



UvA-DARE (Digital Academic Repository)

Teacher-child relationships and interaction processes: Effects on students' learning behaviors and reciprocal influences between teacher and child

Roorda, D.L.

Publication date
2012

[Link to publication](#)

Citation for published version (APA):

Roorda, D. L. (2012). *Teacher-child relationships and interaction processes: Effects on students' learning behaviors and reciprocal influences between teacher and child*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

An Observational Study of Teachers' Affiliation and Control Behaviors Towards Kindergarten Children: Associations With Teacher-Child Relationship Quality

*Debora L. Roorda, Helma M.Y. Koomen,
and Frans J. Oort*

*This chapter has been accepted for publication in T. Wubbels, P. den Brok, J. van Tartwijk, & J. Levy (Eds.), *Interpersonal Relationships in Education*. Rotterdam (NL): Sense Publishers.*

Abstract

This paper investigates whether teachers' observed interactions can be predicted by their perceptions of relationships with kindergarten children. The sample consisted of 48 teachers and 179 children (95 boys). Teachers' relationship perceptions were described with dimensions originally derived from attachment theory (i.e., closeness, conflict, and dependency). Teachers' interactive behaviors were observed in a small-group setting and meticulously categorized on two observation scales based on interpersonal theory (i.e., affiliation and control). Results of multilevel regression analyses showed that conflict had a negative influence on teacher affiliation, whereas dependency had a positive effect. As expected, control was not significantly predicted by any of the relationship dimensions. In addition, significant associations with children's internalizing and externalizing behaviors provided support for the validity of the observation scales.

Introduction

Previous research has shown that the quality of teacher-child relationships influences a range of children's social and academic outcomes, such as classroom participation (e.g., Ladd, Birch, & Buhs, 1999), academic performance (e.g., Hamre & Pianta, 2001), and peer acceptance (e.g., Henricsson & Rydell, 2006). Most research on teacher-child relationships has used teachers' or students' reports of the global quality of the relationship. Far less is known, however, about the ways in which teachers and children interact with each other in concrete daily situations. The present study addresses the need for observational work that captures how teachers and students interact in real time in authentic classroom settings. Interpersonal theory was used to observe and meticulously analyze teachers' videotaped interactive behaviors towards kindergarten children. This theory offers a conceptual framework to describe and predict dyadic interactions between individuals (Kiesler, 1996; Sadler & Woody, 2003).

Interactive behaviors are considered to be guided by individuals' relationship perceptions, because perceptions work as filters for information about the other's behavior and are inclined to act as self-fulfilling prophecies (Pianta, Hamre, & Stuhlman, 2003). In the present study, we investigated whether teachers' perceptions about the quality of the relationship with a specific child influenced their actual interactive behaviors towards that child. Teacher-child relationships seem to be especially important for children who are at risk for social and academic maladjustment due to behavior problems (Hamre & Pianta, 2001). Therefore, we also examined whether teachers interacted differently with children they rated as displaying various levels of externalizing and internalizing behavior.

Interpersonal Theory

According to interpersonal theory (Leary, 1957), interactions can be described on two dimensions: control and affiliation. Control represents the degree of power, dominance and influence in the interaction, with dominance at one end of the dimension, and submissiveness at the other. Affiliation describes the degree of proximity, warmth, and support in the interaction, and ranges from friendliness to hostility (Gurtman, 2001; Kiesler, 1996). These dimensions are considered to be orthogonal (Sadler & Woody, 2003).

A central concept in interpersonal theory is the complementarity principle. This principle can be used to predict people's interactive behaviors based on the behaviors of their interaction partner. The most common conception of complementarity is that of Carson (1969) and Kiesler (1983). According to this approach, interactive behaviors are complementary when they are similar on the affiliation dimension and reciprocal on control (Sadler & Woody, 2003). Thus, friendliness will elicit friendly behavior, whereas dominance will lead to submissive behavior and vice versa. Researchers have applied this theory in educational settings, using a questionnaire to measure teachers' interpersonal styles in secondary education (e.g., Wubbels & Brekelmans, 2005). However, these studies are mostly based on aggregates of students' reports of teachers' global interpersonal styles, and not on observations of

teachers' interactions with individual students. In the present study, we apply this theory to observations of teachers' dyadic interactions with kindergarten children. Independent observers rated teachers' interpersonal behaviors every five seconds, hereby taking into account the continually changing nature of interactive behaviors. This approach has the added advantage that it provides the opportunity to study reciprocal influences between interaction partners and interventions to break negative interaction cycles in the future.

