**Achievement Motivation in High School: The Role of Teacher Child Relationship Quality
from Third Grade to Sixth Grade**

by

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Abstract

Using longitudinal data from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development ($N = 1,364$), the purpose of the current study was to fill a significant gap in the literature on teacher-child relationship quality by addressing several key issues. It sought to address whether closeness and conflict declined from third grade to sixth grade. In addition, it examined both child and teacher characteristics that predicted trajectories of closeness and conflict. And finally, the study aimed to test whether the trajectories of closeness and conflict from third grade to sixth grade predicated achievement motivation in high school. There were four main findings. First, results showed higher levels of closeness in fifth grade for girls, children with low levels of internalizing behavior problems, and children with high social skills. Additionally, teachers with high self-efficacy reported higher levels of closeness. Second, teachers reported having higher levels of conflict in fifth grade with boys, African-American children, and children with high levels externalizing and internalizing behavior problems. Third, the rate of change in closeness and conflict was not predicted by any of the variables in the models. And fourth, neither initial levels nor rate of change in closeness and conflict from third grade to sixth grade predicted achievement motivation in high school. However, higher levels of parental involvement at age 15 predicted higher levels of achievement motivation, concurrently.

Dedication

This dissertation is dedicated to two people who have had a profound influence on my life: my father, the late Eugene Parrett, who instilled in me, the importance of hard work and higher education and the late Catina Lynaum, one of my closest friends whose generous and kind spirit was too big for this Earth. I thank you both for encouraging me to believe in myself, to have confidence in my abilities, and to know that I can do anything if I put my mind to it.

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"Keep your dreams alive. Understand to achieve anything requires faith and belief in yourself, vision, hard work, determination, and dedication. Remember all things are possible for those who believe." ~ Gail Devers

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I. Introduction

Research suggests that the quality of children's relationships with their teachers has long-term consequences for their academic motivation and achievement (Hamre & Pianta, 2001; Hughes & Kwok, 2007; Ladd, Birch, & Buhs, 1999). Due to the structure of elementary and middle schools in the US, however, children do not typically remain with the same teacher from year to year (Howes, Phillipsen, & Peisner-Feinberg, 2000). The implication of this continuous transition is that children must re-form their relationships with their teachers each year. Theoretically, each new relationship that is established by a child will be influenced by previous ones. Yet little is known about how teacher-child relationship quality changes over time as children form new relationships with new teachers each year. Furthermore, few studies have examined the correlates and long-term consequences of these trajectories. To fill these gaps in the literature, the goals of this study were to describe individual student trajectories of teacher-child relationship quality from third grade to sixth grade; examine child and teacher characteristics that might predict differences in initial levels and rates of change in trajectories of relationship quality; and determine whether teacher-child relationship quality trajectories from third grade to sixth grade predict motivational outcomes in high school.

The parent-child relationship is most important in shaping children's development and, unlike parents, teachers are transient figures in a child's life, typically changing from year to year (Jerome, Hamre, & Pianta, 2009). However, a large body of literature has demonstrated that the quality of the relationships children develop with teachers are meaningful and linked to a variety of domains including academic achievement, peer relationships, and school adjustment (Baker, 2006; Jerome et al., 2009; Murray & Greenberg, 2000).

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It should be noted that the term "teacher-child relationship quality" has been used in the literature to describe the affective relationship between a child and his/her teacher; however, we recognize that researchers generally examine the relationship from only the teachers' perspective. Despite this methodological shortcoming, because "teacher-child relationship quality" is the term commonly used in the literature, this is the term adopted for the current project.

Attachment theory (Bowlby, 1969; 1982), used extensively as a theoretical framework for understanding the dynamics of parent-child relationships, has been utilized over the past two decades for understanding research on teacher-child relationships (Howes & Hamilton, 1992; Howes, Phillipsen, & Peisner-Feinberg, 2000). Drawing on attachment theory, Pianta and Steinberg (1992) developed the Student–Teacher Relationship Scale (STRS) to assess warmth/security, anger/dependence, and anxiety/insecurity in the teacher–child relationship. Based on factor analysis of the STRS items, Pianta et al. (1995) identified three dimensions of the teacher–child relationship: closeness, conflict, and dependency. Closeness encompasses the degree of warmth and open communication that exists between a teacher and a child, and may function as a support for young children in the school environment. For example, having a warm affective tie to a significant figure in the classroom may facilitate positive attitudes towards school. Based on theories of parent-child attachment, children who share a close relationship with their teacher possess a "secure base" from which to explore the environment, becoming more engaged in that they work harder, persevere in the face of difficulties, and attend more to the teacher (Birch & Ladd, 1997). In this way, closeness with the teacher provides children with the emotional security necessary to engage fully in learning activities and scaffolds the development of key social, behavioral, and self-regulatory competencies needed in the school

environment (Pianta, 1999), thereby helping to facilitate children's learning and school performance. Children who experience close relationships with their teachers have higher participation rates and engagement in the classroom, like school more, and have a lower likelihood of being retained (Birch & Ladd, 1997; Buhs, Ladd, & Herald, 2006; Ladd, Birch, & Buhs, 1999).

Conflictual teacher-child relationships on the other hand are characterized by discordant interactions and a lack of rapport between the teacher and child. Friction with teachers may limit the extent to which children are willing to rely on these relationships as sources of support for emotional, social, or academic challenges. Further, such difficulties in the teacher-child relationship may foster feelings of anger or anxiety in young children, thus causing them to become disengaged or uninvolved in the learning environment and perhaps even school avoidant. Conflict in the teacher-child relationship is linked to decreased cooperation, self-directedness, prosocial behavior, and school engagement, and more negative attitudes toward school (Birch & Ladd, 1997; Buyse et al., 2008; Pianta & Stuhlman, 2004).

And finally, dependency refers to possessive and "clingy" child behaviors that are indicative of an overreliance on the teacher as a source of support. Children who are overly dependent on the teacher may be tentative in their explorations of and engagement in the school environment if the teacher is not nearby offering encouragement. Dependency is associated with antisocial behavior as well as a lack of competence, negative school attitudes, and less positive engagement (Birch & Ladd, 1997; Birch & Ladd, 1998; Buys et al., 2008). Few studies examine dependency in teacher-child relationship quality beyond preschool and the first few years of elementary school, probably because as children get older, they become more autonomous and less clingy to their teachers (Ang, 2005).

