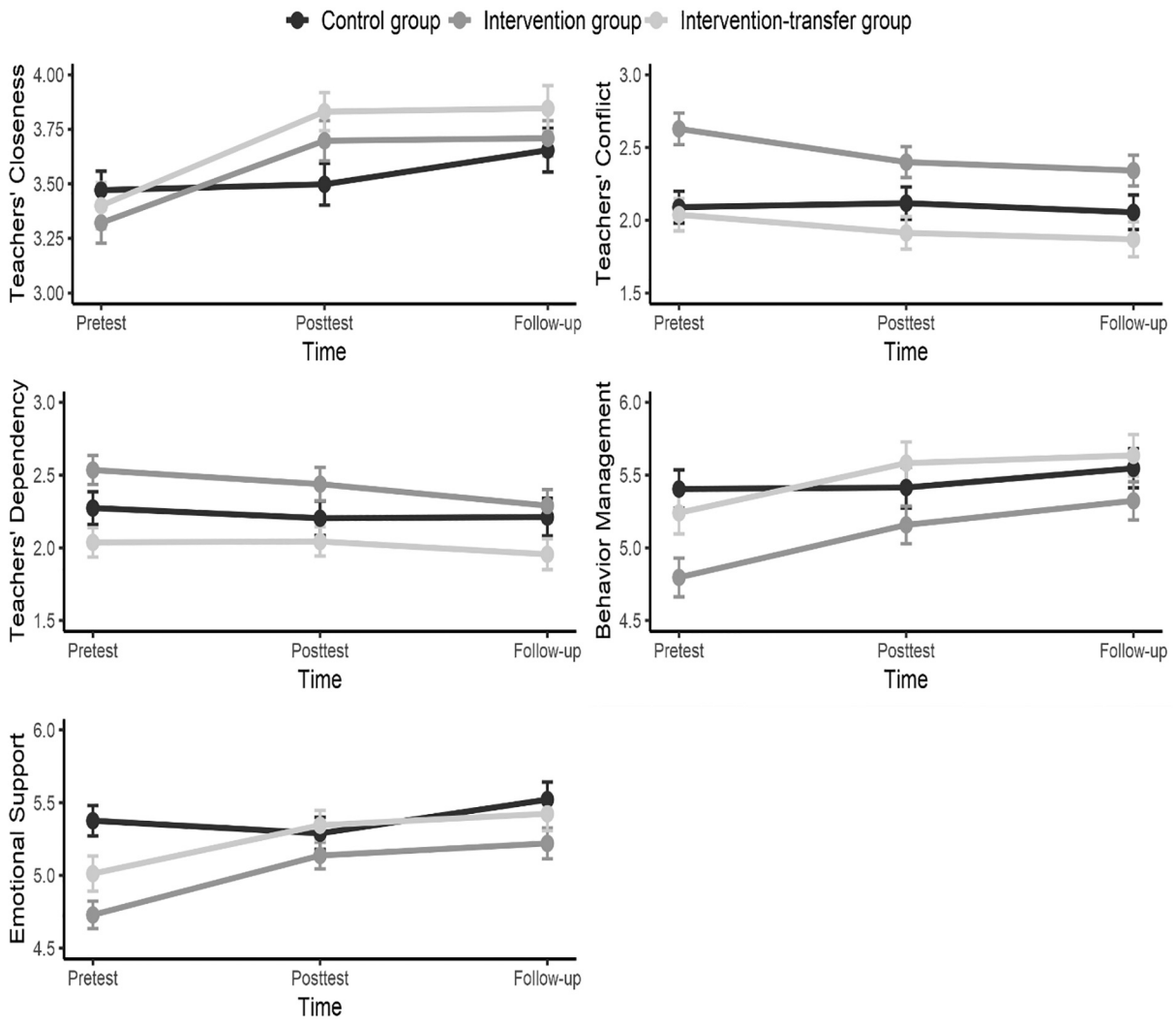

Fig. 2. Mean levels and standard deviations of teachers' perceptions of teacher–child relationship quality and teachers' student-specific self-efficacy beliefs over time with separate lines for the control, intervention, and intervention-transfer group.