Developmental Systems Model of Teacher-Child Relationships

Pianta and colleagues (2003) present a developmental systems model of teacher-child relationships, which considers interactive behaviors as one of the key components of affective relationships between teachers and children. This model consists of four relationship components: features of individuals (developmental history and biological factors), representational models of teacher and child (perceptions and emotions), information exchange processes (interactive behaviors), and external influences. These components influence each other in dynamic, reciprocal ways. Perceptions and selective attending of teacher and child function as filters for information about the other's behavior. These filters can limit the nature and form of the information included in feedback processes and are considered to be influential in guiding behaviors between interaction partners, because perceptions and selective attending are likely to be self-fulfilling. Over time, these feedback and information exchange processes provide a structure for the interactions between teacher and child (Pianta et al., 2003). Although relationship perceptions are considered to guide interactive behaviors, it can also be argued that these influences are in the opposite direction, because relationship perceptions result from a history of daily interactions (Pianta et al., 2003). In the present study, we focus on teachers' interactive behaviors as outcome variable, because interactions were observed at one specific point in time. Therefore, we were not able to investigate how the development of interactive behaviors over time could change relationship perceptions.

Teachers' relationship perceptions are often measured with the Student-Teacher Relationship Scale (STRS; Pianta, 2001). The STRS includes three dimensions: closeness, conflict, and dependency. Closeness measures the degree of affection, warmth, and open communication in the teacher-child relationship. Conflict describes the extent of negativity, anger, and discordance. Dependency refers to the degree of clinginess, overreliance, and possessiveness of the child in the relationship. Accordingly, closeness is looked on as a positive relational factor, supporting children to deal with the requirements in school. Conflict and dependency, on the other hand, are viewed as negative relational factors, hampering and interfering with children's coping with demands they face in school. Especially conflict appears to have a strong influence on children's school functioning (e.g., Hamre & Pianta, 2001).

Child Characteristics and Teachers' Interactive Behaviors

According to the developmental systems model (Pianta et al., 2003), teacher-child relationships are influenced by child characteristics, such as gender and children's behaviors. Previous research based on both teacher reports (e.g., Baker, 2006; Hamre

& Pianta, 2001) and independent observations (e.g., Ladd et al., 1999) has found that teachers' relationship perceptions and interactions with children are closer and less conflictual for girls than for boys.

In addition, numerous studies have found that teachers rate their relationships with externalizing children as less favorable than their relationships with normative children, more specifically, less close and more conflictual and dependent (e.g., Doumen et al., 2008; Thijs & Koomen, 2009). Children's disruptive behaviors (i.e., anger, hostility, and aggression) were also negatively associated with observer ratings of teacher sensitivity (Rimm-Kaufman et al., 2002). Likewise, DeMulder, Denham, Schmidt, and Mitchell (2000) showed that teachers' observed interactions with aggressive children were less secure than with normative children. Teachers also frequently reported their relationships with internalizing children as being less close and more dependent than their relationships with average children (e.g., Arbeau, Coplan, & Weeks, 2010; Thijs & Koomen, 2009). Accordingly, teachers' observed interactions with anxious/withdrawn children were found to be less secure than with normative children (DeMulder et al., 2000). In addition, behavioral observations showed that teachers initiated more interactions towards children they rated as anxious/withdrawn, than towards normative children. They asked more questions, intervened more often, and initiated more interactions with anxious/withdrawn children (Coplan & Prakash, 2003).

Present Study

In the present study, we investigated teachers' behaviors during interactions with kindergarten children. We observed teachers' interactive behaviors during a small group task with four behaviorally diverse children. Children were selected based on their scores on internalizing and externalizing behaviors relative to their classmates. We had two main aims. The first aim was to investigate whether teachers' interactive behaviors towards individual kindergarten children could be predicted by their perceptions of the relationships they share with these children. The second aim was

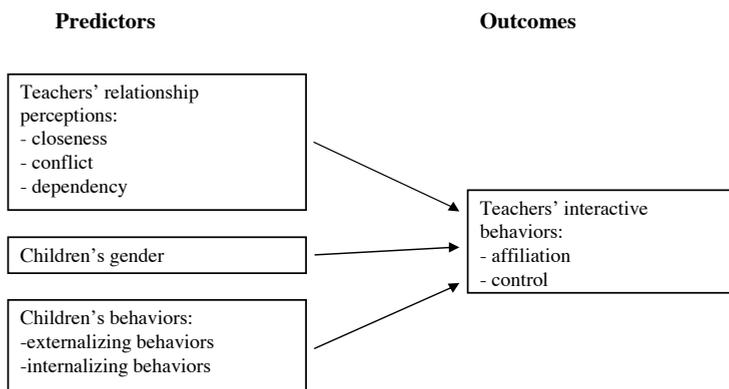


Figure 1. Expected associations between predictor and outcome variables.

