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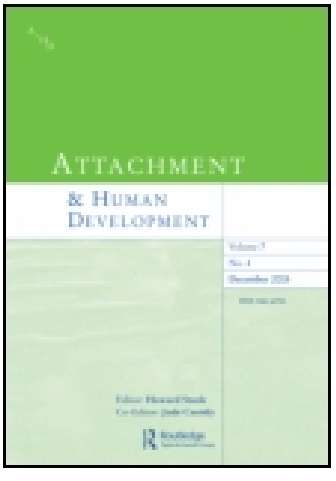

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Recent trends in research on teacher-child relationships

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Recent trends in research on teacher–child relationships

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Theoretical and empirical work on relationships between teachers and children relies on developmental systems theory as the foundational conceptual model, drawing heavily from basic work in attachment as well as research on social development. Recently, the focus on relational processes in effort to support children's development in the classroom has proliferated, with multiple disciplines and fields engaging in research on teacher–child relationship quality to understand and improve the experiences and learning of students. This paper updates the conceptual framework and continues the necessary integration between disciplines by exploring three areas of research: (1) concordance between children's relationships with teachers and parents; (2) the moderating role of teacher–child relationships for the development of at-risk children; and (3) training teachers from a relational perspective. Each of the three areas of research on teacher–child relationships is examined in light of recent findings and considers implications for understanding the nature and impact of relationships between teachers and children.

Keywords: teacher–child relationships; parent–child relationships; at-risk children; training teachers; development

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Introduction

Relationships between teachers and children have been a focus of educators' concern for decades. Some experts suggest that a relationship with at least one caring adult, not necessarily a parent, is perhaps the single most important element in protecting young people who have multiple risks in their lives (e.g., Gambone, Klem, & Connell, 2002), and for many children this adult is a teacher (Pianta, Hamre, & Stuhlman, 2003). Theoretical and empirical work on relationships between teachers and children have drawn heavily from basic science in social development, notably parenting and the assessment of social relationships (Ladd, 1990; Maccoby, 1980), as well as from efforts in education and prevention science to understand and improve the experiences of students in classrooms that contribute to their learning and development (Howes, 1999; NICHD Early Child Care Research Network, 2002).

A wide and diverse array of theoretical and methodological traditions have been engaged in this effort, some of which were summarized in 1999 and then again in 2003 by Pianta and colleagues (Pianta, 1999; Pianta et al., 2003) in a review of empirical findings. At the time of Pianta et al. (2003), the related evidence appeared

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promising for advancing a line of inquiry and applied work as well as helping extend theories about the nature and value of adult–child relationships in human development; however, the conceptual framework and empirical support for understanding children's development in school settings through a relational focus was in its nascent stages. As such, Pianta et al. (2003) concluded by identifying key areas of research needed to propel the field forward. The goal of this paper is to examine several of the recommended areas of research in light of intervening findings and to consider implications for the further understanding of the nature and impact of relationships between teachers and children.

Conceptual and methodological considerations

Before moving to a more detailed review of empirical findings, we present the frameworks used in the field of teacher–child relationships. Although the conceptual framework for teacher–child relationship literature has roots in numerous lines of research within education and psychology, its original framework was perhaps most strongly influenced by attachment theory. The notion that child–adult relationships are central to children's development is largely derived from evidence that attachment between children and parents strongly influences children's development (Ainsworth, Blehar, Waters, & Wall, 1978; Sroufe, 1983), and the broad constructs used to define children's attachment quality have helped to identify the key components and mechanisms needed to form high quality relationships with teachers (Pianta et al., 2003). The attachment framework provides the basis for understanding that children form working models of attachment based on their early experiences with parents and other adult caregivers.

In addition to an attachment framework, more recently, the organizing framework for understanding and studying the complexity of teacher–child relationships has drawn upon developmental systems theory (for discussion of this theory see Good & Weinstein, 1986; Pianta, 1999). According to developmental systems theory (DST), also referred to as an ecologically-oriented systems theory, children are embedded in organized and dynamic systems that include multiple proximal and distal levels of influence. At the most proximal level, teacher–child relationships are a product of individual teacher and child characteristics, which reciprocally influence one another (Pianta et al., 2003). For instance, children's previous relational models with adults may guide their interactions with teachers; however, a sensitive teacher may reshape children's relational models, and subsequent behavior and relationships. Further broadening beyond this dyadic paradigm, DST emphasizes that relationships are embedded within a multilevel system, where each level, including individual, family, classroom, community attributes, has a dynamic bidirectional influence on relational processes (Bronfenbrenner & Morris, 1998; Lerner, 1998; Sameroff, 1995). The within- and cross-level interactions shape the patterns of interactions between children and teachers that are the basis for the formation of teacher–child relationships. The temporal interactions and subsequent relationships form the primary context in which children develop and learn.