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Although the three dimensions of teacher–child relationship quality (closeness, conflict, and dependency) have been documented across diverse samples (e.g., Birch & Ladd, 1997; Saft & Pianta, 2001), and links to children's school adjustment both concurrently and longitudinally have been well-established, the question of whether teacher-child relationship quality changes over time has received only limited attention in the literature. There is some evidence, however, that teacher-child relationship quality is likely to decline as children move through elementary school and into middle school due to both developmental changes as well as changes in the structure and nature of the classroom (Davis, 2003). Key developmental changes as children traverse elementary school include interacting with a wider range of people, including peers; exerting greater independence from parents; and displaying an increase in new cognitive skills (Maldonado-Carreño & Votruba-Drzal, 2011). Additionally, elementary and middle schools are organized such that children must change classes frequently and have different teachers for multiple subjects; class sizes and student-to-teacher ratios increase; and teachers begin to focus more on academic content (Baker, 2006; Eccles et al., 1993).

The lack of studies examining stability in the quality of teacher-child relationships over time and across teachers may be attributed to several factors. First, the majority of the studies on early teacher-child relationship quality have been cross-sectional. Second, those studies that have examined teacher-child relationship quality longitudinally tend to focus on the resulting outcomes for children. Few have examined consistency of teacher-child relationship quality itself. Third, studies that have examined consistency, or rank order stability, in teacher-child relationship quality have typically used bivariate correlations (Hamre & Pianta, 2001; Howes & Hamilton, 1993). Findings from these studies show that teacher-child relationship quality at time 1 is positively correlated with relationship quality at other time points. For example, in Howes et

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al. (2000), closeness in the teacher-child relationship in the first year of preschool was correlated .20 with relationship quality in the first year of kindergarten. The correlation between year two of preschool and kindergarten was .29. In addition, conflict was correlated .47 between the first year of preschool and kindergarten. These findings suggest that closeness and conflict in the teacher-child relationship remained relatively consistent from preschool to kindergarten.

In Birch and Ladd's (1998) study of teacher-student relationship quality from kindergarten to 1st grade, the authors noted relatively high consistency in teacher reports of conflict from one year to the next ($r = .50$). They concluded that "the issue of stability is important to consider because it implies an enduring characteristic or personality trait that resides in the child" (p. 942). It has been suggested that compared with closeness, levels of conflict may be more stable because conflict depends more on attributes of the child (e.g., behavior problems) than the fluctuating characteristics of teachers and dyadic interactions over the years (Jerome, Hamre, & Pianta, 2009). Furthermore, teacher-reported closeness may be more reflective of a teacher's ability to foster warmth and trust with a particular child than children's effect on teachers (Silver, Measelle, Essex, & Armstrong, 2005).

As a result of findings such as these, many researchers have concluded that teacher-child relationship quality is stable for all or most individuals; however, correlations focus on stability in the relative position of individuals in a group (i.e., consistency in the relative rank order of persons across pairs of occasions), concealing individual differences in stability and change (Aldwin, Spiro, Levenson, & Bossé, 1989). The quality of some children's relationships with teachers may be stable, but others may change to varying degrees. It is impossible to determine individual variation in children's relationships with teachers over time with correlations.

Measuring true change in teacher-child relationship quality requires more sophisticated analytic techniques than those conventionally used. One such technique, growth modeling, can be used to assess developmental processes across a variety of domains by modeling both inter- and intra-individual variability in terms of initial levels and developmental trajectories across time (Singer & Willett, 2003). This approach permits a more accurate framing of the stability-change issue by recognizing that some people can change while others remain stable, and this can vary across time.

Three published studies have been found that used growth modeling to examine change in teacher-child relationship quality prior to the middle-school transition. Using a large, nationally representative sample, O'Connor (2010) and O'Connor and McCartney (2007) found that teacher-child relationship quality declined from 54 months to fifth grade. However, both of these studies examined total teacher-child relationship quality, rather than examining the subscales separately. It is possible that children's changes on these two dimensions of relationship quality are not parallel. Jerome, Hamre, and Pianta (2009) also analyzed change in teacher-child relationship quality from kindergarten through sixth grade, but examined conflict and closeness separately. The authors found that conflict increased in earlier years (i.e., kindergarten through fourth grade) and then began decreasing in fifth grade; conversely, children experienced decreases in closeness over time. The findings from O'Connor (2010), O'Connor and McCartney (2007), and Jerome et al. (2009), seem inconsistent with previous correlational studies examining stability, suggesting that the use of growth modeling techniques may provide a more nuanced and accurate picture of the changing nature of teacher-child relationship quality. Additional studies using growth modeling are needed to replicate and extend these findings.

An area for further study is factors that influence teacher-child relationship quality. Greater knowledge of factors that influence the quality of the relationships between teachers and children would lay a stronger foundation for interventions to improve teacher-child relationship quality. There is considerable evidence that a number of child-level characteristics predict variation in initial levels of teacher-child relationship quality; however far fewer studies have examined factors associated with trajectories of teacher-child relationship quality over time. In particular, studies have shown that boys (Furrer & Skinner, 2003; Hamre & Pianta, 2001; Howes et al., 2000), students from socioeconomically challenged families (O'Connor & McCartney, 2006), and racial and ethnic minorities (Hughes, Gleason, & Zhang, 2005; Saft & Pianta, 2001) are more likely to experience lower quality relationships, that is, relationships characterized by more conflict and less closeness. Lower quality relationships also have been reported for children with learning or cognitive deficits (Baker, 2006), children with low levels of social skills (Mashburn et al., 2008), and children with more behavior problems. For example, in a study of Belgium kindergarten classrooms, Buyse et al. (2008) found that teachers reported having poorer-quality relationships with children who exhibited high levels of externalizing and internalizing behavior problems. Many studies have examined total relationship quality, however, leaving open questions regarding the role of these child characteristics on separate trajectories of closeness and conflict. In one of the few studies examining trajectories of conflict and closeness into the middle-school years, Jerome et al. (2009) report that African-American children, boys, and children with more behavior problems experienced higher levels of conflict in kindergarten. Closeness with teachers was also lower for boys. Moreover, African-American children evidenced increasing levels of conflict with teachers as they progressed from kindergarten to third grade. Additional studies of changes in relationship quality over time are

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needed in order to improve prospects for children who begin public school with poor quality teacher-child relationships.