to examine the validity of our observation scales for teacher affiliation and control by relating them to children's gender and behaviors. These aims resulted in three research questions: 1) Do teachers' relationship perceptions (i.e., closeness, conflict, and dependency) predict teachers' actual interactive behaviors in the classroom (i.e., affiliation and control)? 2) Are there gender differences in teachers' displays of affiliation and control? and 3) Do teachers' ratings of children's externalizing and internalizing behaviors predict the degree of affiliation and control they display towards these children? The expected associations between predictor and outcome variables are presented in Figure 1.

As mentioned before, perceptions of teachers are considered to be influential in guiding behaviors between interaction partners (Pianta et al., 2003). With respect to the first research question, we therefore expected that teachers' relationship perceptions, as measured with the STRS, could be used to predict their actual interactive behaviors, which were observed with scales based on interpersonal theory. Because high scores on closeness as well as affiliation represent positive emotions and behaviors, we expected closeness to have a positive influence on teacher affiliation. We hypothesized conflict to have a negative influence on teacher affiliation, because both high scores on conflict and low scores on affiliation represent negative emotions and behaviors. Because dependency is also considered to be a negative dimension of the affective teacher-child relationship (Hamre & Pianta, 2001), we expected dependency to have a negative influence on teacher affiliation. Teacher control focuses solely on power and dominance in the interaction and not on the emotional quality of interactions. Therefore, we expected that teacher control would not be influenced by any of the three relationship dimensions.

The second aim of our study was to investigate the validity of our observation scales. In the present study, we used new observation scales to measure teacher affiliation and control (described below). The validity of these scales for observations in a dyadic setting was supported in a previous study (Thijs, Koomen, Roorda, & ten Hagen, 2011). In the present study, we slightly adapted the scales for use in a small group setting, without changing their intended meaning. The validity of the scales in this group setting needs further support. According to the model of Pianta and colleagues (2003), interactions between teacher and child are, besides by relationship perceptions, influenced by child characteristics, such as gender and children's behaviors. Therefore, we further investigated the validity of our observation scales by relating them to children's gender and their externalizing and internalizing behavior (research questions 2 and 3, respectively). Concerning our second research question, we expected that teachers would show more affiliation towards girls than boys (see, Ladd et al., 1999). With regard to our third research question, we hypothesized that teachers would display less affiliation towards children who score high on externalizing behavior (see, DeMulder et al., 2000; Rimm-Kaufman et al., 2002). In addition, we expected teachers to show more control (see Coplan & Prakash, 2003), and less affiliation (see DeMulder et al., 2000) towards children they rated as displaying high levels of internalizing behavior. Finally, we expected that teacher affiliation and control would not be related with each other, because these dimensions are considered to be orthogonal (Sadler & Woody, 2003).

Method

Sample and Selection

Our sample consisted of 48 teachers (all female) from 48 kindergarten classes of 23 Dutch elementary schools. Four children were selected per teacher (N=192, 105 boys), based on their scores on a Dutch adaptation of the Preschool Behavior Questionnaire (Behar 1977), which the teacher completed for all children in the classroom. In every classroom, children were categorized in four groups: 1) ‘average children’ with relatively low scores on both externalizing and internalizing behavior; 2) ‘inhibited children’ with relatively high scores on internalizing behavior but relatively low scores on externalizing behavior; 3) ‘disruptive children’ with relatively high scores on externalizing behavior but relatively low scores on internalizing behavior; and 4) ‘inhibited-disruptive children’ with relatively high scores on both externalizing and internalizing behavior. Cut-off scores were 1.33 for internalizing behavior and 1.21 for externalizing behavior on a four-point scale. Those values were based on the median values derived from a large randomly selected kindergarten sample (N=1559). From each group, one child was randomly selected for participation. Because of this selection procedure, the distributions of the scores on internalizing and externalizing behavior are representative of the variation of behaviors of children in regular kindergarten classrooms.

The present study was part of a larger project, in which teachers completed the STRS three times and observations were conducted at five occasions within nine weeks. In the present paper, we only report results for the first measurement occasion. Due to absences of some children during this occasion, the present sample includes 179 children (95 boys).

