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

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General Discussion

During the last two decades, the impact of affective teacher-student relationships on students' school functioning has been increasingly acknowledged and investigated. Research in this area has been mostly inspired by the extended attachment perspective (Pianta, 1999) and social-motivational theories (Connell & Wellborn, 1991; Deci, Vallerand, Pelletier, & Ryan, 1991). In the present thesis, we added to the existing knowledge on teacher-student relationships in two ways: First, we used a meta-analytical approach to give an overview of the existing research on the association between affective teacher-student relationships and students' learning behaviors. Second, we examined whether interpersonal theory (Leary, 1957), and the complementarity principle (Carson, 1969/1972) in particular, could be used to analyze reciprocal influences in interactions between teachers and kindergartners and whether a teacher training based on this theory could elicit changes in teachers' and children's interactive behaviors. In this General Discussion, the main findings of the previous chapters will be discussed and we will consider suggestions for future research and implications for school practice. For a more detailed discussion of results, the reader is referred to previous chapters.

Associations Between Affective Teacher-Student Relationships and Learning Behaviors

Because of the disagreement between primary studies about the strength of associations between teacher-student relationships and learning behaviors, we used a meta-analytic approach to integrate the findings of the existing studies and to acquire more insight in the actual strength of associations. We found a total of 99 studies that were suitable to include in our meta-analysis. The results confirmed the notions and findings from previous research that the affective quality of the teacher-student relationship is moderately associated with students' learning behaviors. Associations with engagement (medium to large effect sizes) were stronger than associations with achievement (small to medium effect sizes), which may indicate that engagement mediates the association between relationship quality and achievement (cf., de Bruyn, 2005; Hughes, Luo, Kwok, & Loyd, 2008; Woolley, Kol, & Bowen, 2009; Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006). In contrast with the findings of several previous studies (e.g., Baker, 2006; DiLalla, Marcus, & Wright-Philips, 2004; Hamre & Pianta, 2001), negative aspects of the relationship (e.g., conflict) did not have a stronger impact on students' learning behaviors than positive aspects of the relationship (e.g., closeness). When we distinguished between primary and secondary school studies, however, associations did appear to be stronger for negative relationships in primary school, whereas associations were stronger for positive relationships in secondary school. In sum, our findings provided evidence that, on a meta-analytic level, teacher-student relationships were moderately associated with students' learning. Moreover, the few studies that measured learning outcomes at least one grade later than the relationship (e.g., Hamre & Pianta, 2001; Hughes, 2011), seemed to indicate that associations hold over different school years.

In addition, our results provided support for notions made in previous literature (e.g., Baker, 2006; Ewing & Taylor, 2009; Hamre & Pianta, 2001) that relationships with

teachers are especially important for certain groups of students. In contrast with suggestions made in the literature (Buhrmester & Furman, 1987; Hargreaves, 2000; Lynch & Cicchetti, 1997), teacher-student relationships appeared to be more important for older compared to younger students. Therefore, secondary school teachers should realize that they still have an important influence on their students' school functioning, even though students often give the impression that they have become increasingly independent of their teachers during adolescence. In addition, relationships appeared to be relatively important for students with a low socioeconomic status (SES), for students with learning problems as long as negative relationships were considered, and for boys as long as engagement was the focus of interest. These findings support the academic risk perspective (Hamre & Pianta, 2001), which states that teacher-student relationships are especially relevant for the school functioning of students at risk for school failure. Finally, our meta-analysis revealed several gaps and methodological biases in the research literature: First, most studies used a cross-sectional design, hampering conclusions about causality. Future studies are recommended to more often use longitudinal designs to attain knowledge about students' growth trajectories across different school years. In addition, researchers could investigate how relationships with different teachers could produce deviations from students' average growth curves for engagement and achievement. Second, studies, especially secondary school studies, often did not measure negative aspects of the relationship, whereas the degree of conflict in the relationship seemed to be a more influential predictor of primary school students' adjustment than positive aspects of the relationship. Future research should investigate the role of negative aspects of the relationship more often. Third, secondary school studies often used student reports for both relationships and engagement. The results suggested that this may have caused an overestimation of effect sizes due to shared informant and shared method variance. Future research can better use different informants and methods (e.g., observations, teacher report) for predictor and outcome variable to prevent this bias. Lastly, primary studies often did not report about relevant student characteristics that we included in our analyses. Especially little was known about students with learning and behavioral difficulties in the sample. It would be interesting for future research to focus more on students with such problems, because our findings and some previous studies (e.g., Hamre & Pianta, 2001) indicate that relationships with teachers are more important for students with than without learning difficulties or behavior problems.