Compared to the number of studies on children's characteristics, less has been done to investigate specific teacher characteristics that influence mean level differences in teacher-child relationship quality. Those that have examined teacher characteristics report that teacher-child relationship quality varies as a function of teacher-child racial match (Saft & Pianta, 2001), teacher gender (Kesner, 2000), teacher education and experience (Hamre, Pianta, Downer, & Mashburn, 2008), and teachers' perceptions of their own self-efficacy (Mashburn et al., 2006). For example, the effects of teacher-child racial match were examined in a study by Saft and Pianta (2001). The authors found that teachers reported more positive relationships with students who were the same race as their teachers. Additionally, although teachers of all races rated relationships with African-American children as higher in conflict, ratings of conflict with African-American students among non-African-American teachers were approximately one standard deviation higher than were ratings of African-American teachers. Furthermore, teachers with higher levels of self-efficacy report having relationships with children characterized by higher levels of closeness and lower levels of conflict (Mashburn et al., 2008; O'Connor, 2010).

Only one study was found that examined how teacher characteristics are associated with teacher-child relationship quality trajectories. O'Connor (2010) reported that greater levels of teachers' perceived self-efficacy was related to less rapid rates of decline in teacher-child relationship quality from preschool to fifth grade. Examining teacher characteristics associated with trajectories of teacher-child relationship would require the addition of time-varying predictors in growth models of relationship quality because teacher characteristics typically

change each year as children progress through American public education (Jerome et al., 2009).

Most adults remember teachers with whom they felt comfortable and whom they remember with

fondness, and other teachers they did not like, whom they felt treated them unfairly, or with

whom they felt no relationship at all. Because the child in each instance is the same, it is possible

that some of this variation over time and teachers is determined by teacher characteristics or the

particular match between teacher and child characteristics such as gender and race/ethnicity.

Another issue that requires considerable attention is the lack of empirical evidence

regarding the long-term consequences of changes in teacher-child-relationship quality over the

elementary and middle-school years. Understanding how declines in teacher-child relationship

quality are related to child outcomes is important considering that even small declines in teacher-

child relationship quality across the early years of elementary school are associated with lower

levels of achievement in third grade (O'Connor & McCartney, 2007). In the motivation and

education literature, there is widespread recognition that good relationships with teachers

enhance children's motivation to learn (Maldonado-Carreño & Votruba-Drzal, 2011).

Conversely, researchers have found that the declines in teacher-child relationship quality that

accompany middle-school transitions are related to lower levels of achievement motivation (e.g.,

Ryan & Patrick, 2001), concurrently. Low achievement motivation constitutes a risk factor

because it may reflect detachment from school and lower expectations for success in other areas

of life including work (Cooney, 2000). In addition, poor achievement motivation is a precursor

to academic underachievement, and academic underachievement is a strong predictor of school

dropout (Vallerand et al., 1997).

In the only study found to examine the outcomes associated with trajectories of teacher-

child relationship quality, O'Connor & McCartney (2007) found that declines in teacher child

relationship quality from preschool to third grade predicted lower levels of achievement in third grade. What remains unclear is whether or not teacher-child relationship quality trajectories predict outcomes later in children's academic careers. Given the implications of motivation for students' educational attainment and future success, more information is needed about how the social aspects of the classroom, particularly teacher-child relationship quality, can support or undermine student motivation. Examining the effects of teacher-child relationship quality trajectories on high school achievement motivation may lead to the design and implementation of prevention and/or intervention programs aimed at enhancing the socio-emotional development and educational success of young students at risk for school failure.

The current study will attempt to replicate and extend the results reported by Jerome et al. (2009) albeit within a slightly different developmental frame. Specifically, using the same sample, we will examine trajectories of closeness and conflict, but do so between third and sixth grades, rather than for the periods between kindergarten and sixth grade. We reasoned that teacher-child relationships during this period are more likely to influence children's eventual academic motivation than are relationships during the early childhood years. Jerome and colleagues report significant quadratic changes for both conflict and closeness; it is not clear whether typical trajectories of either dimension are quadratic between third and sixth grades. Thus, the first goal is to describe trajectories of conflict and closeness between third and sixth grades.

Like Jerome and colleagues, we also will identify child characteristics that predict these trajectories. These child-level predictors include child sex, race, behavior problems, and social skills. Thus, the second goal of this study is to identify characteristics of children that are associated with the trajectories of teacher-child closeness and conflict over the later elementary

years and into middle school. Unlike the Jerome study, however, we also will examine teacher characteristics that predict relationship-quality trajectories. This requires the inclusion of time-varying predictors because, in the United States, teacher characteristics change from year to year. In particular, we will focus on teacher characteristics identified in short-term studies of t-c relationship quality, including teacher race, experience, and self-efficacy. We also will be able to examine whether teacher-child racial and gender match predicts trajectories of teacher-child relationship quality.

To extend previous work and address several gaps in the literature, the present study seeks to examine the following questions: (1) Does teacher-child relationship quality change across the elementary and early middle school years? (2) What child and teacher characteristics are associated with initial levels and rates of change in teacher-child relationship quality over time? (3) Do teacher-child relationship quality trajectories from third grade to sixth grade predict achievement motivation at age 15?