For older children, a number of conceptual models have been used to describe teacher–student interactions and relationships. These models include attachment and developmental systems theory, but also include social-motivational, socialization, interpersonal theory, and social support models (Pianta & Allen, 2008). Central to each of these models is the importance of emotional support or a sense of relatedness

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for older students. A youth's emotional connection with adults is perhaps the single most important factor for fostering positive development, including higher levels of engagement, motivation, and academic performance (National Research Council, 2004). Accordingly, for purposes of this review, we will focus on the emotional support domain of teacher–child relationships for older children.

A number of child-report and teacher-report instruments demonstrate that the conceptual model of teacher–child relationships can be reliably assessed. From a *teachers' perspective*, the Student–Teacher Relationship Scale (STRS; Pianta, 2001) is perhaps the most frequently used and empirically-validated measure of teachers' perceived relationship quality with individual children. The STRS identifies three distinct dimensions of teacher–child relationships: closeness, conflict, and dependency. Closeness refers to the degree of warmth and positive affect between the teacher and the child, as well as how comfortable the child is approaching the teacher. Conflict refers to the negativity or lack of rapport between the teacher and child and appears to be the factor most strongly related to child outcomes when teachers' views of the relationship are assessed (Ladd & Burgess, 2001). Lastly, dependency refers to the extent in which the child displays clinginess or possessiveness with the teacher (Mashburn & Pianta, 2006). These constructs conceptually map onto parent–child attachment relationships by focusing on the relation between children's sense of security with a teacher and their ability to explore the environment (Hamre & Pianta, 2001; Pianta & Nimetz, 1991).

Older elementary and middle school children's perceptions of emotional support dimensions of relationships are typically assessed using questionnaires that focus on emotional aspects of classrooms. Questionnaires such as the Emotional Quality Scale of the Relatedness Questionnaire (Lynch & Cicchetti, 1997), the Quality of Student–Teacher Relationship Scale (Davis, 2001), and the Network of Relationships Inventory (Furman & Buhrmester, 1985; Meehan, Hughes, & Cavell, 2003) show promising results in terms of assessing children's perceptions of the emotional quality of their relationships with teachers, assessing key constructs such as *perceived support, utilization* (willingness to rely on the teacher), and *sense of relatedness* (the extent to which students feel successful in their bids for belonging and sense of acceptance).

In addition, observations have played a key role in understanding relational quality and the degree in which classrooms are characterized by emotional support and connectivity (Howes, Hamilton, & Matheson, 1994; Ladd, Birch, & Buhs, 1999; Pianta, La Paro, & Hamre, 2007). In line with DST, teachers who are highly sensitive create an emotionally supportive climate in their classroom, which benefits the development of more positive dyadic teacher–child relationships (Ahnert, Pinquart, & Lamb, 2006; Buyse, Verschueren, Doumen, Van Damme, & Maes, 2008). Observed classroom interactions are another valid source of information for understanding relational quality in the classroom. In the present review, we differentiate between studies that use observed interactions, teachers' perceptions of relationships, and children's perceptions of relationships.

In terms of analytic methods, the field has made considerable strides in obtaining more precise estimates of teacher–child relationship effects. In the past, researchers relied on correlational techniques that often failed to control for relevant child and family characteristics. Currently, more sophisticated longitudinal analyses are used, controlling for relevant intake characteristics. Moreover, to account for the dependency among children within classrooms, researchers are increasingly employing

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multilevel modeling, which take into account the intercorrelations of children's behavior and performance within classrooms. Additionally, researchers are increasingly employing random control trials to examine the effects of teacher–child relationships and interactions. In the present paper, we highlight the methodology employed by researchers in a number of studies to better understand the strength of the findings.

The present paper: examining recent trends

The value of relationships for children's development has been shown in a number of ways: the quality of teacher–child relationships uniquely predicts children's concurrent functioning and subsequent development across multiple domains, including academic performance, psychosocial functioning, and motivation and engagement in school (Howes et al., 1994; Pianta & Stuhlman, 2004; Pianta, Steinberg, & Rollins, 1995). In order to advance the understanding of teacher–child relationships, Pianta et al. (2003) set forth a number of future research areas. The present paper explores the teacher–child relationships literature across three of these recommended research areas: (1) concordance between relationships with teachers and parents, (2) the moderating role of teacher–child relationships for the development of at-risk children, and (3) training teachers from a relational perspective. This paper focuses on these three lines of research because of the important implications for attachment theory and research as well as the substantial progress researchers have made in these areas. The first section seeks to better understand whether early relational models formed with parents apply to subsequent caregiving relationships and the extent to which individual characteristics influence the concordance across relationships. The second section in this paper builds on the theoretical and empirical support that indicates relationships with teachers matter, and examines whether teacher–child relationships serve as moderators of developmental change for at-risk children. The third section in this paper explores the extent to which focused and systematic professional development programs have the potential to improve teacher–child relationships and, in turn, improve children's development and learning. It is our intent that this systematic integration of findings across the three broad aims will highlight and integrate advancements in research on teacher–child relationships.