Studying Reciprocal Influences in Teacher-Child Interactions

After considering the evidence for the association between teacher-student relationships and students' learning behaviors in the second chapter, we shifted our focus to a more detailed level and concentrated on reciprocal influences in actual interactions between teachers and young children. Interpersonal theory and the accompanying complementarity principle (see Chapter 1) were used as the foundation for the remainder of this thesis. We will subsequently discuss the following themes: First, we will consider the validity of the observation scales for control and affiliation that were adapted for use in a small group setting. Second, we will discuss the applicability of the complementarity principle to teacher-child interactions. Third, we will reflect on the

usefulness of interpersonal theory as basis for a teacher training to intervene in negative interaction cycles and promote positive interactions.

Validity of Observation Scales in a Group Setting

The observation scales for teachers' and children's interactive behaviors (control and affiliation) were originally developed and validated for use in a dyadic setting (Thijs, Koomen, Roorda, & ten Hagen, 2011). In this thesis, we slightly adapted these observation scales for use in a small-group setting, without changing their intended meaning. Chapter 4 explicitly examined the validity of the adapted teacher scales. We found a negative association between the degree of conflict in teachers' relationship perceptions and observer ratings of teacher affiliation, whereas no significant associations were found between teachers' relationship perceptions and teacher control. In addition, a negative association was found between externalizing behavior and teacher affiliation, whereas children's internalizing behavior was positively associated with teacher control. These associations were in the expected direction and thus provided support for the validity of the teacher scales for use in a group setting. Implicit support for the validity of the adapted child scales was found in Chapter 5: Positive associations were found between externalizing behavior and child control, whereas internalizing behavior and child control were negatively related. In addition, internalizing behavior was negatively associated with child affiliation. These findings were in the expected direction and provided a first indication for the validity of the child scales for use in a group setting. As the validity of our observation scales seemed to be supported, we decided to use them to analyze reciprocal influences between teacher and child in a group setting.

Complementarity Tendencies in Teacher-Child Interactions

Thijs and colleagues (2011) provided support for the applicability of the complementarity principle to dyadic teacher-child interactions that took place outside the classroom in a sample of relatively inhibited kindergarten children: They found that teachers reacted complementarily on the control dimension (i.e., they reciprocated children's submissive behaviors with dominance and vice versa), whereas children responded complementarily on affiliation (i.e., they returned teachers' friendliness with friendly behaviors and teachers' hostility with hostile behaviors). In addition, children with high scores on social inhibition also reacted complementarily on control, whereas less inhibited children did not. Whether interpersonal complementarity did also apply to teacher-child interactions in the natural ecology of the classroom setting still remained to be investigated. In response, Chapter 5 showed that both teachers and children reacted complementarily on the control dimension, whereas they did not respond complementarily on affiliation, in a small group setting within the kindergarten classroom. Taken together, Chapter 5 and the study of Thijs and colleagues (2011) suggest that teachers respond complementarily to children on control but not on affiliation irrespective of the setting in which interactions takes place (i.e., dyadic setting outside the classroom or small-group setting within the classroom). Furthermore, in both settings, teachers tend to respond less dominant if children show more affiliation and less friendly if children show more control (Chapter 5; Thijs et al., 2011). Thus, teachers interpersonal reactions seem rather stable across settings. In contrast, children's