To address these questions, the proposed study will use data gathered as part of the National Institute of Child and Human Development Study of Early Child Care and Youth Development (NICHD-SECCYD), a comprehensive study of children and the many environments in which they develop. Because it follows children from birth to age 15, this dataset is well-suited for examining teacher-child relationship quality over time. Teacher-child relationship quality, as reported by the teacher, was measured each year from third grade to sixth grade. In this particular dataset, reports of teacher-child relationship quality end in the sixth grade. This is probably because middle school teachers usually have many students for short-periods of time (Feldlaufer, Midgley, & Eccles, 1988), making it difficult to obtain information from one particular teacher. Both child (i.e., race, gender, behavioral orientation, and social

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skills) and teacher (i.e., race, gender, education, experience, and self-efficacy) characteristics will be examined as predictors of teacher-child relationship quality trajectories. Child cognitive ability and socioeconomic status (SES) have been found to be related to both teacher-child relationship quality and children's achievement (Brooks-Gunn & Duncan, 1997; Ladd, Birch, & Buhs, 1999; O'Connor & McCartney, 2007). In order to isolate the effects of teacher-child relationship quality over time, cognitive abilities and SES will be controlled in all analyses. Other control variables that have typically been used in the literature on teacher-child relationship quality are used as predictor variables in the current study (i.e., demographic characteristics of children, children's behavioral orientation, and children's social skills). Therefore, we chose to focus on cognitive abilities and SES as our control variables. Research also shows that children whose parents are more involved in school activities show higher levels of achievement motivation. Therefore, parental involvement will also be controlled in the models predicting achievement motivation.

The outcome of interest in these analyses is achievement motivation. Student reports of achievement motivation were obtained at age 15. This is not only the last data collection point in the NICHD-SECCYD dataset but also is a crucial period for students' motivation because it is in 10th grade that many students begin taking standardized tests for college entrance as well as contemplating dropping out of school (Croniger & Lee, 2001).

II. Review of the Literature

The purpose of this chapter is to present: (1) a review of the relevant theoretical and empirical research on teacher-child relationship quality including its theoretical framework, how it is measured, the effects of teacher-child relationship quality on child outcomes, how teacher-child relationship quality changes over time, and predictors of teacher-child relationship quality; (b) an overview of the theoretical and empirical research on achievement motivation including theories of achievement motivation, how achievement motivation is measured, the importance of achievement motivation, and its predictors; (c) a review of the literature on how teacher-child relationship quality is associated with achievement motivation; and (d) the research questions and hypotheses driving the current study.

Teacher-Child Relationship Quality

Theoretical Framework for Understanding Teacher-Child Relationship Quality

Young children's experiences during the first five years of life have a considerable effect on their cognitive, social, and emotional development (Bowman, Donovan, & Burns, 2001). Attachment theory posits that early interactions with adults, particularly mothers, are central to future social functioning. Based on the nature and quality of their interactions with adults, children construct "internal working models" of their early relationships. This working model then serves as a foundation for all future relationships. Using observations of young infants' interactions with their parents, Ainsworth et al. (1978) categorized attachment relationships into three categories: secure, avoidant insecure, and insecure ambivalent. Later research identified a fourth attachment category, disorganized (incoherent and fragmented; Main & Solomon, 1986). Secure attachment relationships in early childhood are optimal because they establish the basis on which children will form relationships with others; they provide a sense of security for

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children to explore the world around them; and they help foster resilience to stress (Howes & Ritchie, 2002).

Although attachment theorists initially studied the parent–child relationship, parents are not the only consistent figures with whom children can form relationships and from whom children can seek support on a daily basis. Attention has recently turned to the possible importance of relationships with teachers as a context for developmental outcomes in early childhood (e.g. Hamre & Pianta, 2001; Palermo, Hanish, Martin, Fabes, & Reiser, 2007). According to the 2002 National Survey of American Families, 47% of children ages 3-4 spent 35 hours or more per week in out of home care. Spending this amount of time with teachers affords children the opportunity to develop close relationships with them. From this perspective, teachers of young childrcorwen, through their caregiving roles, provide physical and emotional support to the child, and this support is a foundation for attachment like relationships (Hamilton & Howes, 1992; Howes & Hamilton, 1992).

As with the parent-child relationship, the teacher-child relationship varies in both nature and quality. Some children appear to have relationships with teachers that are close and affectionate whereas others are conflictual and even hostile. For example, Howes and Hamilton (1992) used Waters and Deane's (1985) Attachment Q-set to assess 403 infant, toddler, and preschool children's relationships with their teachers. Based on their findings, the authors derived three categories of relationships: secure, avoidant, and ambivalent. Children categorized as secure "expected the adult to be responsive" and "were not easily angry with the adult." Avoidant children were "unaware of adult location changes," "had no physical contact with the adult," and "expected the adult to be unresponsive." Children who were described as ambivalent were "demanding and impatient" and "cried often."

Also guided by attachment theory, Pianta (1999) identified three distinct dimensions of the teacher-child relationship in preschool and school-age children: closeness, conflict, and dependency. The *closeness* dimension characterizes the degree of affection, warmth, and open communication between the teacher and a particular child. Children who have close relationships with their teacher use the teacher as a secure base to explore the school setting and potential peer relationships (Birch & Ladd, 1997). They are also better able to focus their energy and attention on learning (Pianta, 1999).

A *conflictual* teacher-child relationship is marked by friction, anger, and a lack of rapport between the teacher and child. Children who experience conflict with their teachers limit the extent to which they may be able to rely on that relationship as a source of support. Because the child does not feel emotionally secure with the teacher, he or she is less likely to use the relationship as a base of support for exploring the learning opportunities in the classroom. Furthermore, conflict in the teacher-child relationship may foster feelings of anger or anxiety in young children, therefore causing them to become disengaged or uninvolved (Birch & Ladd, 1997).

A *dependent* child-teacher relationship is one in which the child engages in clinging and immature interactions. Overly dependent (i.e., clingy) children often request help from teachers when it is not needed (Pianta, 1999). They are also unlikely to explore the learning opportunities in the classroom or play with peers (Howes & Ritchie, 2002). Few studies have examined dependency in the teacher-child relationship beyond the preschool and early elementary years as it is thought that children become less reliant on their teachers for support and begin to exert more independence as they move across the formal years of schooling.