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Concordance between relationships with parents and teachers

Children form attachment with mothers, or primary caregivers, well before they enter school. Aligned with attachment theory, children's early attachment with their mothers guides the formation of internal models of relationships. These mental representations formed with early caregivers subsequently direct the interpretation and interaction with other relational partners (i.e., teachers; Buyse, Verschueren, & Doumen, 2011; Rydell, Bohlin, & Thorell, 2005; Zajac & Kobak, 2006). Recently, theorists have integrated developmental systems theory with attachment theory in order to better understand the concordance between relationships with parents and teachers. Research at the cross-section of these two theories postulates that teacher/caregiver characteristics, such as sensitivity, may change the internal working models children developed with parents and revise children's previous mental representations of relationships (Buyse et al., 2011). The following section examines the empirical evidence for continuity from parent–child to teacher–child relationships,

applying an attachment framework, as well as a developmental systems model, in order to better understand the extent to which relational models formed by early attachment extend across children's relationships.

To begin, it appears that children's security with parents is related to children's security with teachers/caregivers in toddlerhood. Booth, Kelly, Spieker, and Zuckerman (2003) used the same measure at 24 months to assess observed mother–child and caregiver–child attachment (Attachment Q-Set). Using a subset of items that applied to both mothers and caregivers, they found a significant correlation between the safe-haven/secure-base composite score, suggesting that secure attachment generalizes from mothers to teachers in toddlerhood. Because findings are correlational, the reason for this concordance between mother and teacher attachment is empirically unknown. It may be that children's relational models formed with mothers influence their ability to use a caregiver as a secure base, but as noted by Booth and colleagues (2003), it may be that selection bias leads to the association, where sensitive mothers select sensitive caregivers. Additionally, it may be that children's characteristics, such as temperament, may drive the association, rather than their relational models.

The concordance between maternal security and teacher/caregiver security continues into preschool, albeit modestly (Ahnert et al., 2006; Sroufe, 1989). Ahnert, Pinquart, and Lamb's (2006) meta-analysis examined the extent to which observed security with teachers matches observed security with parents. Although there were significant differences in security between certain groups of children (e.g., girls had more secure relationships with teachers than boys) and context (children in home-based care had more secure relationships than in center-based care), children's security with parents was significantly correlated with children's security with teachers. Results are further corroborated in a study that used teachers' perceptions of closeness to measure relational quality. O'Connor and McCartney (2006) found that insecure children had lower quality relationships with teachers than securely attached children throughout early childhood.

The moderately significant relation between parent–child and teacher–child relationships suggests that there are other child or teacher characteristics that may influence, attenuate, or strengthen this association (O'Connor & McCartney, 2007). Attachment-based theory suggests that the development of secure adult–child relationships is related to adults' sensitivity; however, few studies have tested this characteristic as a moderator in the relation between parent–child and teacher–child relationships. One exception is a study by Buyse and colleagues (2011) that investigated the role of teacher sensitivity as a protective or exacerbating factor in the relation between maternal attachment quality and the relationship with the teacher. They found continuity of relationship problems when observed teacher sensitivity was low: children with insecure attachment continued to have less close relationships with teachers compared to securely attached children when the teacher was less sensitive. When teachers were highly sensitive, children with less secure attachments were no longer at risk for developing less close relationships with teachers. Findings suggest that the quality of teacher–child relationships is not only influenced by children's attachment history, but also teachers' sensitivity.

Evidence suggests that teacher report of closeness with children is relatively stable across early schooling years. For instance, O'Connor and McCartney (2006) found that children's relationship quality with teachers at 54 months more strongly predicted kindergarten and first grade teacher–child relationships than maternal

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attachment. Results suggest two possible explanations. The first explanation is that early relationships with teachers help shape and revise children's internal working models of attachment. The second explanation is that children may construct more differentiated relational models (of parents vs. teachers, for instance) as they develop, and early relationships with teachers may help form children's models of relationships with subsequent teachers. For instance, a child's supportive relationship with a teacher is associated with an increase of a child's sense of engagement to the school setting, which may in turn enhance the child's connectedness to the next teacher (Hughes, Luo, Kwok, & Lloyd, 2008). Both explanations demonstrate the increasing complexity in trying to understand the antecedents of teacher–child relationship quality as children develop.

