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Changing Interactions Between Teachers and Socially Inhibited Kindergarten Children: An Interpersonal Approach

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Thijs, and Frans J. Oort*

This chapter has been submitted for publication.

Abstract

In a short-term longitudinal intervention study, it was investigated whether a short teacher training in interpersonal theory and the complementarity principle could be used to break negative interaction cycles between teachers and relatively inhibited kindergartners. Sixty-five children and their 35 regular teachers were observed in a dyadic task setting, on three occasions. In the training, it was explained that teachers could elicit more initiative from children by being less dominant and more friendliness by being more affiliative. Independent observers rated teachers' and children's interactive behaviors in five-second episodes. Teachers reported on children's social inhibition. Multilevel analyses showed that the training elicited a decrease in teacher control at follow-up. Unexpectedly, the training increased teachers' complementarity on the affiliation dimension, especially in interactions with highly inhibited children. Implications for theory and practice are discussed.

Introduction

Since the early 1990s, a growing body of research has demonstrated that the affective quality of relationships between teachers and individual children influences aspects of children's school functioning, such as engagement in school activities (e.g., Hughes, Luo, Kwok, & Loyd, 2008), academic achievement (e.g., Hamre & Pianta, 2001), and social skills (e.g., Peisner-Feinberg et al., 2001). Interventions specifically focused at improving teacher-child relationships, however, have been scarce. Two existing interventions are My Teaching Partner (Pianta, Mashburn, Downer, Hamre, & Justice, 2008) and Banking Time (Driscoll & Pianta, 2010; Driscoll, Wang, Mashburn, & Pianta, 2011), which are both in the first stages of efficacy evaluation. My Teaching Partner is a two-year long web-mediated consultation program which aims to support effective interactions between teachers and preschoolers at the classroom level. After the first year of intervention, significant increases in three of the seven observed teacher behaviors were found (i.e., teacher sensitivity, instructional learning formats, and language modeling; Pianta et al., 2008). Banking Time consists of two six-weeks intervention periods and purposes to build strong, supportive relationships between teachers and children having difficulties in the classroom by one-on-one meetings between teacher and child consisting of child-led play and teacher facilitation techniques. This intervention elicited small increases (alpha was set at .10) in teachers' perceptions of closeness in the relationship and of children's frustration tolerance, task orientation, and competence and decreases in teacher-rated conduct problems. However, no intervention effects were found on observer ratings of teacher-child interactions (Driscoll & Pianta, 2010). Although the first results are promising, both Banking Time and My Teaching Partner are time consuming programs and effects seem to be relatively small considering the time and energy invested by teachers.

In the present study, we chose to follow a different route and, as a first step, tested the efficacy of a short and relatively simple teacher training, under controlled conditions outside the classroom. If the intervention proves to be effective to some extent, it can be expanded in future studies. The teacher training was based on interpersonal theory (Leary, 1957) and the corresponding complementarity principle (Carson, 1969/1972). This principle provides clues to intervene in inadequate interaction patterns (Kiesler, 1996), because it explains how people elicit specific behaviors from their interaction partner. Thijs, Koomen, Roorda, and ten Hagen (2011) showed that interpersonal complementarity was also found in interactions between teachers and relatively inhibited kindergartners. In the present study, we used follow-up measures of this sample to investigate whether a teacher training based on interpersonal theory could effectively change interactions between teachers and kindergarten children. In addition, we examined whether effects of this teacher training were dependent on the child's level of social inhibition.

Interpersonal Behaviors and Complementarity

Although interpersonal models have been conceptualized in different ways, they share a few basic notions: two dimensions to categorize interpersonal behaviors (e.g., Kiesler, 1983; Leary, 1957) and the principle of interpersonal complementarity (Sadler &

Woody, 2003). The first dimension, control, represents the degree of power, dominance, and influence in the interaction, and ranges from dominance to submissiveness. The second dimension, affiliation, expresses the degree of proximity, warmth, and support displayed during interaction cycles, and varies from friendliness to hostility (Gurtman, 2001; Kiesler, 1996). These dimensions are usually displayed on two orthogonal axes, forming an interpersonal circumplex, with control at the vertical and affiliation at the horizontal dimension.

Carson's (1969/1972) approach of interpersonal complementarity is most common. According to Carson, interactive behaviors are complementary if they are similar at the affiliation dimension and opposite on control. Interpersonal influences are considered to be reciprocal between interaction partners: Friendliness will lead to friendly reactions, whereas dominant behavior will elicit submissive responses (Kiesler, 1983). In addition, interaction partners also influence their own interactive behaviors indirectly through the responses they evoke in the other (Sadler & Woody, 2003). Sadler and Woody (2003) found important support for the conceptualization of Carson (1969/1972) in research with unacquainted university students.

Using Interpersonal Theory to Intervene in Negative Interaction Patterns

The complementarity principle offers suggestions for intervening in negative interaction patterns (Kiesler, 1996). According to Kiesler (1996), persons, e.g., therapists, could deliberately change their own interactive behavior, in order to change the behavior or interpersonal style of their interaction partner, e.g., clients. The pressure for clients to change their interpersonal style is supposed to be strongest when the therapist employs an anticomplementary style (i.e., behaviors that differ most from the expected complementary response; Kiesler, 1996). For instance, therapists could return clients' hostile-dominant behaviors with friendly-dominant behaviors. However, because anticomplementary responses totally deny the client's self-representation, radical behavior changes would be experienced as threatening and unpleasant by the client. Therefore, therapists are advised to gradually change their behaviors by first employing an complementary response (i.e., responses that are complementary on one dimension only) before moving to anticomplementary behaviors (Kiesler, 1996).

Teachers might also use this approach to improve problematic interactions with their students. For instance, they could try to elicit more affiliation from their students by gradually showing more affiliation themselves, and stimulate more initiative from children by being less controlling themselves. Whether such an approach is successful, depends on the applicability of the complementarity principle to the school setting. It has been argued that interpersonal complementarity mainly holds in relatively unstructured settings, in which interaction partners have the same status (Kiesler, 1996), whereas school settings are mostly relatively structured, and teachers and children do not have the same status. Still, research on adult-child interactions suggests that interpersonal complementarity could also apply to the school setting. Evans (1992), for example, investigated the influence of teachers' conversational control on the verbal participation of shy kindergartners. Children spoke more words in total, spoke in longer turns, and volunteered more content when teachers asked fewer questions than they normally did. Similarly, Rudasill and Rimm-Kaufman (2009) found that children

initiated fewer interactions toward their teacher, if teachers were relatively dominant in leading the interaction. With regard to the affiliation dimension, Deater-Deckard and colleagues (2001) revealed reciprocal influences of affect in parent-child interactions, i.e. positive associations between observer ratings of mothers' and children's negativity, and between mothers' and children's positivity.