Instruments

Children’s internalizing and externalizing behaviors. Children’s problem behaviors were measured with the Behavior Questionnaire for Two-to Six Year-Olds-Modified (BQTSYO-M; Thijs, Koomen, de Jong, van der Leij, van Leeuwen, 2004). The broadband scales for Internalizing (15 items, e.g., ‘Shy or timid towards other children’, ‘Easily upset’) and Externalizing Behavior (14 items, e.g., ‘Bullies other children’, ‘A busy child’) were used. Teachers rated children’s behaviors on a 4-point Likert scale, ranging from 1 (*absolutely not characteristic*) to 4 (*very characteristic*). Previous research has reported high internal consistencies (Cronbach’s alpha’s $\geq .81$ and $.91$ for Internalizing and Externalizing Behavior, respectively) and supported the validity of the scales (Thijs & Koomen, 2009; Thijs, Koomen, & van der Leij, 2008).

Teachers’ relationship perceptions. A shortened version of the Dutch adaptation of the Student-Teacher Relationship Scale (Koomen, Verschueren, van Schooten, Jak & Pianta, 2010; Pianta, 2001) was used to measure teachers’ perceptions of affective relationships with individual children. Cronbach’s alpha coefficients were $.78$, $.86$, and $.75$ for Closeness (6 items, e.g., ‘I share an affectionate and warm relationship with this child’), Conflict (8 items, e.g., ‘This child and I always seem to be struggling with each other’), and Dependency (5 items, e.g., ‘This child asks for my help when

he/she really does not need help'), respectively. Items were scored on a 5-point scale, ranging from 1 (*not at all applicable*) to 5 (*highly applicable*).

Teachers' interactive behaviors. Videotaped teacher behaviors towards each child were rated independently by different groups of observers in episodes of five seconds on two six-point scales for teacher affiliation and teacher control (Thijs et al., 2011). With Teacher Affiliation ranging from *very low* (1) "is repulsive, 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." Teacher Control ranged from *very low* (1) "shows a passive attitude towards 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". To examine interrater reliability, a random subset of the observations was double coded ($n = 34$; 14% for Teacher Affiliation; $n = 36$; 15% for Teacher Control). ICCs could be interpreted as fair for Teacher Affiliation (all ICCs were .54) and good for Teacher Control (ICCs ranged from .72 to .75; Cicchetti et al., 2006). Observations of teacher behaviors took place during a 15-minute small-group task activity in the classroom with the four selected children. Children had to place different sets of three pictures in a logical chronological order, and tell the corresponding story to the teacher.

Analyses

Hierarchical linear modeling was used for analyzing the longitudinal data, in which the repeated measures (episodes) were considered as nested within children, and children as nested within teachers. Intraclass correlations and deviance tests were used to check whether it was necessary to include random intercept variance on both the child and the teacher level. Compound symmetry appeared to describe the longitudinal structure at the lowest level adequately. Both variances at the child ($\chi^2(1) = 1229.028, p < .001$ for teacher affiliation; $\chi^2(1) = 274.779, p < .001$ for teacher control) and teacher level ($\chi^2(1) = 134.444, p < .001$ for teacher affiliation; $\chi^2(1) = 84.017, p < .001$ for teacher control) turned out significant. The intraclass correlations also suggested a three level model: For teacher affiliation, the correlation between two episodes within one teacher was .115, the correlation between two episodes within one child was .134, and the correlation between two children within one teacher was .856. For teacher control, the correlation between two episodes within one teacher was .039, the correlation between two episodes within one child was .046, and the correlation between two children within one teacher was .846. Therefore we used a three level model with variance at episode (87% for teacher affiliation; 95% for teacher control) child (2% for teacher affiliation; 1% for teacher control) and teacher level (11% for teacher affiliation; 4% for teacher control). Standardized regression coefficients are reported. Multilevel analyses were conducted with SPSS Version 17.

Results

Preliminary Analyses

Preliminary analyses were conducted by calculating bivariate correlations between the predictor variables (see Table1). The correlation between externalizing behavior and conflict was relatively high ($r = .700$). Other significant correlations were found between externalizing behavior and closeness ($r = -.345$), externalizing behavior and dependency ($r = -.154$), internalizing behavior and closeness ($r = -.313$), and closeness and conflict ($r = -.418$).

Table 1.