The association between maternal attachment in late elementary school/middle school and children's relational functioning in school may dissipate as a result of adolescents' exposure to multiple teachers across a school year and the increasing importance of peers (Roeser & Galloway, 2002). From a research perspective, it is particularly difficult to examine the influence of early maternal attachment or early professional caregiver relationship quality on relationship quality in middle school because of the differences in measurement approaches: relationship quality in middle school is often derived from students' reports of perceived support, mostly based on social-motivational frameworks (e.g., Baker, 2006; Furrer & Skinner, 2003). This makes the study of longitudinal connections more difficult. Interestingly, cross-sectional research in middle school shows that students' perceived support of teachers seems to be intricately tied to perceived parental support. Barber and Olsen (2004), for example, found that a less steep decrease in perceived teacher support was associated with a less steep increase in parent–child conflict. However, researchers are still beginning to unpack the complex pattern of students' perceived teacher support, earlier and current parental relationships, and the sensitivity of relationships to particular contexts and stages of students' development.

In sum, consistent with attachment theory, early maternal attachment is moderately associated with teacher/caregiver relationship quality in early childhood. Upon entrance to non-parental caregiving experiences, teachers' characteristics, particularly sensitivity, have the potential to modify relational schemata, and may offer unique opportunities to buffer poor attachment histories. As children develop and accumulate relational experiences in the school setting, the quality of the relationships they form with teachers may be less dependent on the quality of early mother–child attachment. However, evidence suggests that the concurrent quality of parent–child relationships is still an important resource for children's relational functioning in school. Also, early mother–child attachment may indirectly affect later relationship experiences by placing children on more or less adaptive developmental trajectories. Thus far, the increased integration between attachment theory and a development systems framework has led to important insights about the complexity of forming positive relationships with teachers.

Moderating role of teacher–child relationships

It is generally agreed that a positive relationship with a teacher can operate as a developmental asset for children. Children who have closer relationships with their teachers tend to have higher academic performance, lower externalizing behaviors, and better social skills (Crosnoe, Johnson, & Elder, 2004; Ladd & Burgess, 2001;

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Pianta & Stuhlman, 2004). Although there is evidence that teacher–child relationships facilitate children's healthy development, perhaps the single most frequently posed question regards teacher–child relationships' potential as a protective factor for children likely to struggle in school. In some sense, this is a question about relationships as moderators of already-in-process developmental trajectories (Masten, 2001; Rutter, 1979).

Before children walk into school, children with certain behavioral, demographic, academic, and caregiving factors and experiences are at-risk for a host of academic and socioemotional difficulties (e.g., Hamre & Pianta, 2005; Henricsson & Rydell, 2004). From an ecologically-oriented model, children's relational models and individual characteristics, as well as context, jointly influence development and, as such, relationships within these contexts have important influences on children's development (Bronfenbrenner & Morris, 1998; Ladd, 1996). Examining the extent to which high quality teacher–child relationships protect or promote functioning for at-risk children, as well as examine the exacerbating effects of negative relationship quality, will advance the field's understanding about whether relationships with teachers alter developmental trajectories for the most vulnerable children, including children with behavioral adjustment problems, and academic risk, as well as children who experienced poor caregiving environments, and children with demographic risk (Luthar, Cicchetti, & Becker, 2000).

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Behavioral adjustment problems

Recognizing that behavioral adjustment problems are a significant risk factor for later maladjustment, including academic failure, decreased motivation, antisocial behavior, and delinquency (Baker, 1999; Loeber, 1990), there has been an increased focus on protective factors that may alter this developmental trajectory. Importantly, researchers have found that high quality relationships with teachers appear to decelerate the deleterious effects of risk and promote healthy functioning for children with externalizing and internalizing problems (Baker, 2006; Baker, Grant, & Morlock, 2008; Ladd & Burgess, 2001; Silver, Measelle, Essex, & Armstrong, 2005). For children with internalizing problems, teacher-perceived closeness is associated with improved social skills (Berry & O'Connor, 2010), peer relations (Gazelle, 2006), and academic outcomes (Baker, 2006). For instance, Arbeau, Coplan, and Weeks (2010) found, among first grade children, shyness was related to lower social adjustment. However, close teacher–child relationships appeared to buffer many of the negative outcomes and dependent relationships tended to exacerbate negative outcomes. More specifically, children who were exposed to closer relationships had lower rates of school avoidance, anxiety, and social withdrawal, whereas children who had more dependent relationships had higher rates of negative social outcomes. Importantly, shy children tended to not have conflictual relationships with teachers and, as such, there was no evidence that teacher–child conflict moderated shy children's outcomes.

Children with externalizing problems are more likely to have conflict with teachers, potentially resulting in a maladaptive cycle of interactions. For instance, externalizing behaviors may result in conflict with the teacher, which may exacerbate children's externalizing behaviors, which then may sustain or increase the negative interactions with the teacher. Doumen and colleagues (2008) found evidence for this transactional cycle in early childhood based on teacher-report of relationships and

behavior. Aggressive behavior at the beginning of the preschool year was related to increased conflict with teachers during the year, and increased aggressive behavior by the end of the year.