Thijs and colleagues (2011) were the first to investigate whether the complementarity principle actually holds in interactions between teachers and relatively inhibited kindergarten children. Both teachers' and children's interactive behaviors (i.e., control and affiliation) were rated by independent observers in five-second episodes to allow the examination of reciprocal influences between interaction partners. They found that teachers responded complementarily with respect to control (i.e., they reacted dominantly on children's passiveness), whereas children reacted complementarily with respect to affiliation (i.e., they returned teachers' friendliness with friendly behaviors and teachers' hostility with hostile behaviors; Thijs et al., 2011). These results suggest that intentional changes in teachers' interactive behaviors may also lead to changes in children's interactive behaviors and might therefore be useful in promoting positive teacher-child interactions and intervening in negative interaction cycles. In the present study, we used follow-up measures of Thijs and colleagues' (2011) sample of relatively inhibited kindergartners to investigate the effectiveness of the complementarity principle as a basis for intervention in teacher-child interactions.

Teachers' Interactions with Socially Inhibited Children

Socially inhibited (or shy) children tend to be anxious and withdrawn in social situations (Kagan, 1997; Thijs, Koomen, de Jong, van der Leij, & van Leeuwen, 2004). Those children may be at risk for developing negative interaction cycles. Teachers often perceived their relationships with inhibited children as less close and more dependent than their relationships with average children (e.g., Arbeau, Coplan, & Weeks, 2010; Thijs & Koomen, 2009). Likewise, observations of teacher-child interactions showed that anxious/withdrawn children had less secure attachment relationships with their teachers than normative children (DeMulder, Denham, Schmidt, & Mitchell, 2000). With regard to the control dimension, previous research showed that teachers asked more questions, intervened more often, and initiated more interactions toward anxious/withdrawn children than toward normative children (Coplan & Prakash, 2003). Similarly, Roorda, Koomen, Spilt, Thijs, and Oort (2012) found that teachers displayed more control toward children they rated as socially inhibited, whereas relatively inhibited children showed less control toward their teacher than typical children. In addition, children who were rated high in shyness initiated fewer interactions with their teachers than children with low shyness ratings (Rudasill & Rimm-Kaufman, 2009). These findings suggest that inhibited children are at risk for developing interactions with their teachers that are characterized by low levels of affiliation in both interaction partners, a lack of initiative in the child, and highly dominant behavior in the teacher. In the present study, we implemented a short training targeted at positively influencing teachers' interactions with relatively inhibited kindergartners. We targeted this training at teachers, because teacher-child relationships are asymmetric and it is the teacher who has the responsibility for children's functioning in school. Persons with such a higher

status (e.g., therapists or teachers) are viewed as being more independent and more inclined to change behaviors than persons with a lower status (e.g., clients or children; e.g., Kiesler, 1996; Tracey, 1985). First, the trainer explained the complementary principle to advance teachers' understanding of reciprocal influences during interaction processes and the ways in which their own behaviors can influence children's interactive behaviors. In this way, we tried to make teachers more aware of their own influences on interaction processes and hence to make them more inclined to change their interactive behaviors. Second, we offered practical suggestions based on the complementarity principle about which teacher behaviors would be most efficient in changing children's behaviors in the desired direction. Because the training was focused on interactions with relatively inhibited children, the trainer suggested that teachers could show more affiliation and less control toward these children. In this way, we anticipated that teachers' and eventually children's interactive behaviors would become more friendly and warm. In addition, we expected that the interaction would be less dominated by the teacher, giving children more opportunities to actively participate in the interaction. The degree to which children are influenced by changes in their teachers' interactive behaviors could depend on their level of social inhibition. Thijs and colleagues (2011) found that very shy children responded complementarily to their teacher on the control dimension, whereas not very shy children did not. They might do so because they are afraid of negative evaluations, and therefore more sensitive to teachers' behaviors and more inclined to change their own behavior correspondingly (Magai & McFadden, 1995; Thijs et al., 2011; Weeks, Coplan, & Kingsbury, 2009). Therefore, we expected that highly inhibited children would react stronger to changes in teachers' behaviors.

The Present Study

The overarching goal was to evaluate the suitability of the interpersonal theory and the complementarity principle as basis for a teacher training directed at promoting positive teacher-child interactions. With the present study we provided a first evaluation of the Interpersonal Skills Training for teachers, based on this theory. As our intervention was targeted at changing actual interactions between teacher and child rather than changing their mental representations of the relationship, we chose teachers' and children's interactive behaviors as rated by independent observers as outcome measures. Teacher-child interactions were observed in a dyadic setting outside the classroom without any other children present. Although this dyadic setting may hamper the ecological validity of our outcome values, it also made it possible to observe all teacher-child dyads under comparable conditions and may therefore provide valuable information about the effectiveness of this training, at this stage.

Our study goal resulted in four research questions: Our first question was whether changes in teachers' and children's interactive behaviors (i.e. affiliation and control) were stronger for teacher-child dyads in the training condition as compared to the control condition. We expected that teachers' and children's interactive behaviors would be relatively stable in the control condition, but that teachers in the training condition would show less control and more affiliation after the training sessions. Due to reciprocal influences, we also expected training effects on children's interactive behaviors, although less strong.

The second question was whether intervention effects on teachers' and children's interactive behaviors depended on the level of social inhibition of the child. Based on the higher interpersonal sensitivity of socially inhibited children (Thijs et al., 2011), we hypothesized that potential indirect training effects on children's interactive behaviors would be stronger for highly inhibited children.

The third question addressed intervention effects on interpersonal complementarity. We expected the degree of complementarity in teacher-child interactions to be stable over time for teachers in the control condition and for children in both conditions. For the training condition, we hypothesized that teachers would overall respond less complementarily after the training, because they were encouraged to change their interactive behaviors purposefully.

Finally, our fourth question was whether intervention effects on teachers' complementarity tendencies depended on children's levels of social inhibition. Highly inhibited children are more likely to stick to a passive role during interactions (see Rudasill & Rimm-Kaufman, 2009). We expected that it would be a more challenging task for teachers to restrain their usual responses and leave the initiative to children who are highly inactive. Therefore, we expected weaker training effects on teachers' complementarity tendencies toward highly inhibited children.