complementarity tendencies differed considerably across settings: In the dyadic setting, they reacted complementarily on the affiliation dimension, whereas in the group setting they did not. In the group setting, children's behaviors on the affiliation dimension were influenced by teachers' control behaviors instead. Furthermore, in the dyadic setting, only highly inhibited children reacted complementarily on the control dimension, whereas in the group setting all children did. It could be that teachers' control behaviors have more impact in a group than in a dyadic setting because in a group setting more time is spent on behavior regulation and turn-taking. In addition, settings seem to differ with regard to the impact of teachers' behaviors on the other dimension: Children in the dyadic setting showed *more* affiliation against children in the group setting *less* affiliation if teachers showed more control. Perhaps, children in a dyadic setting appreciated teachers' controlling behaviors because these provided them with a better structure and more clues about how to perform the task (see Skinner & Belmont, 1993; Thijs et al., 2011). In contrast, teachers' controlling behaviors might be perceived as more negative in a group setting because they are more focused on behavior regulation and therefore experienced as more intrusive by children. In addition, children in the dyadic setting showed more initiative when teachers showed more affiliation, whereas children in the group setting behaved more passive and submissive in reaction to high teacher affiliation. It might be that in a dyadic setting, teachers' warm, supportive behaviors make inhibited children feel more secure and therefore more encouraged to show initiative toward the teacher (see Thijs & Koomen, 2008), whereas teachers' warm, supportive behaviors in a group setting may primarily communicate to children that the teacher likes and values them already, and that they do not need to draw further teacher attention by being active. Overall, teachers' interpersonal reactions seem to be more stable across different interaction settings than children's interpersonal reactions. Future research could further investigate how teachers and children respond to each other in other interaction settings (e.g., whole group settings).

Although Chapter 5 and Thijs and colleagues (2011) provide some insight into complementarity tendencies in teacher-child interactions, we do not know how complementarity or the lack thereof relates to teacher-child relationship quality. As lower levels of complementarity on control were found in interactions between teachers and relatively externalizing children, this may imply that a lack of complementarity during teacher-child interactions is indicative of maladaptive interaction cycles on the control dimension. Research with adults also suggests that complementarity during interactions may relate positively to relationship quality as it was positively associated with satisfaction with the interaction, comfort, positive evaluations, and liking of the interaction partner (Dryer & Horowitz, 1997; Tiedens & Fragale, 2003; Tracey, 2004). Nevertheless, high levels of interpersonal complementarity may also reflect negative relationship quality as complementarity may reinforce dominant behaviors in the teacher and hence lead to even more passiveness in the child. This risk seems to be especially large for internalizing children (without comorbid externalizing problems) as they were more passive and submissive than their typical classmates and internalizing peers who had comorbid externalizing problems. Thus, complementarity on control may be advantageous for teacher-child relationships, as long as it does not lead to a further escalation of negative interaction patterns.

With regard to the affiliation dimension, the meaning of a lack of complementarity in teachers' and children's interactive behaviors is difficult to estimate. On the one hand, a lack of complementarity on affiliation may be positive as it means that teachers and children do not reciprocate each other's hostile behaviors. Accordingly, there is less risk of an escalation of negative behaviors, which may prevent teachers and children from ending up in increasingly negative interaction cycles. On the other hand, teachers and children do not reciprocate each other's positive behaviors either, which means that high levels of affiliation will not be rewarded by the interaction partner. This may discourage teachers and children from behaving positively during interactions and thus may have a damaging effect on relationship quality. More research is needed to investigate how teachers' and children's complementarity tendencies are associated with teacher-child relationship quality, for example to further disentangle processes on the positive and negative side of the affiliation dimension.