Although children with behavioral adjustment problems are at-risk for developing conflictual relationships with teachers (e.g., Decker, Dona, & Christenson, 2007), relationship quality is not perfectly concordant with students' level of risk, and students with adjustment problems can and do develop positive relationship with teachers (Myers & Pianta, 2008). In general, children with externalizing problems seem to particularly benefit from a warm, supportive relationship with a teacher in early childhood and elementary school (e.g., Hamre & Pianta, 2005; Meehan et al., 2003). This benefit is also corroborated in parent–child relationship literature that finds parental warmth stabilizes behavior problems, and is associated with a reduction in the growth of externalizing behaviors (e.g., Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005). Children with externalizing problems and positive relationships with teachers show higher reading scores (Baker et al., 2008), deceleration of externalizing behaviors (Silver et al., 2005), and higher academic performance (Baker, 2006) compared to children with externalizing problems with less close or conflictual relationships.

Teacher–child relationships are consistently found as an important protective factor for externalizing behaviors. However, importantly, the vast majority of work just summarized often used teacher-reports for both predictors and outcomes. Adding another layer of complexity, Meehan, Hughes, and Cavell's (2003) investigated the relation between teacher–child relationships and children's aggressive behaviors in early elementary school by employing measures from multiple informants. They found that above and beyond teacher-reported second grade aggressive behaviors, third grade teacher-reported support predicted lower levels of third grade teacher-reported aggression, but did not predict peer-reported aggression. Other studies, such as Ladd, Birch, and Buhs (1999), have found that children with externalizing behaviors appear to have closer relationships with peers, as reported by the peers, when they also have closer relationships with teachers. Importantly, having multiple informants of relationships and outcomes in the classrooms may provide a more comprehensive understanding of classroom processes and outcomes and test the robustness of findings.

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Academic risk

The evidence is a bit more mixed for teacher–child relationships acting as a protective factor for children with academic risk, perhaps in part due to the dearth of recent research in this area. Children with academic risk tend to develop poorer relationships with their teachers compared to more academically competent children, whereas positive relationships with teachers appear to be particularly important for children who struggle with academic demands in school (Eisenhower, Baker, & Blacher, 2007). Teacher–child relationships appear to promote healthy behavioral outcomes and reduce levels of delinquency and socioemotional problems among children with learning difficulties (Al-Yagon & Mikulincer, 2004; Murray & Greenberg, 2001; Pianta et al., 1995). For instance, among Israeli elementary school students, Al-Yagon and Mikulincer (2004) found beneficial effects of close relationships with teachers for children with learning problems; students who reported closer relationships with teachers had lower levels of loneliness, and student-reported and

teacher-reported closeness contributed to students' sense of confidence. However, this study did not account for the nesting of children within classrooms. In terms of academic outcomes, there is no consistent evidence that relationships are able to directly protect against academic underperformance or failure (Baker, 2006; Murray & Greenberg, 2001), which is not completely surprising given that early performance is one of the most salient predictors of subsequent performance (Duncan, Dowsett, Claessens, Magnuson, Huston, Klebanov, et al., 2007). Additionally, although it is posited that conflictual relationships may exacerbate outcomes for children with academic risk, there is little research in this area, with most studies focusing on the moderating effects of the positive aspects of relationships.

Difficult caregiving experiences

Components of caregiving, such as certain discipline styles or beliefs about child-rearing practices, place children at risk for maladaptive development (Bailey, Hill, Oesterle, & Hawkins, 2009). Relationships with teachers have the opportunity to promote the reorganization of relational schemata and buffer the children from negative developmental outcomes associated with problematic early caregiving experiences (e.g., Zajac & Kobak, 2006). Indeed, there is some evidence that children with insecure attachment are able to form positive relationships with teachers, and this positive relationship promotes positive development (Buyse et al., 2011; Copeland-Mitchell, Denham, & DeMulder, 1997). For instance, Burchinal, Peisner-Feinberg, Pianta, and Howes (2002) conducted an investigation of children in child care centers across four states from preschool to second grade. After accounting for the nesting of children within classrooms, among children who had parents with more authoritarian parenting practices, children with closer relationships with teachers, as reported by the teacher, exhibited significantly more gains in reading scores compared to children without close relationships. Interestingly, this moderating effect of teacher–child relationships did not appear amongst aggressive children with poor parenting practices, indicating that the combination of adjustment problems and parental risk may be particularly resistant to protective influences. As in the area of research on children with academic risk, there is little research on whether the negative aspects of relationships exacerbate outcomes for children with difficult caregiving experiences.

Demographic risk

Children with demographic risk, including minority status and low maternal education, also appear to be protected by high quality relationships with teachers (e.g., Hamre & Pianta, 2005; Meehan et al., 2003). In general, minority children (African American and Hispanic) appear to benefit more from close relationships than Caucasian children (Meehan et al., 2003). Burchinal et al. (2002) found that minority children's relationships with teachers strongly predicted their receptive language scores from preschool through second grade, and this moderating relation was sustained even when minority children had behavioral risk. It should be noted that researchers did not test for differences between minority children (i.e., African American and Hispanic children), which is a limitation considering that African American children tend to have less supportive relationships with teachers compared to Hispanic and Caucasian children (Hughes & Kwok, 2007).