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Measuring Teacher-Child Relationship Quality

Several methods have been used to measure teacher-child relationship quality including observation (Howes & Hamilton, 1992a, 1992b; Howes et al., 1994; Howes & Ritchie, 1998); child reports (Harrison, Clarke, & Ungerer, 2007; Mantzicopolous & Neuharth-Pritchett, 2003; Murray, Murray, & Waas (2007); and peer reports (Hughes & Kwok, 2007; Hughes, Zhang, & Hill, 2006). However, the most commonly used measure is the Student Teacher Relationship Scale (STRS; Pianta & Nimetz, 1991), which asks teachers to rate the degree to which their relationship with a particular child is characterized by closeness, conflict, and dependency. The original STRS was pilot tested in a sample of 72 kindergarten children (Pianta, 1989) and aimed at assessing the dimensions of warmth/security, anger/dependency, and anxiety/insecurity. The items chosen for the original measure were derived from attachment theory, the Attachment Q-set (Waters & Deane, 1985), and literature on teacher-child interactions (Pianta & Steinberg, 1992). Based on factor analysis, the 16-item scale was found to have three factors: secure, improved, and dependent. An expanded 31-item version of the STRS, used in subsequent studies of kindergarten children and their teachers (Pianta, 1992; Pianta & Steinberg, 1992), identified five subscales supported by factor analysis: conflict, closeness, open communication, dependent, and troubled/closed. The final version of the STRS that is currently in use consists of 28 items rated on a 5-point scale and contains three subscales to measure conflict, closeness, and dependency. The STRS also yields scores on the overall relationship quality, with the conflict and dependency scores often added together to create a "relational negativity score" (Hamre & Pianta, 2001).

Since its creation, the STRS has been used extensively in research on teacher-child relationship quality and has been validated for use with students from preschool to eighth grade

(Hamre & Pianta, 2001). Considerable evidence for the convergent, predictive, and discriminant validity has been established by several studies (Birch & Ladd, 1998; Doumen et al., 2009; Hamre & Pianta, 2001; Pianta, 2001; Pianta, Steinberg, & Rollins, 1995). For example, Hamre and Pianta (2001) followed 179 children from kindergarten through eighth grade to examine the extent to which teacher-child relationship quality in kindergarten predicted school outcomes. An array of academic and behavioral data were collected longitudinally, including standardized test scores, work habits, disciplinary records, and grades in subjects such as language arts and math. Hierarchical regression analyses revealed that kindergarten teachers' reports of relational negativity (i.e., relationships marked by conflict and dependency) predicted fewer positive work-habit marks, more disciplinary infractions, and poorer math and reading grades in lower elementary school (grades 1- 4), upper elementary school (grades 5 – 6), and middle school (grades 7 – 8). These findings held even after controlling for gender, ethnicity, cognitive ability, and behavior ratings.

Using a multi-method approach, Doumen and colleagues (2009) conducted two studies with kindergarten and preschool children to replicate and extend previous findings regarding the convergent and discriminative validity of the STRS and its subscales. In Study 1, the authors investigated convergence between the STRS scales and child- and peer-reports of teacher-child relationship quality in a sample of 71 children and their teachers from six different kindergarten classes in Belgium. Child reports were measured with the Feelings about School scale (FAS; Valeski & Stipek, 2001) and peer reports were obtained through peer nominations of teacher-child relationship quality. The authors found that the STRS closeness and conflict scales converged with both child and peer reports of similar relationship dimensions. In addition, for teacher-rated closeness and conflict, associations with peer ratings of the same relationship

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dimensions were stronger than associations with peer ratings of different relationship

dimensions, yielding evidence for the discriminant validity of these two STRS scales. In the

second study, the association between the STRS scales and the Attachment Q-set (Waters &

Deane, 1985), an observational measure of teacher–child relationship quality, was examined.

Data were collected from 35 children and their teachers from 10 different preschool and

kindergarten classes in Belgium. Children who were rated by teachers as being overly dependent

towards them were also rated as fussier and displaying difficult behavior and less compliance

towards the teacher by observers, lending support to the convergent validity of the dependency

scale.

The Importance of Teacher-Child Relationship Quality

Teacher–child relationship quality has emerged as an important aspect of the classroom

context with implications for children's current and future academic achievement, school

adjustment, and peer relationships (e.g., Birch & Ladd, 1997,1998; Hamre & Pianta, 2001;

Silver, Measelle, Armstrong, & Essex, 2005; Valeski, 2000). Studies on teacher-child

relationship quality have found links between these outcomes even after controlling for

children's demographic variables, cognitive abilities, and behavior ratings (Hamre & Pianta,

2001; O'Connor & McCartney, 2007; Pianta & Stuhlman, 2004). For example, Birch and Ladd

(1997) examined the association between teacher-child relationship quality and children's

achievement in a sample of kindergarteners ($N = 206$). A series of hierarchical regression

analyses was performed, in which scores on four subtests of the *Metropolitan Readiness Tests-

Level* One (MRT; Hildreth, Griffiths, &McGauran, 1965) were regressed on the teacher-child

relationship variables. Children with closer and less dependent relationships had higher visual

and language scores on standardized tests. Using data from the National Institute of Child

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Health and Human Development Study of Early Child Care and Youth Development (NICHD-SECCYD), O'Connor and McCartney (2007) found that controlling for child and family factors, high quality teacher–child relationships from pre-kindergarten through third grade fostered children's academic achievement in third grade. In another longitudinal study, relational negativity in kindergarten predicted lower grades, lower academic performance on standardized tests, and lower ratings of positive work habits in eighth grade, after controlling for gender, ethnicity, cognitive ability, and behavior ratings (Hamre & Pianta, 2001).

Teacher-child relationships characterized by trust and warmth are positively associated with school adaptation (Baker, Grant, & Morloch, 2008). In Pianta and Steinberg's (1992) study of teacher-child relationship quality and school adjustment in kindergarten, data were gathered for the entire kindergarten population of a small city school district (436 children and 26 teachers). The authors found that teacher-child closeness was related to good work habits whereas conflict in the teacher-child relationship was associated with conduct and learning problems. Birch and Ladd (1997) also assessed the association between teacher-child relationships and children's school adjustment (school liking, engagement, and achievement) in kindergarten. Using regression analyses, dependency in the teacher-child relationship was related to school adjustment difficulties, including poorer academic performance, more negative school attitudes, and less positive engagement with the school environment. And in study conducted by Rey and colleagues (2007), 89 African American children in Grades 3 through 6 and their teachers rated the quality of the teacher–child relationship and completed questionnaires regarding school adjustment. Teacher and child reports on the quality of the relationship were correlated significantly ($r = 0.33$, $p < 0.01$). Positive teacher–child relationships, as reported by

children, predicted better classroom rule compliance, more interest in school, more feelings of connectedness towards school, and more involvement in school-related activities.