Support as compared to teachers in the control group. We also examined if transfer effects of LLInC could be identified for the intervention-transfer group. Regarding teachers' student-specific self-efficacy for Behavior Management, the intervention group reported lower levels as compared to the control group at pretest ($b = -0.47$, $p < .01$). The intervention-transfer group did not differ from the control group at pretest ($b = -0.13$, $p = .45$). After controlling for pretest differences, teachers in the intervention group had higher self-efficacy beliefs regarding Behavioral Management at posttest as compared to the control group ($b = 0.30$, $p = .02$). The effect size was small to medium. The intervention-transfer group did not significantly differ in self-efficacy for Behavioral Management compared to the control group at posttest ($b = 0.28$, $p = .03$) given the adjusted alpha level. The intervention effect for teachers in the intervention group was still present at follow-up as indicated by the small to medium difference between the intervention group and the control group ($b = 0.33$, $p = .02$). At follow-up, there was no difference between the control group and the intervention-transfer group ($b = 0.28$, $p = .06$).

At pretest, teachers in the intervention group reported lower levels of self-efficacy for Emotional Support as compared to the control group at pretest ($b = -0.57$, $p < .01$). The intervention-transfer group did not differ from the control group at pretest ($b = -0.26$, $p = .17$). After LLInC, and controlling for pretest differences, the intervention group had higher levels of Emotional Support as compared to the control group at posttest ($b = 0.49$, $p < .01$), which is considered to be a moderate effect size. In addition, teachers in the intervention-transfer group had higher self-efficacy beliefs regarding Emotional Support at posttest as compared to the control group ($b = 0.38$, $p = .02$), indicating that LLInC was also effective for these teacher–child dyads in improving teachers' self-efficacy beliefs for Emotional Support. At follow-up, when controlling for pretest differences, there was no significant difference between the intervention group and the control group ($b = 0.35$, $p = .10$). Increases in teachers' self-efficacy for Emotional Support were similar for the

intervention-transfer group and the control group from pretest to follow-up ($b = 0.29$, $p = .16$), indicating no transfer effects at follow-up.

4. Discussion

We examined whether LLInC, a teacher-based coaching-intervention, was effective in improving teachers' perceptions of affective teacher–child relationship quality and cognitive-behavioral student-specific self-efficacy beliefs in elementary school. We compared an intervention group in which teachers received LLInC about their relationship with two individual children with a control group in which teachers received no intervention. An additional condition was added to evaluate if effects of LLInC transferred to other problematic teacher–child dyads that were not specifically included in LLInC.

The results provide mixed support for the effectiveness of LLInC with elementary school children in Grades 2–6. First, teachers receiving LLInC experienced short-term improvements in perceived teacher–child relationship quality and student-specific self-efficacy beliefs (i.e., all outcomes except from relational dependency) as compared to teachers receiving no intervention. Second, LLInC yielded some longer-term improvements in teachers' student-specific self-efficacy for behavior management. Third, similar short-term improvements in teacher–child closeness and teachers' self-efficacy for emotional support were found for teacher–child dyads in the intervention-transfer condition. This may indicate that the improvements in teachers' perceptions of relationship quality with and self-efficacy toward targeted children generalized to teachers' dyadic relationships with children in the classroom who were not included as subjects in LLInC. Taken together, these findings partly support the usefulness of a teacher-based coaching intervention to improve teachers' affective relationship quality and teachers' self-efficacy beliefs with individual children.

4.1. Effects of LLInC on affective teacher–child relationship quality

We examined the effect of LLInC on separate dimensions of perceived teacher–child relationship quality. Directly after receiving LLInC, teachers in the intervention group experienced higher increases in their perceived closeness than teachers in the control group. Furthermore, LLInC appeared to yield improvements in closeness between teachers and children who were not directly targeted during the intervention. As such, teachers receiving LLInC also experienced higher levels of closeness with other children from their classroom with whom they reported to have relationship difficulties, without specifically talking about their mutual relationship during the consultations that were part of the intervention. Notably, the effects for teacher–child closeness disappeared from pretest to the follow-up measurement. In contrast with our expectations and with findings from previous research about non-problematic teacher–child relationships (e.g., Doumen et al., 2008), teachers in the control group also had increased levels of closeness, especially in the months after LLInC. It may be that teachers, irrespective of the condition they were in, started to think more about their relationship with an individual child with whom they experienced relationship problems. In both conditions, the teacher had to answer questions about their relationship with such children. As the time in between filling out questionnaires was relatively short and the questionnaires were completed three times, monitoring a specific teacher–child relationship itself may have had a positive influence on teacher–child closeness. More research is necessary to tease apart the effects of guided and focused reflection versus merely monitoring.