Descriptive statistics and correlations

	<i>n</i>	<i>M (SD)</i>	2	3	4	5
1.Externalizing Behavior	179	1.393 (.488)	-.062	-.345**	.700**	-.154*
2.Internalizing Behavior	179	1.400 (.388)		-.313**	-.084	.149
3.Closeness	167	4.255 (.683)			-.418**	.125
4.Conflict	167	1.783 (.874)				.016
5.Dependency	167	2.333 (.808)				
6.Teacher Affiliation	11836 ^a	4.35 (.660)				
7.Teacher Control	12303 ^a	3.78 (1.091)				

Note 1. * $p < 0.05$ ** $p < 0.01$ (two-tailed)

Note 2. a. This number refers to the total number of episodes in the analyses

Multilevel Correlations

Through multilevel analyses, we also estimated correlations between teacher affiliation and teacher control for separate levels. Teacher affiliation and control appeared not to be correlated at the episode ($r = .021$, $p = .068$) and child level ($r = .295$, $p = .130$). Unexpectedly, we did find a significant negative correlation at the teacher level ($r = -.589$, $p < .001$).

Table 2.

Single predictor models

	Teacher Affiliation		Teacher Control	
	(SE)	p^b	(SE)	p^b
Gender	.044 (.031)	.155	-.035 (.024)	.149
Externalizing Behavior	-.077 (.014)	.000	.008 (.013)	.540
Internalizing Behavior	.049 (.015)	.001	.030 (.012)	.015
Closeness	.005 (.019)	.778	-.027 (.014)	.059
Conflict	-.062 (.016)	.000	.014 (.013)	.282
Dependency	.035 (.019)	.065	.017 (.015)	.246

Note 1. Standardized beta coefficients are reported

Note 2. b Probability is associated with Wald Z test

Teachers' Relationship Perceptions

To answer our research questions, we included several predictors at the child level. Although they are not reported in Table 2 to 4, the random variances at the different levels (i.e., episode, child, and teacher level) were estimated in all models.

Separate multilevel analyses with single predictor variables give an indication of their individual effects on the dependent variables (see Table 2). Conflict was the only relationship dimension that had a significant and negative effect on teacher affiliation. Teacher control was not significantly predicted by any of the relationship dimensions. We also included all three relationships dimensions at the same time in the model. In this model (Table 3, Model 1), both conflict and dependency were significant predictors of teacher affiliation. Conflict had a negative influence on teacher affiliation, whereas dependency had a positive effect. Just as in the single predictor models, teacher control was not significantly predicted by any of the relationship dimensions (Table 4, Model 1).

Table 3.
Influence of relationship perceptions and child characteristics on Teacher Affiliation

	Model 1		Model 2		Model 3	
	β (SE)	p^b	β (SE)	p^b	β (SE)	p^b
<i>Relationship perceptions</i>						
Closeness	-.027 (.019)	.147			-.013 (.021)	.526
Conflict	-.069 (.016)	.000			-.016 (.023)	.487
Dependency	.038 (.018)	.036			.016 (.019)	.379
<i>Child characteristics</i>						
Gender			.013 (.030)	.678	.008 (.033)	.799
Externalizing Behavior			-.067 (.016)	.000	-.058 (.024)	.016
Internalizing Behavior			.039 (.015)	.009	.032 (.019)	.085

Note 1. Standardized beta coefficients are reported

Note 2. b Probability is associated with Wald Z test

Children's Gender and Behaviors

In the single predictor models, gender did not act as a significant predictor of teacher affiliation and control. However, both externalizing and internalizing behaviors had a significant effect on teacher affiliation. As expected, externalizing behavior had a negative effect on teacher affiliation. Contrary to our hypothesis, internalizing behavior had a positive influence on teacher affiliation. Teacher control was only significantly and positively predicted by internalizing behavior. When all child characteristics were included together in one model (Table 3 and 4, Model 2), the results were the same as for the single predictor models.

Combined Models

Finally, we included all predictor variables together in Model 3 (Table 3 and 4). For teacher affiliation, the effects of conflict, dependency, and internalizing behavior were no longer significant. Externalizing behavior was the only significant predictor of teacher affiliation, and showed a negative effect. Concerning teacher control, the effect of internalizing behavior was no longer significant.

Table 4.

Influence of relationship perceptions and child characteristics on Teacher Control

	Model 1		Model 2		Model 3	
	β (SE)	p^b	β (SE)	p^b	β (SE)	p^b
<i>Relationship perceptions</i>						
Closeness	-.027 (.015)	.075			-.009 (.018)	.601
Conflict	.006 (.014)	.671			.010 (.020)	.616
Dependency	.021 (.015)	.160			.012 (.016)	.439
<i>Child characteristics</i>						
Gender			-.016 (.027)	.546	-.018 (.029)	.525
Externalizing Behavior			.010 (.014)	.449	.003 (.021)	.896
Internalizing Behavior			.030 (.013)	.022	.027 (.016)	.094