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The extant research demonstrates clear evidence for compensatory effects, and a bit less evidence for exacerbating effects, of child–teacher relationships for the development of at-risk children. Studies from the previous decade have begun to uncover how relationships with teachers are related to development. More advanced methods, including longitudinal designs and multilevel modeling, have allowed for a more precise understanding of the extent to which teacher–child relationships act as a moderator for at-risk children. Consistent with attachment theory, one may assume that having a positive relationship with an adult outside the home, specifically a teacher, can help to reorganize relational models and promote outcomes for at-risk children. However, in general, the exact intervening mechanisms explaining the protective role of teacher–child relationships for different types of at-risk children remain to be explored.

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Training teachers from a relational perspective

Fundamental to any adult–child interaction is the ability of an adult to accurately read a child's social and emotional cues, respond to a child's signals appropriately, and offer emotional support or limits when needed (Pianta et al., 2003). Therefore, at the most basic level, the quality of these relationships is contingent on adults' individual characteristics and interpersonal skills. Of particular interest are teachers' characteristics that can be changed and altered to increase the quality of relationships with children and ultimately promote positive outcomes for children. Conceptualizing the role of teachers as a central agent of change for improving relationships in the classroom provides the opportunity for intervention, training, and professional development (Goodlad, 1991). The following section examines the extent to which teacher-focused interventions improve relationships within the classroom. Additionally, we supplement the work on interventions for improving teacher–child *relationships* to interventions targeting improvement in teacher–child *interactions* within the classroom. As mentioned previously, the temporal interactions between children and teachers are the basis for the formation of teacher–child relationships.

Historically, both in-service and pre-service teacher training have been disjointed and unsystematic, often yielding small effects on improving teacher quality (Ball & Cohen, 1999; Birman, Desimone, Porter, & Garet, 2000; Haymore-Sandholtz, 2002; Pianta, Mashburn, Downer, Hamre, & Justice, 2008). Because of the strong evidence that positive teacher–child relationships matter, and may even promote outcomes for the riskiest children, program developers and policymakers have begun implementing programs specifically designed to alter relationship quality through more direct actions related to knowledge or behavioral change, often called process-oriented professional development (Sheridan, Edwards, Marvin, & Knoche, 2009). Rather than providing teachers with general knowledge unconnected to teachers' classrooms, process inputs focus on providing teachers knowledge, skills, and support within individual classroom contexts and experiences in order to change teaching practices. In this section, we focus on process-oriented professional development that has the explicit intention of improving relationships and interactions between teachers and children.

Until recently, very little empirical work examined the extent to which targeted relational professional development improves teacher–child relationships. However, within the past decade, researchers have begun to implement relationship-focused professional development interventions. This intervention work has strong roots in

an attachment framework and often takes into account the dynamic bidirectional influence on relational processes. For example, Driscoll and Pianta (2010) evaluated the effects of an intervention, Banking Time, on improving teacher–child relationships. In Banking Time, a set of one-on-one child-directed sessions occurs between the teacher and child that are specifically designed to foster positive teacher–child relationships. Results indicated that teachers randomly assigned to the Banking Time intervention reported increased perceptions of closeness with children. Additionally, children who participated in Banking Time demonstrated gains in teacher-reported task orientation and competence, and decreased teacher-reported adjustment problems compared to peers in the same classroom who did not participate in the intervention. Children with less close relationships appeared to particularly benefit from teachers receiving Banking Time. One limitation to this work is that both closeness and child outcomes were based on teacher-reports and the lack of outside reporters may have resulted in a source effect.

In addition, there is evidence that professional development can improve *observed* interactions in the classroom. Lyon and colleagues (2009) investigated the effects of Teacher–Child Interaction Training for improving positive interactions in preschool classrooms. Teacher–Child Interaction Training provides group training and practice for interacting with groups of children. Teachers are observed and coaches provide feedback on their classroom practices. Non-experimental results indicated a mean level change in positive interactions between teachers and children from baseline to the end treatment. In terms of causal evidence, Pianta, Mashburn, Downer, Hamre, and Justice (2008) designed and implemented a random control trial of a web-based system of professional development, MyTeachingPartner (MTP) with a central focus on supporting teachers' representations and beliefs about the importance of interactions in preschool classrooms. The control group was provided with online access to the MTP website, including video examples of high quality interactions and access to web training on Banking Time. The treatment group received consultant support in addition to the online support. Through the consultant support, teachers videotaped their interactions in the classroom and then consultants guided teachers through a reflection on their teaching practices. By the end of the year, pre-kindergarten teachers in the treatment group who worked with a consultant and had website access had higher observed quality of social and instructional interactions with children than teachers who only had website access (Pianta et al., 2008).