Next to closeness, intervention teachers experienced small decreases in conflict in the relationship directly after receiving LLInC as compared to control teachers. This implies that LLInC also helped teachers reduce negativity and discordance in interactions with particular children. An explanation for the decreasing level of conflict is that during LLInC, teachers often get confronted with the fact that they have negative interaction patterns with a child that may result in negative feelings about dealing with this child. During four sessions of LLInC, the teacher talks extensively about their relationship with two individual children. The consultant invites the teacher to think about how a child is feeling, why a child behaves the way he or she does, how a child responds to certain behavior, and what this would imply for teachers' daily practices. As a result, teachers receiving LLInC may have realized that they needed to change certain behaviors to break negative interaction patterns. Our findings are important considering that a low level of negativity and frustration in teacher–child relationships may help children develop social and emotional competencies and reduce the risk of further maladaptive development (e.g., Baker et al., 2008; Meehan et al., 2003).

However, the effects of LLInC did not seem to hold at follow-up later in the school year. It may be that some teachers still needed more help or support to include sensitive teaching practices into their daily teaching behavior and to reduce teacher–child problems. The lack of intervention effects at follow-up may be due to the limited amount of sessions between the teacher and the consultant (i.e., four sessions in total). For some teachers, it is recommended to continue LLInC with a follow-up session after a few weeks. In this follow-up session, the consultant and teacher may reflect on beliefs and feelings that occurred in the weeks after the fourth session of LLInC. They can continue to reflect on the specific solutions that were discussed in the second and fourth sessions of LLInC. Another possible solution is to combine LLInC with other intervention elements. Recently, Hoogendijk et al. (2019) combined elements of LLInC with other strategies, such as functional behavior analysis (Ellis, 1991), practicing interactions with an individual child using video interaction guidance (VIG; Hayes et al., 2001), and synchronous coaching (Coninx et al., 2013). This intervention, Key2Teach, was also shown to be effective in reducing teacher–child conflict over an even longer time period. These results of Key2Teach are promising and suggest that a combination of LLInC with other coaching strategies may help improve teacher–child relationships. However, how these combinations fare in the long run is not yet clear as Hoogendijk et al. (2019) did not include follow-up measurements to test whether these effects lasted. In sum, it is possible that LLInC, as evaluated in the present study, may be helpful to some degree, but clearly some teachers need additional help in reducing long-term teacher–child relationship problems.

In contrast with our expectations, we did not find any differences between the intervention group and the control group concerning teacher-reported dependency in the teacher–child relationship. A possible explanation for this lack of decreases in the level of

dependency can be found in the definition of teacher–child dependency. Dependency is sometimes believed to be a marker of child adjustment problems rather than a relational dimension (e.g., Doumen et al., 2008). Given that LLInC is mainly focused on improving interaction patterns through teachers' reflection on their feelings and beliefs, and not on improving children's adjustment in the classroom, this program may not be most suitable for improving dependency. It is possible that to reduce teacher–child dependency, interventions should more specifically target dependency-related problems instead of only relationship problems. As teacher–child dependency is an important predictor of poor child outcomes (Bosman et al., 2018; Zee et al., 2013), future research should find ways to decrease teacher–child dependency in elementary school.

4.2. Effects of LLInC on teachers' student-specific self-efficacy

With regard to the two specific domains of teachers' student-specific self-efficacy, consisting of behavior management and emotional support, we found improvements in the weeks after LLInC and also for behavior management at follow-up. To be specific, stimulating teachers to reflect on their feelings and beliefs about their relationship with an individual child seemed to enhance teachers' beliefs in their capability to manage individual children's behavior and support these children emotionally. These results are promising considering that teachers with positive self-efficacy beliefs have previously been found to use better teaching strategies and experience fewer burnout symptoms (e.g., Woolfolk Hoy & Davis, 2006; Zee & Koomen, 2016). In addition, it appeared that LLInC yielded short-term improvements in teachers' self-efficacy beliefs for emotional support about interactions with children who were not included as subjects in the intervention at posttest. Thus, without specifically talking about the mutual relationship during LLInC, teachers receiving LLInC also felt more self-efficacious about emotionally supporting children from their classroom with whom they experienced relationship difficulties.