Method

Participants and Design

Our sample consisted of 65 kindergarten children (35 boys) and their 35 teachers (2 men) from 23 Dutch regular schools (see Thijs et al., 2011). Children were on average 5.79 years old ($SD = 0.72$). No information was available on children's and teachers' ethnic background but most of them could be identified as members of the dominant Dutch ethnic group and all spoke Dutch (the official language in regular schools in the Netherlands). Interactions between teachers and children were observed on three different occasions in the spring of the kindergarten school year (pretest, posttest, and follow-up), each five weeks apart. In the second and third week after the pretest, 22 teachers (40 children, 22 boys) received a short training (see below); the other 15 teachers (25 children, 13 boys) were assigned to the control condition. Teachers who worked at the same school were assigned to the same condition, to prevent information exchange between conditions. Schools were randomly assigned to conditions. Children in the training condition ($M = 5.94$, $SD = 0.68$) were somewhat older than children in the control condition ($M = 5.56$, $SD = 0.73$; $t(63) = -2.11$, $p = .039$). Six children were absent at posttest and for eleven other children there were no observations at follow-up. These children were still included in our analyses because multilevel analysis can compensate for missing observations.

Children were selected from a total pool of 587 kindergartners based on their behavior scores relative to their classmates. Teachers completed the Social Inhibition, Hyperactivity, and Externalizing Behavior subscales of the Behavior Questionnaire for Two- to Six-Year-Olds-Modified (BQTSYO-M; see below) for all children over five years old in their classrooms. Per teacher two children were selected who scored highest in their class on the Social Inhibition subscale and low on Hyperactivity and Externalizing

Behavior (if possible close to but below the class mean). Teachers were not aware of these selection guidelines. Children in the training condition had higher levels of Social Inhibition ($M = 2.48$, $SD = 0.78$) than children in the control condition ($M = 2.05$, $SD = 0.61$; $t(63) = -2.33$, $p = .023$). There were no differences between training and control condition in children's levels of Hyperactivity ($t(63) = -.39$, $p = .696$) and Externalizing Behavior ($t(63) = -.63$, $p = .530$).

Originally, our sample included 37 teachers and 74 children. Four children were excluded from the study, because their faces were not clearly visible during videotaped interactions with the teacher. One child was excluded because it did not have high enough scores on Social Inhibition (less than 0.5 SD above the class mean). Four children (two teachers) were excluded because they only had data at the first measurement occasion.

Procedure

On each occasion, teachers and children were observed during a dyadic interaction task outside the classroom. Children had to place different sets of three pictures in a logical chronological order and tell the corresponding story to the teacher. On each occasion, children got different sets of pictures. Teachers were instructed to let children explain their stories and were encouraged to remove the last picture and let children think of an alternative ending to the story. However, teachers were also told that we were interested in how they usually interacted with the child and that they could do the task in their own way. Therefore, the length of the video-recordings (fragments) varied from 3.00 to 21.75 minutes ($M = 8.32$, $SD = 3.29$). To control for possible effects of the duration of interactions on outcome variables, we included Interaction Time as covariate in all analyses. There were no differences between conditions in the length of interactions at pretest ($t(63) = -.34$, $p = .733$). Videos were coded by trained observers. Teachers rated children's behaviors (i.e., Inhibition, Hyperactivity, and Externalizing Behavior) approximately two weeks before the start of the video-observations.

Interpersonal Skills Training

The Interpersonal Skills Training (IST; Thijs, 2005) consisted of two sessions, of approximately 45 minutes each, in which teachers were trained individually by the third author or trained graduate students. The aim of the IST was to make teachers aware of reciprocal influences during their interactions with socially inhibited children and to provide them with practical guidelines to improve those interactions. We used notions from interpersonal theory and the complementarity principle to describe and explain reciprocal influences between teacher and child and to formulate guidelines to enhance those interactions. Before the start of the training, the teacher received a booklet in which the interpersonal circumplex and the complementarity principle were explained. This booklet also contained suggestions for using the complementarity principle to change problematic interactions with children. For instance, it was explained how teachers can elicit more initiative from inhibited children by being less dominant themselves and more friendliness by behaving more friendly themselves. During the first session, the teacher saw a video fragment of herself interacting with one of the two selected children and was asked whether she had read and understood the information booklet. Depending on the level of understanding, the main points of interpersonal theory were addressed more or less in detail. Next, the teacher was

stimulated to conduct a thought experiment about the selected child and herself to further enhance understanding of interpersonal theory, mutual influences, and possibilities to change interactions. The teacher was asked 1) to describe the child's and her own interactive behaviors in terms of the interpersonal theory, 2) to reflect upon the mutual influence between her own and the child's interpersonal behaviors in terms of the interpersonal model, and 3) to think about the desirability and the possibility of changing children's behaviors according to interpersonal theory in daily school practice. To further enlarge the teacher's understanding of the interpersonal theory and reciprocal influences during interactions with inhibited children, the trainer handed the teacher a short vignette about the interpersonal behaviors of a socially withdrawn girl and her teacher's reactions to these behaviors. During the second training session, this vignette was discussed with the teacher, if some parts of interpersonal theory were still unclear. In addition, it was emphasized to the teacher that it is important to be alert at interactions with inhibited children, because of the negative, long-term outcomes of social withdrawal. Next, the trainer once again showed the teacher the video fragment of her interactions with the withdrawn target child and stimulated the teacher to apply interpersonal theory to her actual interactions with an inhibited child. The trainer encouraged the teacher 1) to describe the child's and her own behaviors in terms of the model, 2) to address the issue of mutual influence by asking the teacher whether she and the child elicited specific interactive behaviors from each other, and 3) to think about the desirability and the possibility of changing the child's behavior as displayed in the video fragment using interpersonal theory. In addition, the trainer asked the teacher whether the fragment was representative for her interactions with the child, and whether her videotaped behaviors corresponded to her intentions.