Expanding upon the MTP model, a recent professional development study conducted by the National Center for Research on Early Childhood Education (NCRECE) examined the impact of a skill-focused course that focused on how interactions in early education settings influence children's learning and language outcomes. Teachers who were randomly assigned to participate in the course were better able to accurately report on observed quality of teacher–child interactions as well as improve their actual interactions with children compared to teachers who were not in the course (Hamre, Pianta, Burchinal, Field, Locasale-Crouch, & Downer, 2010). Results from MTP, NCRECE, and Banking Time interventions suggest that relationship-focused, individualized professional development supports for teachers can improve the quality of interactions with children.

Importantly, improving teachers' behaviors and perceptions through a relational lens has shown to be effective in improving children's outcomes. For instance, Murray and Malmgren (2005) evaluated the effects of a randomized control trial on

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a teacher–student relationship program among students in a high poverty urban school. Teachers were trained to increase their positive interactions with students, held weekly meetings with students, and called home to parents. Findings indicated that students in the intervention had higher grade point averages compared to students in the control group. Intervention teachers' grades were not included in the analyses in order to assure that findings were not attributable to the grading of teachers participating in the intervention. The intervention did not seem to impact students' socioemotional adjustment. Webster-Stratton, Reid, and Hammond (2004) conducted a randomized control trial on an intervention aimed to improve parents' and teachers' relationships with children with early-onset conduct problems. In the intervention the teacher-training component – which not only addressed classroom management strategies, but also how to promote positive relationships with children with behavior problems – was coupled with a parent-training component. The dual intervention resulted in fewer conduct problems with mothers, teachers, and peers. Importantly, because of the simultaneous intervention on parents and teachers, it is difficult to parse out the unique influence of teacher training.

In addition, a recent investigation examined the effect of a relationship-focused reflection program on teacher sensitivity and teachers' perceptions of relationships with children. Teachers were guided to narrate their representation of relationships with target children as well as reflect on differences between their own representations and actual observed interactions. Although the study did not find an average mean effect on improving relationship perceptions, teachers were more sensitive in their teaching practices after participating in the intervention (see Spilt, Koomen, Thijs, & Van der Leij, 2012). Thus, there seems potential to improve teachers' attributes known to promote relationships with children through cognitive-behavioral training, or reflection-based interventions.

In addition to training teachers, there is some evidence that indicates interventions targeting personnel other than teachers have positive results. For instance, the school-based Check & Connect program was developed for elementary and middle school students who were at risk for dropping out of school. The Check & Connect program aimed to improve engagement in school through promoting students' relationships with an interventionist/adult figure within the school setting (Anderson, Christenson, Sinclair, & Lehr, 2004). The interventionist conducted ongoing evaluations of students' engagement and ensured that the students received persistent and continuous positive support. Although this study did not have a control group, results suggest that forming a positive adult relationship in school can promote children's development. Interventionists' perceived closeness with students was associated with increased student academic engagement, and improved school attendance.

In terms of pre-service training, there are few interventions that focus on modifying existing training in order to improve teachers' ability to form close relationships with children. Some preliminary evidence suggests that pre-service training may be a prime target for informing teachers on practices associated with high quality relationships. Rimm-Kaufman, Voorhees, Snell, and La Paro (2003) developed an intervention for Master's students in an early childhood special education program. The main components of the intervention were reviewing literature on teacher–child interactions, observing and discussing videotapes of teacher practices, and discussing issues related to teacher sensitivity. In the pilot study, based on qualitative evidence, Master's level students were able to recognize

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their sensitive behaviors and identify the ways in which their interactions differed based on children's characteristics or behavior within the classroom. Although this study was relatively small scale and qualitative, it suggests that there may be potential to train teachers on relational practices before they enter the teaching profession.

Overall, teacher–child relationships have begun to emerge as a central agent of change for improving the quality of education, demonstrating promising evidence that focusing on relationships in the classroom can improve children's functioning and adjustment. More specifically, evidence suggests that focusing on providing coherent and cohesive professional development may significantly improve the quality of teacher–child relationships (e.g., Anderson et al., 2004; Bierman, Domitrovich, Nix, Gest, Welsh, Greenberg, et al., 2008; Noam & Fiore, 2004; Pianta et al., 2008). Overall, the work to date exploring the effect of professional development on the quality of relationships and, in turn, children's development and learning, shows promising results and supports the need for applications to a policy context.

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Conclusions and future directions

Recent research has made significant progress towards understanding teacher–child relationships through a developmental systems perspective. By relying on a developmental systems model, as well as an attachment framework and social-motivational perspectives, researchers have made significant progress in advancing the current understanding of teacher–child relationships. Our review of recent empirically rigorous work demonstrates the complexity of examining teacher–child relationships, particularly when research expands beyond the dyadic relationship model and investigates the multiple-levels of influence on relationship quality.