And finally, in the preschool and elementary grades, children who establish more supportive and less conflictual relationships with teachers are more accepted by peers (Birch & Ladd, 1997; Ladd, Birch, & Buhs, 1999; Taylor, 1989; Taylor & Trickett, 1989). Hughes and colleagues (2001) found that after controlling for children's levels of aggression, third and fourth grade behaviorally at-risk children who were perceived by their classmates as being more supported by the teacher were better accepted by their classmates.

Much of the literature on the effects of teacher-child relationship quality focuses on a limited age range of children, typically from preschool to early elementary school (Saft & Pianta, 2001), meaning less is known about older elementary or middle school students' relationships with their teachers. The limited findings suggest, however, that even older children benefit from positive-teacher child relationship quality. Murray and Greenberg's (2000) investigation of fifth and sixth grade students' social and contextual experiences at school revealed that those students who had poor relationships with teachers also had lower scores on social and emotional adjustment compared with students who had positive relationships with teachers. In addition, more positive student perceptions of relationships with teachers in middle school are associated with positive academic outcomes, including higher grades (Crosnoe, 2004; Gutman & Midgley, 2000; Jia et al., 2009) and stronger achievement test performance (Gregory & Weinstein, 2004); satisfaction with and interest in school and academic self-efficacy (Roeser, Midgley, & Urdan, 1996; Wentzel, 1998); and psychological adjustment such as lower depressive symptoms and higher levels of self-esteem (Jia et al., 2009).

How Teacher-Child Relationship Quality Changes Over Time

The majority of the investigations on teacher-child relationship quality have tended to focus on the link between relationship quality and children's academic, socio-emotional, and behavioral outcomes (Hamre & Pianta, 2001). Few studies have examined the developmental course of teacher-child relationship quality over time. Those that have done so have yielded conflicting results, depending on the analytic strategy employed. Attachment theory would suggest that children tend to recreate the past quality of their relationships in new ones. However, little is actually known about how this works in teacher-child relationships. Some studies suggest that as students move from elementary to middle school, the quality of teacher-child relationships declines. Using a cross-sectional sample of third-, fourth-, fifth-, and sixth-grade students, Furrer and Skinner (2003) found evidence of decreases in students' patterns of relatedness to teachers when they transitioned to middle school. An examination of mean levels of relatedness to teachers across third through sixth grades revealed that relatedness increased from third through fifth grade but decreased significantly from fifth to sixth grade, the transition point to middle school.

Although some stability across the early childhood period is expected, age-related changes in teacher-child relationship quality also seem plausible. Teacher–child relationships are likely to undergo change across the elementary school period for several reasons. First, teachers' interactions with preschool children incorporate aspects of care-giving (Howes & Hamilton, 1992). But care-giving interactions are likely to decrease in frequency as the academic task demands of elementary school increase (Baker, 2006). Second, the organization of elementary school is such that children are likely to interact with multiple teachers (e.g., gym, art, and homeroom) on a regular basis and with new teachers each year. It has been suggested that these

transitions encourage children to construct relationships with teachers that are related to the tasks

of schooling, rather than ones in which they are emotionally invested, as they were in previous

years (Baker, 2006). And third, the increasing importance of peer relationships may decrease the

prominence of teacher-child relationships by late elementary school (Wentzel, 1993). This

developmental shift is clearly evident by middle school when children report less positive

relationships with teachers and more investment in peer relationships than do children in grades

two through five (Lynch & Cicchetti, 1997).

Findings from prior studies have shown that teachers' perceptions of relational closeness

and conflict with a particular child are marked by moderate consistency even across different

teachers from preschool through second grade (Baker, Blacher, & Eisenhower, 2009; Pianta et

al., 1995). For example, Howes and colleagues (2000) conducted a three-year longitudinal study

on children's relationships with their teachers. The study began in the child's next-to-last year of

preschool and continued through kindergarten. Of the initial sample of 793 children, 357

children had complete teacher data for all three time points. Teacher child-relationship quality

was measured using the closeness, conflict, and dependency subscales of the STRS. The authors

correlated STRS scores for Year 1 (first year of preschool) with Year 2 (second year of

preschool) and Year 3 (kindergarten). Closeness, conflict, and dependency were modestly to

moderately correlated stable over the three years (rs = .16 - .61). In addition, path analysis

revealed that kindergarten relationship quality (Time 3) could be predicted from relationship

quality scores for the two previous years of preschool.

Contrary to the findings of Howes et al. (2000), using data from Phases I, II, and III of

the NICHD-SECCYD, O'Connor (2010) and O'Connor and McCartney (2007) found that

overall relationship quality decreased slightly from preschool to fifth grade. Additionally,

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Jerome, Hamre, and Pianta (2009) also used data from Phases I and II of the NICHD-SECCYD to analyze change in teacher-child relationship quality from kindergarten through sixth grade. The authors found that conflict increased in earlier years (i.e., kindergarten through fourth grade) and then began decreasing in fifth grade; conversely, children experienced decreases in closeness from kindergarten to sixth grade. These three studies offer preliminary evidence that teacher-child relationship quality may actually decline rather than remaining relatively consistent.

Perhaps one of the reasons for this discrepancy is the way in which the researchers measured consistency of teacher-child relationship quality over time. Consistency, or rank order stability, in teacher-child relationship quality has typically been examined using bivariate correlations (Hamre & Pianta, 2001; Howes & Hamilton, 1993; Howes et al., 2000). Positive correlations between two or more time points merely indicates that the rank order of children remains relatively stable across occasions; this does not yield any information regarding *how* change occurred or even the *direction* of change.