Several aspects of LLInC may have positively influenced teachers' student-specific self-efficacy beliefs. According to Bandura's social-cognitive paradigm Bandura (1997), people reflect on and evaluate their capability beliefs by interpreting information from several sources. Three of these sources, including mastery experiences, verbal persuasion, and affective states, might have been vital in the development of teachers' self-efficacy beliefs through LLInC. The first, mastery experience, refers to reflection on and interpretation of previous teaching performances (Bandura, 1997; Usher & Pajares, 2008). Teachers who believe their past teaching performances were successful are more likely to feel confident about these teaching tasks in future practices. During LLInC, especially during the first (and third) session, the consultant asked the teacher about several specific experiences regarding their interactions with the child. These questions were not only about teachers' negative experiences but also about recent positive experiences (e.g., "Can you describe a specific moment in which you connected with this child?"). Example follow-up questions included "What happened in this situation?" and "How did you feel about this?". Because the consultant also specifically asked about positive experiences during these sessions, teachers may become more aware of these successful teaching practices instead of only focusing on more ineffective teaching experiences. As a result, teachers may feel more self-efficacious about future interactions with an individual child.

Second, social persuasion or social evaluation is seen as a potential source that can influence teachers' efficacy beliefs (Bandura, 1997). Social evaluation refers to a process in which teachers receive verbal, positive feedback about their teaching practices from important others, such as colleagues or school administrators. This positive feedback, when specific and sincere, can enhance teachers' self-efficacy beliefs (Hattie & Timperley, 2007; Schunk, 1984). During LLInC, in Session 2 (and Ssession 4), the consultant gives feedback to teachers in the form of a relational profile of strengths and difficulties, representing eight constructs of teachers' pedagogical practices and feelings (see also Figure A1). The consultant explains why teachers received a high, medium, or low-level score for each construct by giving examples of specific recent situations that teachers described during the interview sessions. Subsequently, the consultant described for each construct of the relationship profile what the teacher already does better as compared to other teachers. The consultant thus gives every teacher several specific, positive encouragements in terms of skills and adaptive ways of teaching. Providing teachers with specific and individualized social evaluations is found to be especially important in the enhancement of self-efficacy (Tschannen-Moran & McMaster, 2009). This may explain our findings of the effects of LLInC on teachers' student-specific self-efficacy beliefs.

Third, the meaning that teachers give to their physiological and affective states informs their self-efficacy beliefs (Bandura, 1997; Klassen & Durksen, 2014). For example, high classroom stress of teachers was found to be related to low domain-specific self-efficacy (Klassen & Chiu, 2011) and low student-specific self-efficacy (Zee et al., 2016). During LLInC, teachers gain insight into the degree of negative affect, positive affect, and helplessness in dealing with an individual child. In general, teachers are not used to talking about their feelings in relationships with individual children, and are especially not used to receiving feedback from a professional about these feelings. Conceivably, teachers' realization that they also had positive feelings about a child, instead of only negative feelings, may have increased their self-efficacy beliefs about dealing with this child in the domains of behavior management and emotional support. Although we did not investigate this directly, LLInC may have influenced teachers' self-efficacy beliefs through teachers' increased positive affect about a specific child.

It must be noted, however, that for teachers receiving LLInC, student-specific self-efficacy beliefs of emotional support did not differ significantly from those of teachers who did not receive LLInC a few months after the intervention ended. It appeared that teachers' self-efficacy for emotional support did not increase further in the months after LLInC ended, whereas teachers in the control group showed slight increases in this construct (see Table 2 and Fig. 2). Possibly, similar to what happened with regard to teacher–child closeness, control teachers' had an influence on their capability beliefs in establishing a caring relationship with the child.

To summarize, the results of this study indicated that improvements in teachers' self-efficacy are in general somewhat stronger (i.e., larger effects, also a longer-term effect for teachers' self-efficacy for behavior management) as compared to improvements in teachers' perceptions of affective relationship quality (i.e., no longer-term effects and no effects for teacher–child dependency). It may be that

the effects of teachers' self-efficacy beliefs precede effects on affective teacher–child relationship quality. Teachers may first become more confident in their abilities regarding how to effectively deal with an individual child before actual interpersonal effects of improved affective teacher–child relationship quality may take place. To further disentangle and compare the effects of LLInC on teachers' perceptions of relationship quality, future research could include a mid-intervention measurement to identify possible mechanisms of the intervention effects.