Measurement Instruments

Children's social inhibition. Children's social inhibition was measured with the Behavior Questionnaire for Two- to Six Year-Olds-Modified (BQTSYO-M; Thijs et al., 2004). This questionnaire consists of small- and broad-band scales which concern children's internalizing and externalizing behaviors. The Hyperactivity subscale (4 items, e.g., 'Has poor concentration', 'Restless') and the broad-band Externalizing Behavior scale (13 items, e.g., 'Hits or kicks other children', 'Disobedient') were used for the selection procedure. The Social Inhibition subscale (5 items, e.g., 'Tries to avoid attention', 'Rather quiet, does not say anything spontaneously') was used for both the selection of children and as a moderator variable in our analyses. Teachers rated children's behaviors on a 4-point Likert scale, ranging from 1 (*absolutely not characteristic*) to 4 (*very characteristic*). Cronbach's alphas were above .84 for Social Inhibition, Hyperactivity, and Externalizing Behavior. Previous research has supported the validity of the scales (Thijs & Koomen, 2009; Thijs, Koomen, & van der Leij, 2008).

Teachers' and children's observed interpersonal behaviors. Observations of teachers' and children's interpersonal behaviors (control and affiliation) were rated independently by different groups of trained observers in episodes of five seconds (i.e., interval ratings) on four six-point scales (Thijs et al., 2011). With Teacher Control ranging from *very low* (1) "shows a passive attitude toward the child, and does not try to influence his/her behavior at all – e.g., does not give clues and lets the child determine the situation" to *very high* (6) "tries to have a strong influence on the child, has (or takes) complete

control over the situation without acknowledging and permitting any independent contribution from the child”. Teacher Affiliation ranges from *very low* (1) “is defensive, morose, or unfriendly to the child – e.g., shows verbal and nonverbal angry or clearly irritated reactions” to *very high* (6) “is strongly positive, clearly supportive, companionable, or warm, both verbally and nonverbally – e.g., is truly interested, encouraging, reassuring, or companionable, praises the child, smiles at it, or jokes with it. No ambiguity is observed”. Child Control ranged from *very low* (1) “is totally passive and shows no initiative, acts only when explicitly or repeatedly asked by the teacher, does not appear to behave like this on purpose, but as a result of large uncertainty or strong dependency” to *very high* (6) “adopts an active self-assured attitude toward the teacher – e.g., indicates its wishes, tries to convince the teacher, or openly protests with her”. Child Affiliation ranged from *very low* (1) “is indifferent, defensive, morose, unfriendly, or cheeky to the teacher – e.g., reacts angrily or not at all, or is clearly turned away from the teacher” to *very high* (6) “is very pleasant, companionable, spontaneous, or warm to the teacher – e.g., smiles at the teacher, or tells jokes or something personal. No ambiguity is observed”.

To examine interrater reliability, a random selection of the total dataset of videos was double coded. For the four scales, ICCs ranged from fair to excellent according to the guidelines of Cicchetti and colleagues (2006): ICCs were .52 for Teacher Affiliation (3 raters; 17 fragments); .79 (3 raters; 11 fragments) and .70 (3 raters, 3 fragments) for Teacher Control; .60 for Child Affiliation (4 raters; 5 fragments); and .64 for Child Control (6 raters; 4 fragments). The validity of these microscales has been supported by significant associations with global observer ratings of teachers’ autonomy support, and children’s positive affect and submissiveness (see Thijs et al., 2011).

Interaction Time. Interaction Time was coded to represent the total number of episodes that teacher and child interacted with each other at a certain occasion.

Analyses

Hierarchical linear modeling was used for analyzing the longitudinal data. The five-second episodes were considered as nested within measurement occasions (i.e., pretest, posttest, and follow-up), occasions as nested within children, and children as nested within teachers. Deviance tests were used to check whether it was necessary to distinguish between variance on the occasion, child, and teacher level. For teachers’ interactive behaviors, we used three level models with variance at episode (88% for Teacher Control; 75% for Teacher Affiliation), occasion (8% for Teacher Control; 18% for Teacher Affiliation), and teacher level (4% for Teacher Control; 7% for Teacher Affiliation). For children’s interactive behaviors, three level models with variance at episode (64% for Child Control; 74% for Child Affiliation), occasion (23% for Child Control; 19% for Child Affiliation), and child level (13% for Child Control; 7% for Child Affiliation) were used.

We used a four-step procedure to answer our research questions: First, interactions of time and condition were included in the model to investigate intervention effects on teachers’ and children’s interactive behaviors (question 1). Second, to examine whether intervention effects on interactive behaviors depended on Social Inhibition (question 2), we added interactions of time, condition, and Social Inhibition to the model in

the previous step. Third, to investigate intervention effects on teachers' and students' interpersonal complementarity (question 3), interactions of time, condition, and the interaction partner's behavior on the same dimension one episode before the dependent variable was measured ($Other_{t-1}$), were added to the model in step 1. We also added the actor's own behavior on the same dimension, one episode earlier than the dependent variable ($Self_{t-1}$), to control for intrapersonal stability. Finally, to examine whether intervention effects on interpersonal complementarity depended on Social Inhibition (question 4), we added interactions of time, condition, $Other_{t-1}$, and Inhibition to the model in the previous step.

To examine time effects, we used dummy variables for posttest and follow-up, because we expected that changes over time would be non-linear due to the intervention. To control for possible effects of the duration of interactions, we included Interaction Time as a covariate in all models. To ease interpretation of results, each continuous variable was standardized (z -scores) at its own level in the analyses. Multilevel analyses were conducted with SPSS version 17.

Results

Descriptive information and correlations between outcome variables are presented in Table 1. Table 2 displays intervention effects on teachers' and children's interactive behaviors (Training at posttest/follow-up). Intervention effects on teachers' and children's interpersonal complementarity are presented in Table 3. The first part of this table is comparable to Table 2, the second part displays intervention effects on complementarity tendencies ($Other_{t-1}$, training at posttest/follow-up). Finally, Model b in Table 3 displays the moderation effect of social inhibition on intervention effects on teachers' complementarity tendencies on affiliation ($Other_{t-1}$, training, posttest/follow-up, inhibition).

Teachers' Interactive Behaviors and Complementarity

Interaction Time had a significant effect on Teacher Control but not on Teacher Affiliation: Teachers showed more control as interactions lasted longer ($\beta = .10, p < .001$). Overall, there was a significant decline in Teacher Control at posttest ($\beta = -.20, p = .018$; see Table 2). In addition, a significant interaction of time and condition at follow-up was found, which indicates an intervention effect. In the control condition, there was no significant change in Teacher Control at follow-up, whereas in the training condition there was a significant decrease in Teacher Control ($\beta = -.29, p = .006$; see Figure 1). No intervention effect was found for teachers' complementarity tendencies on the control dimension (see Table 3). Neither did Social Inhibition act as a significant moderator for the effects on Teacher Control.