Modeling true change in teacher-child relationship quality requires a more sophisticated methodology than is typically used in studies in this area. Newer multi-level modeling techniques are more informative than correlations and/or MANOVA because they characterize both group-level and individual-level effects, yielding a more complete understanding of the phenomena under study. One technique in particular, growth modeling capitalizes on individual variability while simultaneously focusing on correlations over time, changes in variance, and shifts in mean values (Hess, 2000). In growth modeling, two important components of change trajectories are the intercept and the slope. The intercept refers to the initial status of the variable under investigation (e.g., teacher-child relationship quality). The slope corresponds to the rate of change over the period of the study. The goal of growth modeling is to identify an appropriate

growth curve form that accurately describes the overall, group-level trend. For example, do group-level trajectories of teacher-child relationship quality show increase, decreases, stability, or curvilinearity over time? And because people vary in rate of change, in direction of change (if they change at all), and in the amount of curvature (if curvilinearity characterizes change in a particular variable) that defines their trajectories, growth modeling also allows researchers to determine individual differences in trajectories, regardless of the shape and direction of the group-level trajectory. Individual trajectories reflect within-person variability, while individual differences across trajectories reflect between-person variability (Mroczek & Griffin, 2007).

As noted earlier, the majority of studies examining teacher-child relationship quality over time have used correlations to measure stability and change (see Howes et al., 2000); however, others (see Jerome, Hamre, & Pianta, 2009; O'Connor (2010); and O'Connor & McCartney 2006; 2007) have used individual growth modeling, providing a different perspective on the developmental course of teacher-child relationship quality. More longitudinal studies are needed to corroborate these authors' findings and to fully capitalize on the advantages of growth modeling. One such advantage is the ability to explain variability in initial levels and in patterns of growth by testing the contribution of other variables or constructs (Hess, 2000). Using growth modeling, one is able to test whether specific child and/or teacher characteristics are related to both initial levels (i.e., intercept) and rates of change (i.e., slope) of teacher-child relationship quality. Given the importance of teacher-child relationship quality for children's behavioral, cognitive, and socio-emotional outcomes, understanding how and why teacher-child relationship quality changes is imperative. Because so few studies have investigated both trajectories of teacher-child relationship quality as well as predictors of those trajectories, further investigation is warranted.

Predictors of Teacher-Child Relationship Quality

Not all children develop relationships with teachers characterized by high levels of closeness and low levels of conflict. Based on empirical evidence, extensive variation exists in the quality of children's relationships with their teachers.   Studies show that initial levels of teacher-child relationship quality are often associated with characteristics of the child including gender, race/ethnicity, behavioral orientation, social skills, cognitive abilities, and socioeconomic status.

Teacher-child relationship quality, however, is determined by characteristics of both the child and teacher. In past research, the focus has primarily been on child-level variables that influence teacher-child relationship quality. Those that have, show that teachers' biological factors (e.g., race/ethnicity, gender), their professional backgrounds (e.g., level of education, years of teaching experience), and psychological characteristics (e.g., self-efficacy) play a role in their perception of the quality of their relationships with children. A more detailed description of child and teacher correlates of teacher-child relationship quality found in the literature is presented below.

Child characteristics associated with teacher-child relationship quality

Gender. A consistent finding in the literature is that teachers often characterize their relationships with girls as closer and less conflictual than their relationships with boys (Hughes, Gleason, & Zhang, 2005; Masburn, Hamre, Downer, & Pianta, 2006). For example, Rudasill and Rimm-Kaufman (2009) examined associations between child characteristics (i.e., ratings of shyness and effortful control and gender) and teacher–child relationship quality in first grade. They found that teachers were more likely to rate their relationships as higher in conflict with boys and higher in closeness with girls. Similar findings have been reported in several other

studies (Hamre & Pianta; Saft and Pianta, 2001; Silver et al., 2005; Stuhlman and Pianta, 2002).

According to Ewing and Taylor (2009), a *gender role socialization perspective* might explain this consistent finding. Girls' social relationships tend to be more focused on intimacy and sharing, while boys' relationships tend to be more activity-oriented (Rudasill & Rimm-Kaufman, 2009). Furthermore, it has been suggested that teachers' perception of more conflict in their relationships with boys is related to boys' more frequent display of verbal and physical aggression (Stipek & Miles, 2008).

Only two studies were found that sought to examine whether child gender was associated with trajectories of teacher-child relationship quality. Using a large, nationally representative sample, O'Connor (2010) found that declines in overall teacher-child relationship quality were not related to child gender. Conversely, Jerome, Hamre, and Pianta (2009) found that compared to girls, boys experienced greater decreases in teacher reported closeness from kindergarten to sixth grade. This resulted in an increasing gap in closeness between boys and girls as they moved across the elementary and early middle school years.

Child race/ethnicity. Caucasian children form closer and less conflictual relationships with their teachers than do their minority peers (Ladd, Birch, & Buhs, 1999), with African-American children more likely to have less positive relationships with their teachers than their White or Hispanic counterparts (Hamre & Pianta, 2001; Hughes & Kwok, 2007; Saft & Pianta, 2001). For example, in a study of Head Start attendees, conflict scores were more pronounced for African-American children (Mantzicopoulos & Neuharth-Pritchett, 2003). Similarly, in an ethnically diverse sample of 607 academically at-risk children in first and second grade, teachers rated the quality of their relationships with White and Hispanic children more positively (i.e., less conflict and more closeness) than their relationships with African-American children

(Hughes, Gleason, & Zhang, 2005). Kesner (2000) also found that pre-service teachers perceived their relationship with African-American children as more dependent than their relationship with Asian-American and Hispanic children. Furthermore, Jerome, Hamre & Pianta (2009) found that compared to Caucasian children, African-American children experienced more consistent, linear growth in conflict from kindergarten through sixth grade. These findings suggest that it is important to develop further understanding about teacher-child relationship quality among ethnic minority students, particularly among African-American children because they are consistently rated as having poorer quality relationships with teachers than their Caucasian peers (Hughes & Kwok, 2007).