First, researchers have made significant advances in understanding the concordance between maternal attachment and teacher–child relationships, the moderating influence of teacher–child relationships for at-risk children, and how to improve adult–child relationships in the classroom. In terms of the first area, it appears that children's relationships with teachers in early childhood are associated with attachment patterns with parents, but also with concurrent teacher characteristics. The influence of maternal attachment on teacher–child relationships becomes increasingly complex as children develop, which is most likely due to a host of additional factors including the influence of the quality of teacher–child relationships, the shifting role of teachers, and different informants on relationship quality across schooling.

In terms of the moderating effect of relationship quality, it appears that teacher–child relationships can compensate for the negative effects of earlier experiences. Most strongly supported, close relationships with teachers are associated with improved academic and socioemotional functioning among children with behavioral and demographic risk. Conflictual relationships are associated with exacerbated negative outcomes for children with externalizing and internalizing problems; however, there is less clear evidence on the exacerbating effect for other types of child-level risk.

Lastly, recent work on targeted professional development using a relational perspective demonstrates the potential for improving teacher–child relationships. A focus on professional development that provides teachers with knowledge, skills, and

support within individual classroom contexts and experiences has been shown to improve the quality of teacher–child relationships and in some cases improve children's outcomes. Although most relationally-focused professional development opportunities are typically implemented during in-service, pre-service programs may be a particularly important place for relational training.

Across the three research areas, there have been significant gains in methodology approaches, conceptualization, and integration across disciplines. The following section highlights areas for future research. The first two aims were set forth by Pianta et al. (2003) yet still need significant advancement. The remaining aims integrate critical areas of research needed to advance research across all lines of inquiry related to teacher–child relationships.

Future directions

(1) Understanding the varying role of teachers across children's development is rather difficult because of the lack of consistent constructs and measures across early childhood, elementary school, and middle school. In early childhood, teacher–child relationships are often defined by the attachment-based constructs of closeness, conflict, and dependency and measured through teacher report, whereas in later years, social-motivational models of teacher–child relationships are more prominent and child-reports are mostly used. In order to create a measure across these time periods, researchers would need to strike a balance between creating a time invariant assessment that combines these constructs while designing a developmentally sensitive instrument. Further research is needed to best understand how to conceptualize and measure relationships across development. Creating and validating downward extensions of child measures and/or upward extensions of teacher reports may be a first recommended step in this endeavor.

(2) Although child–adult relationships are bidirectional, they are also asymmetric, varying across age and grade depending on children's developmental maturity and capability to form relationships (Pianta et al., 2003). Moreover, because of the varying role of teachers across children's experience in school, it could be expected that differing components of teacher–child relationships are associated with student outcomes in late elementary and middle school compared to early childhood. This area of research has not been thoroughly examined, but remains an important area for research.

(3) Further research is needed to better understand whether results hold across different raters of relationships, as well as different raters of behavioral and socioemotional outcomes. For instance, in early childhood, it may be useful to assess teacher- and child-perceptions of closeness, as well as observe relationships between dyads. Some preliminary work in this area demonstrates the potential for multiple perspectives (e.g., Koepke & Harkins, 2008; Mantzicopoulos & Neuharth-Pritchett, 2003), but further research is needed on source effects and the robustness of findings across multiple informants.

(4) Although the studies from the previous decade have begun to uncover how relationships with teachers are related to development, past studies tend to be limited by their methods and design, mostly using non-experimental data, thereby limiting causal inferences. Even in the context of experiments,

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children may not always be randomly assigned to classrooms. Future studies should therefore try to control for the selection of children into certain classrooms.

(5) There is a need to expand beyond the dyadic paradigm and intervene across multiple levels within the developmental system, including community, classroom, family, and individual contexts. Clearly delineating and disseminating the school-, classroom-, and individual-level practices and structures associated with closer and less conflicted relationships between teachers and students would aid educators in promoting positive outcomes, particularly for at-risk children, and aid in teacher professional development.

(6) The reciprocal interactions between teachers and children are embedded within a complex system including proximal factors such as families and peers, and more distal features such as schools, communities, and cultures (Good & Weinstein, 1986; Pianta, 1999; Pianta et al., 2003). To date, ecological studies have explored how multiple systems interact and influence relationships; however, these studies often omit socio-cultural influences. Recent international work suggests that student–teacher relationships may operate differently depending on the cultural context (e.g., Fredriksen & Rhodes, 2004; Joshi, 2009). Thus, it is important to explore the extent to which socio-cultural context influences relational quality across settings both inside and outside the United States.

By and large, the field has made significant progress in understanding the complex role of teacher–child relationships. We need to continue the necessary integration between lines of inquiry in order to further our understanding of the nature and influence of relationships between teachers and children.

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