Overall, there was a significant decrease in Teacher Affiliation at follow-up compared to the pretest ($\beta = -.38, p = .002$; see Table 2). No intervention effect was found for Teacher Affiliation, neither was there an intervention effect if we controlled for the child's level of Social Inhibition. But we did find a significant intervention effect on teachers' interpersonal complementarity on the affiliation dimension (see Table 3): The analyses revealed a positive effect of Affiliation $Other_{t-1}$ ($\beta = .12, p < .001$), indicating that, overall,

Table 1.

Descriptive statistics and correlations for outcome variables per occasion

	Training condition					Control condition				
	<i>n</i>	<i>M (SD)</i>	1.	2.	3.	<i>n</i>	<i>M (SD)</i>	1.	2.	3.
<i>Time 1</i>										
1. Teacher control	3359	3.62 (.91)	-			2021	3.58 (.96)	-		
2. Teacher affiliation	3308	4.55 (.64)	.18**	-		2036	4.61 (.64)	.29**	-	
3. Child control	3252	2.69 (.79)	-.17**	-.01	-	2008	2.60 (.74)	-.12**	.01	-
4. Child affiliation	3319	3.42 (.66)	-.06**	.18**	.45**	2054	3.32 (.63)	.04	.21**	.44**
<i>Time 2</i>										
1. Teacher control	4231	3.41 (1.01)	-			2476	3.49 (1.01)	-		
2. Teacher affiliation	4216	4.47 (.70)	.19**	-		2428	4.50 (.65)	.25**	-	
3. Child control	4195	2.87 (.77)	-.16**	.08**	-	2453	2.75 (.72)	-.17**	-.04	-
4. Child affiliation	4243	3.40 (.70)	-.04*	.22**	.53**	2467	3.40 (.64)	-.02	.15**	.51**
<i>Time 3</i>										
1. Teacher control	3684	3.25 (1.07)	-			2002	3.56 (1.11)	-		
2. Teacher affiliation	3690	4.32 (.69)	.27**	-		1996	4.37 (.64)	.31**	-	
3. Child control	3649	2.91 (.67)	-.15**	.02	-	1937	2.75 (.62)	-.25**	-.11**	-
4. Child affiliation	3699	3.39 (.63)	.03	.07**	.38**	2149	3.31 (.68)	.05*	.18**	.28**

Note 1. * $p < .05$ ** $p < .01$

Note 2. Concurrent correlations are reported

Note 3. *n* refers to the total number of episodes in the analyses

teachers responded complementarily to an individual child with regard to Affiliation. Overall, this complementarity appeared to be stronger in the control condition than in the training condition ($\beta = -.06, p = .038$). However, there was an increase in teacher complementarity in the training condition, which was significant at follow-up ($\beta = .09, p = .015$). Figures 2 to 4 show the differences in complementarity between teachers in the training condition and teachers in the control condition on pretest, posttest, and follow-up; steeper lines represent stronger complementarity. Moreover, this intervention effect was found to depend on the child's level of Social Inhibition (see Table 3, Model b). Overall, teachers reacted more complementarily on Affiliation to highly inhibited children ($\beta = .07, p = .028$). However, this effect diminished at follow-up in the control

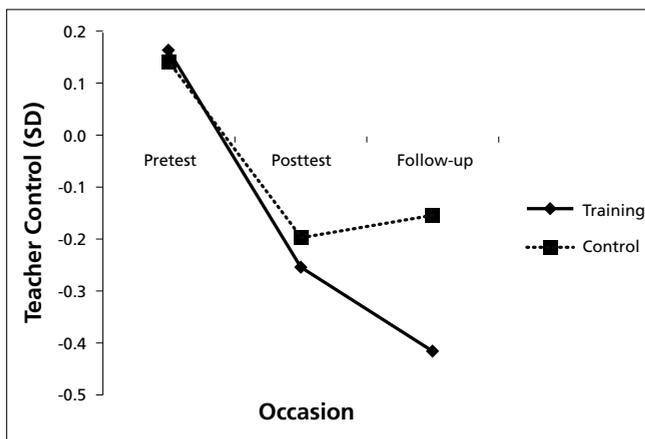


Figure 1. Interaction effect of time and condition on Teacher Control.

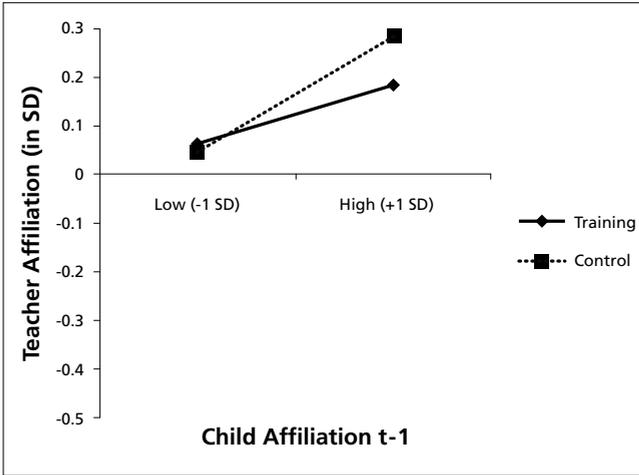


Figure 2. Interaction effect of $Child\ Affiliation_{t-1}$ and condition on Teacher Affiliation at pretest.

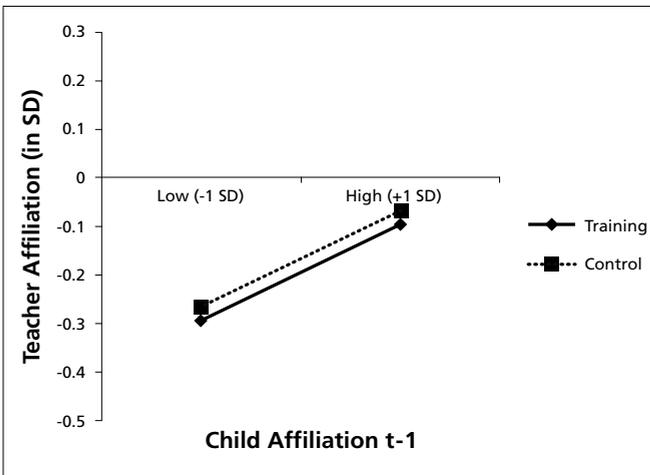


Figure 3. Interaction effect of $Child\ Affiliation_{t-1}$ and condition on Teacher Affiliation at posttest.