Note 1. Standardized beta coefficients are reported

Discussion

Our first research question was whether teachers' observed interactions with kindergarten children could be predicted by their perceptions of the relationships with these children. We expected that teachers' perceptions of closeness in the relationship would have a positive influence, whereas teachers' perceptions of conflict and dependency would have negative effects on teachers' observed affiliation. Furthermore, we hypothesized that teachers' observed control would not be associated with their relationship perceptions. In agreement with expectations, our results showed that only teacher affiliation was significantly predicted by relationship dimensions. As expected, teachers who reported more conflict in their relationship with a particular child, showed less affiliation towards that child. Contrary to our expectations, closeness was not a significant predictor of teacher affiliation. These findings are comparable with those of Stuhlman and Pianta (2001), who found that teachers' mental representations of negative affect in the relationship (as elicited from teachers by the Teacher Relationship Interview) was a significant predictor of teachers' observed interactive behaviors, whereas positive affect was not. Other research revealed that conflict was a stronger predictor of children's school functioning than closeness (e.g., Hamre & Pianta 2001). Our results seem to indicate that conflict is not only a stronger predictor of children's behaviors, but also of teachers' interactive behaviors.

Dependency also had a significant effect on teacher affiliation when included in the model together with closeness and conflict, but this effect was different than expected. In contrast with our hypothesis, the analysis showed that teachers who reported more dependency in their relationship with a particular child, also showed more affiliation towards that child. We expected that dependency would act as a negative dimension of teacher-child relationships, because it was presented as such in the literature (e.g., Hamre & Pianta, 2001). However, in the present study a high level of dependency rather seemed to prompt teachers to provide warmth and support in interactions with children. Presumably, because

they notice special needs for their attention. It is important to note that we used a Dutch adaptation of the STRS in the present study, in which the Dependency subscale partly consisted of other items than the original version (Pianta, 2001). Previous research showed that this adapted subscale was substantially more reliable than the original (Koomen et al., 2010). However, it could be that the adapted Dependency subscale records more positive perceptions and feelings of teachers.

Finally, our results showed that teacher control behavior was not associated with closeness, conflict, or dependency. This finding agrees with our hypothesis that control is not reflective of the affective bond between teacher and child.

Our second aim was to validate the observation scales in a small group situation. Besides the forementioned relationships, we expected to find associations between child characteristics (i.e., gender, externalizing behavior, and internalizing behavior) and teacher affiliation and control, resulting in two research questions (one about gender differences in teachers' interactive behaviors, and the other about the influences of children's externalizing and internalizing behaviors on teachers' interactive behaviors). In addition, we investigated whether teacher affiliation and control could be considered to be orthogonal, as was expected based on the literature (Sadler & Woody, 2003).

Concerning our second research question about gender differences, we expected that teachers would show more affiliation towards girls than boys, because of the findings of Ladd and colleagues (1999). However, neither teacher affiliation nor control was significantly predicted by children's gender. In the present study, teachers' interactive behaviors were rated every five seconds during one measurement occasion, whereas Ladd and colleagues (1999) averaged ratings on three occasions to obtain one emotional tone score for every teacher-child dyad. Perhaps, gender differences are more salient when ratings are more global and based on longer periods of time.

With regard to the third research question about the influences of children's behaviors, we found that both externalizing and internalizing behavior had a significant influence on teacher affiliation. In line with our hypothesis, teachers displayed less affiliation towards children they considered to be disruptive. In contrast with our expectations, however, teachers showed more affiliation towards children they described as inhibited. Previous research has shown that teachers report more socioemotional support towards inhibited children compared with average children (Thijs, Koomen, & van der Leij, 2006). Perhaps, teachers display more affiliation and support towards these children, because they are aware of the special pedagogical needs of these children. Teacher control was also significantly associated with children's scores on internalizing behavior. As expected, teachers showed more control towards children they rated as socially inhibited. Furthermore, teacher affiliation and control were not significantly related at the episode and child level, which is in line with our expectation that the two dimensions would be independent. However, we did find a significant correlation between both dimensions at the teacher level, which seems to indicate that teachers who generally show more control, tend to be less friendly towards their students.