Usefulness of Interpersonal Theory as Basis for Teacher Training

As we found that teacher-student relationships were moderately associated with students' learning behaviors on a meta-analytic level, it seems important to intervene in negative teacher-student relationships and to promote positive relationships at an early stage. In Chapter 3, we used interpersonal theory as basis for a teacher training (Interpersonal Skills Training; IST) to intervene in dyadic interactions with relatively inhibited kindergartners. Teacher-child interactions were observed on three occasions (pretest, posttest, and follow-up), each five weeks apart. The IST proved to diminish teacher control at follow-up (Chapter 3). Although the absolute decrease in teacher control was relatively small, it was found after considerable time (i.e., seven weeks after intervention). This means that the IST could have a meaningful impact on teachers' interactive behaviors in the long run. The decrease in teacher control could be especially advantageous for this relatively inhibited sample, because those children tend to be more passive and submissive toward their teacher than typical children (Chapter 5). As we did not find any intervention effects on children's interactive behaviors, we do not have evidence that this decrease in teacher control will actually result in more initiative from children. As it was the teacher who received the training, we expected that changes in teachers' behaviors would precede changes in children's behaviors. However, we were not able to identify such changes due to the lack of a second follow-up measure. It is important for future research to include more follow-up measures to detect possible delayed intervention effects.

The IST did not produce changes in the overall level of teacher affiliation. It could be that behaviors on the affiliation dimension are more difficult to change 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 experimental conditions. In contrast, after a yearlong intervention with the Good Behavior Game, only a marginally increase in teacher praise was found (Leflot, van Lier, Oghena, & Colpin, 2010). Likewise, Banking Time, a two times six-weeks intervention, did not produce changes in observer ratings of teachers' supportive presence, although an increase in teachers' perceptions of closeness was found (Driscoll & Pianta, 2010). The IST consisted of only two meetings, which is probably not long enough to change teachers' affiliation

behaviors. Future research could extend the number of meetings to find out whether an intensification of the IST could produce a change in teacher affiliation. Nevertheless, the IST did elicit an increase in teachers' complementarity tendencies on the affiliation dimension, especially in interactions with socially inhibited children. As explained before, it is not clear whether this increase in complementarity has either positive or negative consequences for teacher-child relationships.

Qualifications and Recommendations for Future Research

Some additional qualifications should be taken into account with regard to the interpretation of the results of this thesis. First, in the section *Complementarity Tendencies in Teacher-Child Interactions*, we tried to explain differences in teachers' and children's interpersonal reactions between findings in the dyadic setting of Thijs and colleagues (2011) and the small-group setting of Chapter 5. However, these studies differed in several aspects, which could all have had their own impact on the results (i.e., dyadic versus small-group setting, outside versus within the classroom, and relatively inhibited children with low levels of externalizing behavior versus children with varying scores on externalizing and internalizing behaviors). Accordingly, we do not know how teachers and children would have reacted on each other in a dyadic setting within the classroom or whether teachers and children with high levels of externalizing behavior would have had reacted more complementarily in a dyadic setting outside the classroom. More research is needed to obtain knowledge about teachers' and children's interpersonal reactions in different interaction settings, such as dyadic interactions within the classroom or whole group interactions.

Second, as mentioned before, it is still unknown how teachers' and children's complementarity tendencies relate to teacher-child relationship quality. Future research could investigate how interpersonal complementarity or the lack thereof influences teacher-child relationships and other aspects of children's school adjustment, such as task engagement and academic achievement. Previous research indicates that positive and negative affect are two separate dimensions of teacher-child relationships (see e.g., Chapter 2; Spilt & Koomen, 2009). Future research could examine to what extent teachers and children react complementarily on the affiliation dimension if separate observation scales are used for positive affiliation and negative affiliation.

Finally, a limitation of our intervention study (Chapter 3) was that the outcome variables were observed in a dyadic setting outside the classroom. Although this structured setting made it possible to examine all teachers and children under comparable circumstances, we did not investigate the effects of the IST in the natural ecology of the kindergarten classroom. In addition, the sample consisted of relatively inhibited children (without comorbid externalizing problems). More research is needed to investigate whether the IST can also influence teachers' and children's interactive behaviors in the classroom setting in samples of children with different behavior profiles. The sample of Chapter 5 was part of a larger longitudinal intervention study. In this study, teachers received an extended version of the IST and interactions were observed in a small group setting within the classroom in a sample of children with a variety of internalizing and externalizing behaviors. Spilt, Koomen, Thijs, and van der Leij (in press) reported on the effects of the extended IST against an alternative intervention in a subsample with

relatively high levels of externalizing behavior ($N = 64$). The IST was found to produce a decline in teachers' perceptions of conflict in the relationship. Additional research is needed to investigate effects of the IST for the whole sample and to examine whether this intervention also alters teachers' and children's observed interactive behaviors.