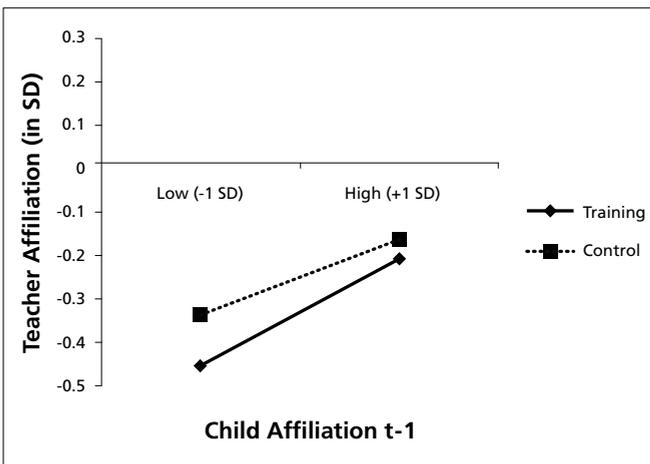


Figure 4. Interaction effect of $Child\ Affiliation_{t-1}$ and condition on Teacher Affiliation at follow-up.

Table 2.

Intervention effects on teachers' and children's interactive behaviors

	Teacher		Child	
	Control (SE)	Affiliation (SE)	Control (SE)	Affiliation (SE)
<i>Predictors</i>				
Interaction Time	.097 (.026)**	.077 (.039)	-.113 (.046)*	-.005 (.042)
Pretest	.141 (.073)	.225 (.113)	-.333 (.114)**	-.138 (.102)
Posttest (vs. pretest)	-.199 (.083)*	-.228 (.125)	.307 (.137)*	.149 (.135)
Follow-up (vs. pretest)	-.153 (.081)	-.384 (.121)**	.354 (.132)**	.004 (.131)
Training condition (vs. control)	.023 (.092)	-.039 (.143)	.211 (.143)	.176 (.127)
Training (vs. control) at posttest	-.080 (.100)	.005 (.150)	.014 (.164)	-.128 (.163)
Training (vs. control) at follow-up	-.288 (.103)**	-.058 (.153)	.003 (.168)	.014 (.166)
<i>Variance</i>				
Episodes	.878	.746	.620	.723
Occasions	.061	.150	.182	.180
Children	-	-	.123	.059
Teachers	.030	.081	-	-

Note 1. The dependent variables and Interaction Time have been standardized to zero mean and unit variance, so that those regression coefficients can be interpreted as effect size r (so .1 indicates small, effect sizes, .3 indicates medium effect sizes, and .5 indicates large effect sizes); regression coefficients of binary indices can be interpreted as effect size Cohen's d (so .2 represents small effect sizes, .5 represents medium effect sizes, and .8 represents large effect sizes; Cohen, 1988).

Note 2. * $p < .05$ ** $p < .01$

condition ($\beta = -.11$, $p = .011$). Only teachers in the training condition still responded more complementarily to inhibited children at follow-up ($\beta = .12$, $p = .013$).

Children's Interactive Behaviors and Complementarity

Interaction Time was significantly associated with Child Control but not with Child Affiliation: Children displayed less control as interactions lasted longer ($\beta = -.11$, $p = .014$). There was a significant increase in Child Control at posttest ($\beta = .31$, $p = .027$) and a further increase at follow-up ($\beta = .35$, $p = .008$). No intervention effects were found on Child Control or children's complementarity tendencies on the Control dimension, neither did Social Inhibition act as a significant moderator.

For Child Affiliation, no intervention effects were found for either interactive behaviors or interpersonal complementarity, nor were there intervention effects depending on the child's level of Social Inhibition.

Discussion

The present study aimed to contribute to the small body of research evaluating interventions specifically targeted at improving teacher-child relationships. In contrast to existing, relatively time-consuming, interventions (Driscoll & Pianta, 2010; Pianta et al., 2008), this study tested the effectiveness of instructing teachers in interpersonal theory and the complementarity principle, during only two training sessions, to change

Table 3.

Intervention effects on teachers' and children's interpersonal complementarity

	Teacher		Child	
	Control	Affiliation	Control	Affiliation
	β (SE)	β (SE)	β (SE)	β (SE)
<i>Predictors</i>				
Interaction Time	.074 (.021)**	.051 (.025)*	-.071 (.030)*	-.004 (.029)
Pretest	.107 (.060)	.165 (.073)*	-.211 (.074)**	-.102 (.071)
Posttest (vs. pretest)	-.154 (.068)*	-.167 (.081)*	.196 (.089)*	.111 (.094)
Follow-up (vs. pretest)	-.114 (.067)	-.254 (.078)**	.224 (.085)*	-.002 (.091)
Training condition (vs. control)	.018 (.076)	-.042 (.092)	.141 (.093)	.129 (.089)
Training (vs. control) at posttest	-.059 (.082)	.016 (.097)	.000 (.106)	-.096 (.113)
Training (vs. control) at follow-up	-.230 (.084)**	-.037 (.099)	-.009 (.109)	.010 (.116)
Self _{t-1}	.172 (.008)**	.345 (.007)**	.353 (.007)**	.302 (.007)**
Other _{t-1}	-.018 (.025)	.119 (.022)**	-.009 (.019)	.023 (.022)
Other _{t-1} at posttest	.011 (.035)	-.018 (.030)	.013 (.025)	-.024 (.029)
Other _{t-1} at follow-up	-.058 (.039)	-.036 (.032)	-.028 (.026)	-.068 (.031)*
Other _{t-1} in training (vs. control)	-.023 (.032)	-.057 (.028)*	-.026 (.024)	-.008 (.028)
Other _{t-1} , training at posttest	-.014 (.044)	.053 (.037)	-.002 (.032)	.047 (.037)
Other _{t-1} , training at follow-up	.048 (.047)	.094 (.039)*	.028 (.032)	.032 (.039)
<i>Model b: Moderating effects of social inhibition^a</i>				
Inhibition	-	.005 (.081)	-	-
Inhibition at posttest	-	.015 (.104)	-	-
Inhibition at follow-up	-	.050 (.096)	-	-
Other _{t-1} for inhibition	-	.066 (.030)*	-	-
Other _{t-1} at posttest for inhibition	-	-.079 (.042)	-	-
Other _{t-1} at follow-up for inhibition	-	-.109 (.043)*	-	-
Inhibition in training (vs. control)	-	.133 (.095)	-	-
Inhibition, in training at posttest	-	-.155 (.117)	-	-
Inhibition, in training at follow-up	-	-.145 (.112)	-	-
Other _{t-1} , in training for inhibition	-	-.047 (.034)	-	-
Other _{t-1} , training, posttest, inhibition	-	.070 (.047)	-	-
Other _{t-1} , training, follow-up, inhibition	-	.120 (.048)*	-	-
<i>Variance</i>				
Episodes	.852	.651	.546	.662
Occasions	.037	.059	.072	.083
Children	-	-	.052	.029
Teachers	.021	.033	-	-