4.3. Transfer effects of LLInC

An important feature of the present study was that we included an intervention-transfer condition: Teachers receiving LLInC also reported about their relationships with children who, although also being selected for relationship difficulties, were not included as subjects of conversations during LLInC. It was expected that when teachers would reflect on their relationship with two children during LLInC that they could also start to become aware of feelings and beliefs about other children in the classroom with whom they experienced difficulties with. We found that teacher–child dyads that were not subject to LLInC had similar improvements in teacher–child closeness and student-specific self-efficacy beliefs for emotional support as compared to the teacher–child dyads that were discussed extensively during the four sessions of LLInC. Not surprisingly, the effects of LLInC seemed somewhat smaller in the transfer group as compared to the intervention group (based on means and standard deviations in Table 2). For teacher–child conflict and self-efficacy beliefs for behavior management, the effects of the intervention did not transfer to other problematic teacher–child dyads. This may indicate that for these dimensions of relationships, teachers need more help to change their perceptions. Still, the results provide preliminary evidence that the effects of LLInC, mainly with regard to positive dimensions of relationships, may generalize to teachers' relationships with other children in the classroom.

The domain-specific representational model (i.e., the teacher's mental representation of their role as a teacher) may be explicitly activated during the last session of LLInC, as teachers compared two profiles of their relationship with two individual children with each other to complete the intervention. During this comparison, the consultant actively stimulated teachers to reflect on aspects of the relationships that were affected by an individual child's behavior and also about the teacher's characteristics that affected their relationship. Consequently, the teacher started to think about how he or she contributed to both relationships and what he or she considered to be of different importance in interacting with the two children differently. Teachers may realize during or after LLInC that relationships also depend on characteristics of themselves and consequently think about how these characteristics influence relationships with other children in the classroom. Therefore, it's possible that not only the reorganization of relationship-specific mental representations may have changed teachers' perspectives, but it could also be that teachers' domain-specific mental representational model (Sibley & Overall, 2008) may have been activated during LLInC (Pianta et al., 2003). If teachers' domain-specific mental representational models are also activated or even reorganized, it could be expected that teachers' domain-specific self-efficacy beliefs, instead of only student-specific self-efficacy beliefs, also improve after implementing LLInC specific to two individual children (Grusec et al., 1994). The present study only included student-specific self-efficacy measures which made it impossible to investigate the hypothesis that domain-specific representations were also activated. Future research should investigate the extent to which teachers' classroom-level self-efficacy beliefs improve after LLInC.

These transfer effects could also be expected based on consultation models of indirect service delivery. Consultation models are based on the premise that teachers' skills, competencies, and feelings may be related to changes in children's functioning in the classroom (Akin-Little et al., 2004). There is growing evidence to support the usefulness of consultation for teachers. For example, research has shown that teachers' competencies, self-efficacy beliefs, and satisfaction improved through consultation by another professional or mental health consultant (e.g., Akin-Little et al., 2004; Benedict et al., 2007; Carter & Van Norman, 2010). LLInC is also focused on applying consultation with teachers in order to improve teachers' relationships with specific children. Following the models discussed, consultation about a specific relationship with a child partly generalized to teachers' relationships with other children as well. The next step is to investigate whether changes in teachers' perceptions of self-efficacy beliefs and relationship quality also influence children's perceptions and behavior.

4.4. Limitations and suggestions for future research

Our findings should be interpreted in light of several limitations. First, we did not use a fully randomized design to include teacher–child dyads in the intervention and control conditions. As we collected data for the intervention group and the control group in separate data collections, we could not randomly assign teachers to the two groups. This may have resulted in pretest differences between relationships in the control group and the intervention group. Note, however, that for the intervention-transfer condition we randomly assigned two children to be subject of LLInC. Despite this randomization, the intervention group and intervention-transfer group also differed from each other. An explanation is that in general there were large differences in relationship problems between dyads. This may be due to the selection criterion in which teachers themselves could select children with whom they experienced relationship problems. We were able to control for pretest differences in measurements of teacher–child relationship quality and teachers' student-specific self-efficacy. Moreover, we did not find any notable differences between the groups on demographic variables (see also Table 1), indicating that the groups were comparable, at least on several important variables. Despite all this, a fully randomized design would be preferred. Additionally, it is preferable to change the control condition into a waitlist control condition. In the present study, some parents of children from the control group did not want to sign an informed consent form because no intervention was going to be given to their child's teacher, whereas other teachers would receive an intervention. To reduce chances that children with a non-problematic relationship would be included in the study, we did not ask teachers to select another child from

the classroom when informed consent was not provided. However, including a waitlist control condition may increase parents' willingness to grant permission for their child's participation in the study.