Practical Implications for School Practice

The studies described in this thesis yielded several implications for teachers and school psychologists. First, the results of our meta-analysis emphasize the importance of the quality of teacher-student relationships for students' learning. Teachers should be made aware of the impact they could thus have on students. In a positive way, teachers can enhance children's learning behaviors by being warm, supportive, and emotionally involved with them. However, teachers can also have a deteriorating effect on students' school functioning if they are not able to prevent negativity in relationships with their students. Accordingly, there should be more attention for the impact of affective teacher-student relationships during teacher education. In addition, school psychologists should have skills and opportunities to help teachers improve unfavorable relationship and maintain warm and supportive relationships with students. Our meta-analysis indicated that teacher-student relationships are especially important for students who are at risk for school failure (e.g., students with a low SES, students with learning problems). Therefore, teachers should invest in their relationships with these students as much as possible to protect them from malfunctioning. Finally, affective relationships with teachers seemed to become more influential as students grew older. School psychologists should make teachers aware of these findings, as students are usually considered to become more independent from teachers as they move to higher grades (Buhrmester & Furman, 1987; Hargreaves, 2000; Lynch & Cicchetti, 1997). Accordingly, secondary school teachers are likely to underestimate the impact they can have on students. School psychologists could help them to maintain positive relationships even if they have fewer contact moments with students. Secondary schools should provide teachers with the necessary support to develop positive relationships with their students (e.g., recognition of the importance of teacher-student relationships and opportunities for teacher training and consultation).

Second, Chapters 3 and 5 provided indications that interpersonal theory and the complementarity principle might be useable to improve teacher-child relationships and to intervene in negative interaction cycles. A short teacher training (i.e., two meetings) seemed enough to produce a change in teachers' control behaviors toward relatively inhibited children. More research is needed to investigate whether a decrease in teacher control will eventually lead to an increase in children's initiative and whether intervention effects are also found if interactions are observed in the natural ecology of the classroom setting, in a behaviorally diverse sample. Still, the intervention effect on teacher control (Chapter 3) and the applicability of the complementarity principle to teacher-child interactions in a small group setting (Chapter 5) suggest that notions from interpersonal theory could be used to intervene in negative interactions with children. As complementarity in interactions usually happens automatically and unconsciously (Tiedens & Fragale, 2003), school psychologists could give teachers a short training to introduce them in interpersonal theory. For Dutch-speaking regions, an intervention

program based on interpersonal theory (i.e., *Interactiewijzer*; Verstegen & Lodewijks, 1999) has been published to help teachers break problematic interaction cycles. However, the effectiveness of this intervention program has not yet been investigated.

Finally, Chapter 5 showed that teachers' dominant behaviors did not only have a negative effect on child control but also on child affiliation. Teachers should realize that their dominant behaviors in class will not only elicit more passiveness in the child but also more hostile and less warm behaviors. Therefore, they should be cautious not to behave too controlling toward children.

General Conclusion

The first part of this thesis provides evidence on a meta-analytical level for the importance of affective teacher-student relationships for students' learning behaviors. In addition, it identified groups of students for whom the relationship with the teacher seemed to be especially influential. In this way, our findings underscore the need to promote positive teacher-student relationships and to intervene in negative relationships in order to enhance students' school functioning, especially for students at risk for academic maladjustment. The second part of this thesis offered a first indication that interpersonal theory and the complementarity principle could be useful to study and explain reciprocal influences in interactions between teachers and behaviorally different children. Although the effectiveness of such an approach needs to be further investigated, the first results suggested that interpersonal theory could be a useful tool to give teachers insight in interaction processes and help them break negative interaction cycles with children and enhance positive teacher-child interactions.

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