Overall, our results seem to provide some evidence for the validity of our observation scales. Finally, we investigated whether child characteristics or teachers' relationship perceptions had a stronger influence on teachers' interactive behaviors. For teacher

affiliation, the effects of conflict and dependency were no longer significant if child characteristics and relationship dimensions were included together in the model. Only externalizing behavior remained a significant predictor of teacher affiliation. Teacher control was no longer significantly associated with any of our predictor variables. The findings for teacher affiliation suggest that teachers' actual interactive behaviors are more strongly guided by their perceptions of the problem behavior of the child, than by their perceptions of the relationship with that child. This makes sense considering that externalizing behaviors of children can be really disturbing in classroom settings. From moment to moment, teachers may be confronted with children's disturbing behaviors and have to decide how they will react on them. Therefore, teachers' perceptions of whether a child displays dysfunctional behaviors may be more influential than teachers' perceptions of the relationship. Another explanation could be that teachers completed the questionnaires about children's externalizing behavior for (almost) all children in their classroom, whereas they completed the STRS only for the four children included in the observations. It is possible that this focus on four specific children made teachers more aware of their answers on the STRS and consequently more susceptible to social desirability. In comparison, teachers' answers on the behavior questionnaire could be more valid, and therefore more predictive of teachers' observed interactive behaviors. To be sure about what really happens during teacher-child interactions, more information about the actual interactions is needed. Further research should investigate the influence of children's interactive behaviors on teachers' interactions and vice versa.

Qualifications

A number of qualifications should be made. First, in the present study we treated teachers' interactive behaviors as outcome variables, and relationship perceptions and children's gender and behaviors as predictors. However, the cross-sectional nature of our study does not permit conclusions about causality. It is up to future research to further examine directions of influence by conducting longitudinal and/or experimental studies.

Second, in the present study children's behavior ratings were solely based on teacher perceptions. Previous research has provided support for the validity of teacher reports of children's social-behavior functioning and especially of their ratings of externalizing behaviors (Konold & Pianta, 2007). However, to be sure about whether child characteristics or teachers' relationship perceptions are stronger predictors of teachers' interactive behaviors, more objective measures of children's externalizing and internalizing behaviors are needed.

Finally, multilevel models showed that relatively small percentages of the variance were located at the child and teacher level, whereas the largest part of the variance was situated at the episode level for both teacher affiliation and control. Apparently, teachers' interactive behaviors change from moment to moment and are less influenced by teachers' interpersonal style or characteristics of the specific child with whom the teacher interacts. It seems important for future research to examine the relations between moment to moment observations of both teachers' and children's interactive behaviors.

In conclusion, these results seem to suggest that our observation scales for teacher affiliation and teacher control are, to some extent, valid, judging from the associations

between externalizing behavior and teacher affiliation, internalizing behavior and teacher control, and the multilevel correlations on the episode and child level. Furthermore, we did find some evidence that teachers' actual interactive behaviors can be predicted by their relationship perceptions. However, teachers' affiliation towards kindergarten children was more strongly associated with teachers' negative relationship perceptions (conflict) than with their positive relationship perceptions (closeness). This is an alarming finding, because the effects of perceptions on behaviors are considered to be reciprocal and perceptions tend to act as self-fulfilling prophecies (Pianta et al., 2003). Teachers who experience their relationship with a particular child as conflictual tend to behave less warm and supportive towards this child. This could lead to a vicious circle in which negative perceptions and negative behaviors intensify each other. It seems important to intervene in teacher-child relationships that are viewed by the teacher as being conflictual. In addition, more process studies are needed to learn how teacher-child interactions evolve, and about the reciprocal associations between child characteristics, relationship perceptions, and interactive behaviors.