Note 1. The dependent variables, Interaction Time, and Inhibition have been standardized to zero mean and unit variance, so that those regression coefficients can be interpreted as effect size r ; regression coefficients of binary indices can be interpreted as effect size Cohen's d (Cohen, 1988).

Note 2. * $p < .05$ ** $p < .01$

Note 3. The subscript t-1 indicates that predictors were measured one episode (five seconds) earlier than the dependent variable. Self and other represent interactive behaviors on the same dimension as the dependent variable (i.e., either control or affiliation). Self_{t-1} was included in the model to control for intrapersonal stability.

Note 4. a. Regression coefficients in the first part of this model were very similar as in the model above and therefore not reported here.

teacher-child interactions. The present study was intended as a first evaluation of this Interpersonal Skills Training (IST) in which we examined training effects on teachers' and children's interactive behaviors and interpersonal complementarity. The IST produced a decrease in teacher control at follow-up (i.e., seven weeks after the intervention). In addition, IST increased teachers' complementarity tendencies on the affiliation dimension (i.e., they returned children's friendliness more often with positiveness and children's hostility more often with unfriendliness), especially in interactions with highly inhibited children. No intervention effects were found for children's interactive behaviors and complementarity tendencies.

Intervention Effects on Teacher Control

Our sample consisted of children that were relatively inhibited compared to their classmates. Previous research has suggested that teachers behave more dominantly toward children with higher levels of social inhibition (Coplan & Prakash, 2003; Roorda et al., 2012), which will hinder children's active participation in the interaction (Evans, 1992). Therefore, the IST intended to decrease teachers' control behaviors. At posttest, teachers in both conditions displayed less control than at pretest. Probably, because children knew better what was expected of them when they performed the same task for the second time and therefore there was less need for the teacher to guide children's behaviors. The IST further diminished teachers' control behaviors at follow-up: At follow-up, a significant decrease in teacher control was found in the training condition, but not in the control condition. Although the absolute change in teacher control was relatively small, it was found seven weeks after the intervention, and could therefore still have a meaningful impact on teachers' and children's behaviors on the long term. This postponed training effect suggests that teachers need time to fully implement the training in their daily interactions with children. The IST seemed to affect the degree of teacher control regardless of the child's level of social inhibition, which further supports the effectiveness of our training for teachers' control behaviors. In sum, our findings provided a first indication that the IST, which consisted of only two training sessions, was able to elicit small but significant changes in teachers' actual control behaviors. Although teachers actually changed their behaviors on the control dimension, the IST did not lead to a decrease in teachers' complementarity tendencies on this dimension. Likewise, Tracey (2004) found that college students who interacted in a prescribed manner (i.e., either dominant, submissive, friendly, or critical) displayed the same level of complementarity as students who interacted in a natural manner. Apparently, people can change their interactive behaviors without changing the degree of complementarity in their reactions to the interaction partner. It seems that teachers have learned from the training to elicit more dominant behavior from children by being less dominant themselves. However, not finding training effects on complementarity indicates that teachers did not learn to respond *acomplementarily* on the child's behavior.

Intervention Effects on Teacher Affiliation

The IST did not affect teachers' interactive behaviors on the affiliation dimension at either posttest or follow-up. Perhaps, no intervention effect on teacher affiliation was found because teachers already showed more affiliation toward the relatively inhibited

children in our sample than they would have done toward less inhibited children, which seems to be supported by previous research which found that teachers showed more support and more affiliation toward internalizing children (Roorda et al., 2012; Thijs & Koomen, 2008). Surprisingly, an overall decline in teacher affiliation was found, which was significant at the follow-up measure. Perhaps, teachers were more fully aware of the video camera during the first occasion, for which reason they tried to be more supportive toward the child. It could be that teachers' behaviors were less determined by social desirability as they became less aware of being videotaped at the later occasions. Or maybe teachers became less patient and more quickly irritated every time they had to supervise the same child on the same task again. This decrease in affiliation could not be prevented in the training condition. Perhaps, behaviors on the affiliation dimension are more difficult to change intentionally than behaviors on the control dimension. Evans (1992) found that, after coaching, teachers were able to change the level of control in their conversational style, according to the conditions of the experiment (i.e., they could vary from high, to normal, to low controlling styles). In contrast, after a yearlong intervention with the Good Behavior Game, only a marginally significant increase in teacher praise, a specific form of affiliation, was found (Leflot, van Lier, Onghena, & Colpin, 2010). Our intervention with the IST only consisted of two meetings, which is probably not long enough to affect teachers' behaviors on the affiliation dimension. Future research could investigate whether an extension of the training could produce an increase in teacher affiliation.

Although the IST did not affect the overall level of teacher affiliation, an intervention effect on interpersonal complementarity on the affiliation dimension was found at follow-up. In contrast with our hypothesis, the IST increased, rather than decreased, the degree of complementarity in teachers' affiliation behaviors: teachers more often returned children's unfriendliness with hostility and children's friendliness with warmth. Previous research has found that complementarity in interactions between college students leads to satisfaction and comfort during the interaction, and positive feelings about the interaction partner (Dryer & Horowitz, 1997; Tiedens & Fragale, 2003; Tracey 2004). Based on these findings, one could interpret this increase in complementarity as a positive effect of the training. However, the increase in complementarity could also point to negative effects: If teachers react more complementarily on children's unfriendly behaviors, the degree of negativity and conflict in the interaction will increase, which could hinder children's school functioning (see Hamre & Pianta, 2001; Ladd, Birch, & Buhs, 1999). The increase in complementarity in the training condition was mainly found if teachers interacted with children with high levels of social inhibition. This stronger complementarity toward highly inhibited children may also, on the one hand, be negative, as it could imply that teachers more often returned children's hostile behaviors with hostility. Perhaps teachers are personally affected by the behaviors of highly inhibited children and therefore not able to respond professionally to those children and to return their hostility with friendly behaviors. However, as teachers are found to show comparatively more support and more affiliation toward highly inhibited children (Roorda et al., 2012; Thijs & Koomen, 2008), their stronger complementarity may, on the other hand, also indicate that they are more sensitive to the needs of those vulnerable children, and therefore more likely to reward their positive behaviors with