A second limitation was the lack of power to detect small effects in the current study. A power analysis was conducted for the most important comparison (i.e., intervention teachers versus control teachers). Given the sample size, it appeared that power was higher than 0.80 for detecting a small to moderate effect, but this was not the case for identifying a small effect. This inability to detect small effects with this sample size implies that small long-term effects or transfer effects of the intervention could be missed. Given this power issue, it is important that the effects of the intervention observed in this study are validated in a study with a larger sample size.

A main assumption of the present study was that teachers in the intervention group became aware of and reorganized their mental representations of relationships with individual children. We assumed that more flexible and differentiated mental representations would improve affective teacher–child relationships and teachers' self-efficacy beliefs. However, as a third limitation, we should acknowledge that we did not measure changes in mental representations. Therefore, it remains unclear whether improvements in teacher–child relationship quality and teachers' student-specific self-efficacy were due to actual changes in teachers' mental representations. One way of studying these changes is by using the TRI again during a follow-up measurement later in the school year instead of only as a part of LLInC itself. By also conducting the TRI during the posttest or follow-up measurement, larger effects can be expected because LLInC is directly aimed at changing teachers' relationship perspectives (beliefs and feelings) that are discussed using the TRI. These relationship perspectives include constructs such as teachers' awareness of children's internal states (perspective taking) and improving teachers' emotions (positive affect, anger, helplessness) about the relationship (Bosman et al., 2019). Thus, it is recommended that future researchers include the TRI when evaluating the effectiveness of LLInC.

A fourth limitation is that the effects may have not only been caused by LLInC, but also by teachers' increased awareness of receiving an intervention, as compared to teachers receiving no intervention. Our conclusions could provide a more comprehensive picture when observational measures or children's reports of relationship quality were included to examine whether LLInC led to changes in teachers' behaviors or children's perceptions of the relationship. However, considering that LLInC is a teacher-based coaching intervention aimed at altering teachers' beliefs and feelings about dyadic relationships, it should be noted that the first appropriate outcome measure for investigating change is teachers' perceptions, for which we used multiple constructs. Still, future researchers are advised to include more various measurements and outcomes to fully understand if and how LLInC can affect teachers and children in elementary school.

A suggestion for future research would be to also include other aspects that may determine teacher–child relationship quality. For instance, age, gender, ethnicity, or the ethnic match between teachers and children have been found to be related to teachers' perceptions of relationships in several studies (Saft & Pianta, 2001; Thijs et al., 2012). Although we accounted for child characteristics such as gender, ethnicity, and age, these covariates did not have an effect on the results of the present study. Still, it remains important to further investigate whether intervention effects are dependent on child and teacher characteristics.

4.5. Conclusions and practical implications

To conclude, the results from this study indicate that LLInC is an intervention that appears to generate short-term improvements in teacher-perceived relationship quality and both short-term and longer-term improvements in teachers' self-efficacy beliefs for behavioral management. This sustained change in teachers' self-efficacy beliefs is important when considering that teachers with a strong sense of self-efficacy have more adequate teaching strategies, are more committed and motivated for their work, and have fewer burnout-symptoms as compared to teachers with lower self-efficacy (e.g., Bottiani et al., 2019; Morris et al., 2017; Woolfolk Hoy & Davis, 2006; Zee & Koomen, 2016). It is also important that some of the improvements regarding teacher–child relationship quality and teachers' student-specific self-efficacy transferred to teachers' relationships with other children in the classroom with whom they experienced difficulties. Taken together, the findings of this study are promising considering that LLInC only includes four sessions ranging from 30 to 60 min. LLInC is much shorter than other potentially effective interventions that aim to improve teacher–child relationships and teachers' self-efficacy beliefs (e.g., Driscoll & Pianta, 2010; Vancraeyveldt et al., 2015). Furthermore, LLInC can be relatively easily implemented within schools. As school psychologists or other professionals within the schools are usually in close contact with teachers, they have an opportunity to function as a consultant that engages teachers in the reflective process. Moreover, brief relationship-focused reflection coaching based on LLInC can be supplemented with behavior interventions, such as video interaction guidance (cf., Hoogendijk et al., 2019), especially when teachers need more practical tips on how they can improve problematic interactions. As this study shows, engaging teachers in reflection can be a good start in enhancing teacher–child relationships and, especially, teachers' student-specific self-efficacy.