References

- Arbeau, K. A., Coplan, R. J., & Weeks, M. (2010). Shyness, teacher-child relationships, and socio-emotional adjustment in grade 1. *International Journal of Behavioral Development, 34*(3), 259-269.
- Baker, J. A. (2006). Contributions of teacher-child relationships to positive school adjustment during elementary school. *Journal of School Psychology, 44*, 211-229.
- Behar, L. B. (1977). The Preschool Behavior Questionnaire. *Journal of Abnormal Child Psychology, 5*, 265-275.
- Carson, R. C. (1969). *Interaction concepts of personality*. Chicago: Aline.
- Cicchetti, D., Bronen, R., Spencer, S., Haut, S., Berg, A., Oliver, P., et al. (2006). Rating scales, scales of measurement, issues of reliability: Resolving some critical issues for clinicians and researchers. *Journal of Nervous and Mental Disease, 194*(8), 557-564.
- Coplan, R. J. & Prakash, K. (2003). Spending time with teacher: Characteristics of preschoolers who frequently elicit versus initiate interactions with teachers. *Early Childhood Research Quarterly, 18*(1), 143-158.
- DeMulder, E. K., Denham, S., Schmidt, M., & Mitchell, J. (2000). Q-sort assessment of attachment security during the preschool years: Links from home to school. *Developmental Psychology, 36*(2), 274-282.
- Doumen, S., Verschueren, K., Buyse, E., Germeijs, V., Luyckx, K., & Soenens, B. (2008). Reciprocal relations between teacher-child conflict and aggressive behavior in kindergarten: A three-wave longitudinal study. *Journal of Clinical Child & Adolescent Psychology, 37*(3), 588-599.
- Gurtman, M. B. (2001). Interpersonal complementarity: Integrating interpersonal measurement with interpersonal models. *Journal of Counseling Psychology, 48*(1), 97-110.
- Hamre, B. K. & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development, 72*, 625-638.
- Henricsson, L. & Rydell, A.-M. (2006). Children with behaviour problems: The influence of social competence and social relations on problem stability, school achievement and peer acceptance across the first six years of school. *Infant and Child Development, 15*(4), 347-366.
- Kiesler, D. J. (1996). *Contemporary interpersonal theory and research: Personality, psychopathology, and psychotherapy*. Oxford, England: Wiley.
- Kiesler, D. J. (1983). The 1982 interpersonal circle: A taxonomy for complementarity in human transactions. *Psychological Review, 90*, 185-214.
- Konold, T. R. & Pianta, R. C. (2007). The influence of informants on ratings of children's behavioral functioning: A latent variable approach. *Journal of Psychoeducational Assessment, 25*(3), 222-236.
- Koomen, H.M.Y., Verschueren, K., van Schooten, E., Jak, S., & Pianta, R.C. (2010). *Validating the Student-Teacher Relationship Scale: testing factor structure and measurement invariance across child gender and age in a Dutch sample*. Manuscript submitted for publication.
- Ladd, G. W., Birch, S. H., & Buhs, E. S. (1999). Children's social and scholastic lives in kindergarten: Related spheres of influence? *Child Development, 70*(6), 1373-1400.
- Leary, T. (1957). *An interpersonal diagnosis of personality*. New York: Ronald Press Company
- Pianta, R. C. (2001). *Student-Teacher Relationship Scale. Professional Manual*. Lutz, Florida: Psychological Assessment Resources.
- Pianta, R. C., Hamre, B., & Stuhlman, M. (2003). Relationships between teachers and children. In Reynolds, William M (Ed); Miller, Gloria E (Ed). (2003). *Handbook of psychology: Educational psychology, Vol. 7. (pp. 199-234)*.

- Hoboken, NJ, US: John Wiley & Sons.
- Rimm-Kaufman, S. E., Early, D. M., Cox, M. J., Saluja, G., Pianta, R. C., Bradley, R. H. et al. (2002). Early behavioral attributes and teachers' sensitivity as predictors of competent behavior in the kindergarten classroom. *Applied Developmental Psychology, 23*, 451-470.
- Sadler, P. & Woody, E. (2003). Is who you are who you're talking to? Interpersonal style and complementarity in mixed-sex interactions. *Journal of Personality and Social Psychology, 84*(1), 80-96.
- Stuhlman, M. W. & Pianta, R. C. (2001). Teachers' narratives about their relationships with children: Associations with behavior in classrooms. *School Psychology Review, 31*(2), 148-163.
- Thijs, J. T. & Koomen, H. M. Y. (2008). Task-related interactions between kindergarten children and their teachers: The role of emotional security. *Infant and Child Development, 17*, 181-197.
- Thijs, J. & Koomen, H. M. Y. (2009). Toward a further understanding of teachers' reports of early teacher-child relationships: Examining the roles of behavior appraisals and attributions. *Early Childhood Research Quarterly, 24*(2), 186-197.
- Thijs, J. T., Koomen, H. M. Y., de Jong, P. F., van der Leij, A., & van Leeuwen, M. G. P. (2004). Internalizing behaviors among kindergarten children: Measuring dimensions of social withdrawal with a checklist. *Journal of Clinical Child and Adolescent Psychology, 33*(4), 802-812.
- Thijs, J., Koomen, H. M. Y., Roorda, D., & ten Hagen, J. (2011). Explaining teacher-student interactions in early childhood: An interpersonal theoretical approach. *Journal of Applied Developmental Psychology, 32*(1), 34-43.
- Thijs, J. T., Koomen, H. M. Y., & van der Leij, A. (2006). Teachers' self-reported pedagogical practices toward socially inhibited, hyperactive, and average children. *Psychology in the Schools, 43*(5), 635-651.
- Thijs, J. T., Koomen, H. M. Y., & van der Leij, A. (2008). Teacher-child relationships and pedagogical practices: Considering the teacher's perspective. *School Psychology Review, 37*(2), 244-260.
- Wubbels, T. & Brekelmans, M. (2005). Chapter 1: Two decades of research on teacher-student relationships in class. *International Journal of Educational Research, 43*, 6-24.