friendliness. Which interpretation is most correct, is to be revealed in future studies. To prevent the negative effects of increased complementarity, it is important for future training to further emphasize that teachers should only react complementarily to children's friendly behaviors, whereas they should respond anticomplementarily if children display hostility during the interaction. In addition, teachers should be encouraged to be especially cautious of their reactions to highly inhibited children, as these children seem to be most at risk for becoming entrapped in increasingly negative interaction cycles.

Children's Interactive Behaviors

As socially inhibited children have been found to display less initiative in their interactions with teachers (Rudasill & Rimm-Kaufman, 2009), an indirect aim of our training was to increase children's control behaviors by reducing the level of teacher control. However, in contrast with the findings of Evans (1992), the decrease in teacher control was not accompanied by an increase in initiative of the child. Probably, no intervention effect on child control was found, because the effect on teacher control was not found before follow-up. As the IST was a teacher training, we expected that changes in teachers' behaviors would precede changes in children's interactive behaviors. However, this hypothesis could not be investigated, because there were only three observations of teacher-child interactions. Overall, there was an increase in child control at posttest and an even stronger increase at follow-up, but this increase was also found in the control condition. Socially inhibited children tend to be especially fearful and withdrawn in unfamiliar situations (Kagan, 1997). Perhaps, children became more accustomed to the new situation (i.e., to being alone with the teacher outside the classroom, to the previously unknown task, and to performing a task in the presence of a video camera) during subsequent occasions, and therefore increasingly more daring to show initiative toward the teacher. With respect to the affiliation dimension, children's interactive behaviors were also not affected by the teacher training. This is understandable as the IST did not change teachers' behaviors on the affiliation dimension either.

As expected, no intervention effect was found on children's complementarity tendencies on both the control and affiliation dimension. Neither were there stronger intervention effects for highly inhibited children. It could be that some highly inhibited children were rigid and nonresponsive to teachers' interactive behaviors (see Thijs et al., 2011), whereas others were highly sensitive to changes in teachers' behaviors, as we expected. Perhaps, the highly inhibited children differed in their degree of interpersonal flexibility, and, therefore the effect of social inhibition was leveled out.

Implications for School Practice

The most promising findings for school practice were found with regard to the control dimension. Our results showed that only a short training is needed to bring about small, but significant, changes in teachers' control behaviors. The fact that this intervention effect was found seven weeks after the training indicated that these changes could be long-lasting. This decrease in teacher control was especially important as it took place during interactions with relatively inhibited children, who tend to be passive and withdrawn in social situations. These findings show that teachers are able to change

their interactive behaviors toward inhibited children intentionally. As complementarity in interactions usually happens automatically and unconscious (Tiedens & Fragale, 2003), school practitioners could give teachers a short training to introduce them in interpersonal theory and help them to break negative interaction cycles with socially inhibited children.

Our results also showed that at least extension of the IST, and possibly also supplementing the program with other elements, is needed if school practitioners want to help teachers improve interactions with regard to the affiliation dimension. Teachers could use concrete support in how to respond with more warmth and friendliness to children, even if those children behave hostile or aloof themselves. School practitioners should emphasize to teachers that it is important not to return children's aloofness with hostile behaviors, in order to avoid negative interaction cycles.

More research is needed to investigate whether changes in teachers' interactive behaviors in due course will have an effect on children's behaviors. Still, the intervention effect on teacher control suggests that it could be useful for teachers and school practitioners to use notions from interpersonal theory to intervene in negative interactions with kindergarten children.

Limitations

Some limitations should be mentioned. First, the present study consisted of three measurement occasions. As most effects were only found at follow-up, it would have added a lot to our understanding if we had followed teachers and children for a longer time period. Future researchers are advised to include more follow-up measures to see if changes in teachers' behaviors eventually lead to changes in children's interactive behaviors. In addition, it would provide insight to have teachers report about the ways in which they tried to implement the training in their daily interactions with children. Including such process measures may provide explanations why training effects are only found at the third measurement occasion.

Second, teacher-child interactions were observed outside the classroom in a dyadic setting. Although this setting enabled us to observe all teacher-child dyads under comparable conditions, it could also have limited the ecological validity of our observations. The present study was meant to provide a first indication of the usefulness of the IST in changing teacher-child interactions, further research is needed to determine whether training effects are also found in the daily practice of the classroom setting. Furthermore, our sample only included children who were rated by their teachers as displaying relatively high levels of social inhibition and low levels of externalizing behaviors. Future research could investigate how the IST influences teachers' interactive behaviors toward children with different behavior profiles.

Third, mean levels of social inhibition were significantly higher in the training than in the control condition. As highly inhibited children were expected to be more sensitive to change (Thijs et al., 2011), this might have influenced our results. However, since no training effects were found on children's interactive behaviors, we believe that this difference in levels of social inhibition had limited, if any, impact on our results. Still, for future research it seems to be advisable to match children in training and control condition on their levels of social inhibition.

Finally, in the present study, the IST only consisted of two short training sessions. Although this seemed to be enough to bring about a change in teachers' control behaviors, teachers' behaviors on the affiliation dimension were not altered. It could be that two training sessions are not enough to elicit changes in teacher affiliation. Future research could extend the number of training sessions, in which teachers should get assistance in how they can behave more friendly and supportive to inhibited children and how to return children's aloofness with friendliness.

Conclusion

In sum, this study provides a first indication that interpersonal theory can be used to alter teachers' interactive behaviors. Two sessions seemed to be enough to realize a decline in teachers' control behaviors. More research is needed to see whether the training will eventually influence children's interactive behaviors, and whether it will also be successful in affecting interactions in the daily practice of the classroom setting. Furthermore, an extension of the training is needed to achieve changes on the affiliation dimension. Yet, our results indicate that interpersonal theory offers important starting points to break negative interaction cycles between teachers and socially inhibited children.

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