Declaration of Competing Interest

None.

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Appendix A

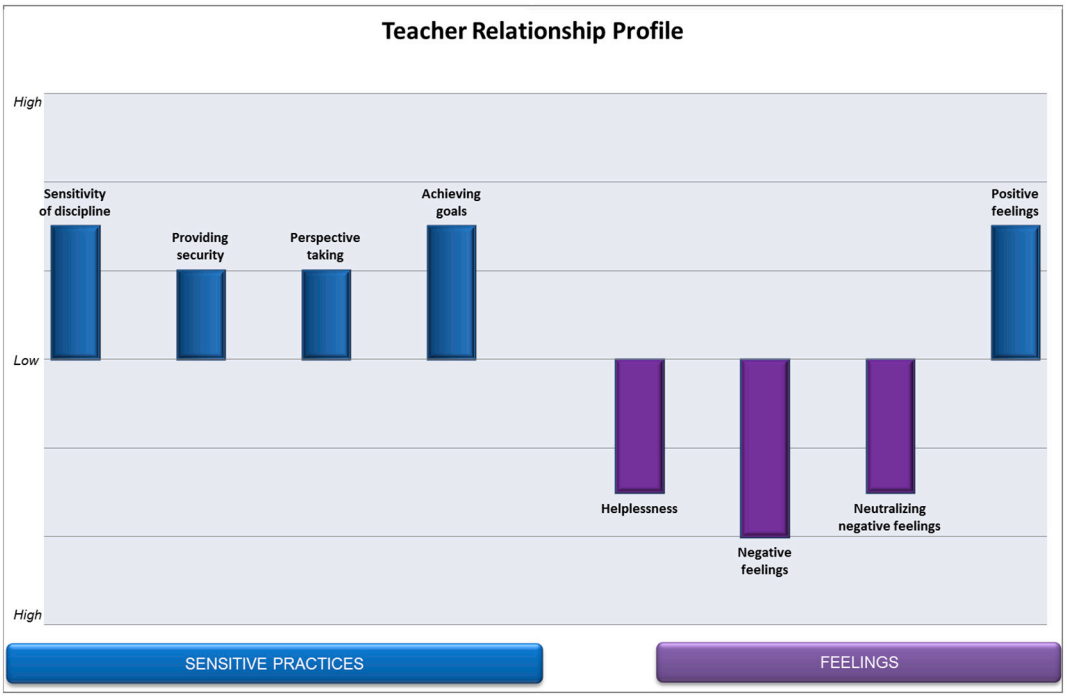

Fig. A1. An example of the relationship profile that is communicated with the teacher in session 2 and session 4 of LLInC.

Appendix B

Table B1
Dummy coding of all three repeated measurements and groups

	Intercept	dI_{W1}	dIT_{W1}	dC_{W2}	dI_{W2}	dIT_{W2}	dC_{W3}	dI_{W3}	dIT_{W3}
IT_{W1}	1	0	1	0	0	0	0	0	0
I_{W1}	1	1	0	0	0	0	0	0	0
C_{W1}	1	0	0	0	0	0	0	0	0
IT_{W2}	1	0	1	1	0	1	0	0	0
I_{W2}	1	1	0	1	1	0	0	0	0
C_{W2}	1	0	0	1	0	0	0	0	0
IT_{W3}	1	0	1	0	0	0	1	0	1
I_{W3}	1	1	0	0	0	0	1	1	0
C_{W3}	1	0	0	0	0	0	1	0	0

Note. C = control group, I = intervention group, IT = intervention-transfer group. W1 = first wave, W2 = second wave, W3 = third wave. Dummy codes are represented with a 'd' in front of the categorization of the variable. The control group in the first wave functions as an intercept in all models.

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