Behavior problems. Children's behavioral orientation has also been found to be related to the quality of the teacher-child relationship. Externalizing and internalizing behaviors constitute the two major dimensions of children's behavior problems (Henricsson & Rydell, 2004; 2006). Externalizing behaviors, such as aggression, hyperactivity, and oppositionality, have been associated with conflictual, dependent, and nonclose relationships, both concurrently and prospectively (Birch & Ladd, 1998; Howes, 2000; Howes, Phillipsen, & Peisner-Feinberg, 2000). Pianta and Steinberg (1992) found that children whose parents described them as "acting out" at home were more likely to have relationships with teachers that were characterized by conflict and closed communication. Correlational analysis in one study revealed that kindergarten children who displayed antisocial behavioral styles (i.e., aggression, object possessiveness, and arguing) were more likely to experience conflict in their relationship with teachers (Ladd et al., 1999). In addition to investigating teacher-child relationship quality differences between intellectually disabled and typically developing children as described in a previous section, Eisenhower and colleagues (2007) examined early (age 3) and concurrent (age

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6) child behavioral characteristics as predictors of teacher-child relationship quality at age 6. Using hierarchical linear regression, results revealed that child behavior problems at ages three and six years were predictive of negative teacher–child relationships at age six.

Internalizing problems can include inhibited or socially withdrawn behavior, anxiety, and depression (Henricsson & Rydell, 2006). Although less is known about teacher-child relationship quality for children with internalizing problems, children with internalizing symptoms appear to experience less closeness (Buyse et al. 2008). Specifically, in one study, less closeness reported by the preschool or first grade teacher was linked to higher levels of mothers' reports of internalizing behavior (Pianta & Stuhlman, 2004). Ladd and Burgess (1999) conducted a longitudinal study on children with specific behaviors that place them at risk for relationship maladjustment. Three categories of children (aggressive, withdrawn, and aggressive/withdrawn) were followed from kindergarten ($n = 250$) through second grade. Teachers rated withdrawn children as being less close and more dependent only in kindergarten.

Social skills. Studies have also linked teacher-child relationship quality with children's prosocial behaviors. Prosocial behavior is defined as behavior that reflects care or concern on the part of one child toward another, for example, by helping, comforting, or simply smiling at another child (Mitchell-Copeland, Denham, & DeMulder, 1997). Children rated high in teacher-child relationship closeness and low in child-teacher relationship conflict have been found to also be rated high in prosocial behavior with peers (Howes, 2000). Associations between teacher-child relationship quality and children's social competence with peers were examined in a longitudinal sample of 48 4-year-old children who were enrolled in child care as infants (Howes, Hamilton, & Matheson, 1994). Children's ages ranged from 13 to 24 months during the first wave of data collection. Data were collected six times during the study, with approximately 6

months between data collection points. Scores for security in the teacher-child relationship were used to predict dimensions of peer behavior at four years old. Toddler security with the teacher positively predicted prosocial and complex play and negatively predicted hostile aggression and withdrawn behaviors at age 4. In a longitudinal study following 199 children from kindergarten to first grade, antisocial behavior was positively correlated with teacher-child conflict and negatively with teacher-child closeness both in kindergarten and in first grade (Birch & Ladd, 1998).

Cognitive/academic abilities. Several studies suggest that children's cognitive and/or academic competencies are linked to teacher-child relationship quality (e.g., Ladd, Birch, & Buhs 1999; Murray & Greenberg 2000). Based on behavioral observations of children's relationships with teachers, Ladd et al. (1999) found that children's cognitive abilities, as measured with the Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981), were positively correlated with teacher-child relationship quality ($r = .26$). As such, children with greater cognitive abilities were likely to have closer teacher-child relationships. In addition, children with higher academic skills and better school achievement tend to have relationships with their teachers that are lower in conflict and higher in closeness (Ladd et al., 1999; Mantzicopolous, 2005; Masburn, Hamre, Downer, & Pianta, 2006). Using data from the NICHD-SEYYCD, O'Connor and McCartney (2007) focused on teacher-child relationship quality and achievement in third grade. Controlling for child and family factors, positive associations were found between children's achievement scores on a subscale of the Woodcock Johnson Psycho-Educational Battery–Revised (WJR; Woodcock & Johnson, 1990) and teacher-child relationship quality.

Research on teacher-child relationship quality has generally used samples of typically developing children, with few studies examining the relationship quality of children with intellectual disabilities. In a review of the literature, two studies were found that specifically compared the teacher-child relationship quality of children with intellectual disabilities to those children without. Eisenhower, Blacher, and Baker (2007) investigated whether children at age 6 with intellectual disabilities had poorer quality relationships with their teachers than typically developing children. Children with intellectual disability ($n = 58$) or typical development ($n = 82$) were recruited for the study. Participants were part of a longitudinal study conducted by the authors to address the development of behavior problems and psychopathology in 3 year olds (30–40 months) with and without intellectual disability. Children in the sample were classified as having intellectual disability if, at 5 years old, they scored 84 or below on the Stanford–Binet Intelligence Scale IV and also scored 84 or below on the Vineland Adaptive Behavior Scales (VABS), a measure of adaptive functioning. Independent sample t-tests revealed that children in the intellectually disabled group had higher levels of conflict and dependency, lower levels of closeness, and lower total relationship quality scores on STRS than their typically developing peers. These findings echo those of McIntyre, Blacher, and Baker (2006), who found that five-year-old children with intellectual disabilities also experienced poorer overall relationship quality with their teachers than their typically developing peers.

Socio-economic status. Children from socioeconomically advantaged backgrounds form closer, less conflictual relationships with teachers than students from lower SES backgrounds (Ladd et al., 1999; Wyrick & Rudasill, 2009). O'Connor and McCartney (2007) found that preschool through first-grade classrooms containing children with higher mean maternal education levels (a common proxy for socioeconomic status) have higher quality teacher–child

relationships. These findings are similar to studies that have used independent observations of teacher–child relationship quality (e.g., NICHD ECCRN, 2003; Pianta et al., 2002). For example, teachers have been observed to be less sensitive and provide lower quality instruction to students in preschool and elementary school classrooms with higher concentrations of poverty (Pianta et al., 2005).

Teacher characteristics and experiences associated with teacher-child relationship quality

Teacher gender. Although a large body of literature focuses on the role that students' gender plays in teacher-child relationship quality, less research explores the impact of teachers' gender (Hopf & Hatzichristou, 1999). The teaching profession is more diverse now than it has been in the past; however, a majority of teachers are female (Kesner, 2000). The 2003–2004 Schools and Staffing Survey indicates that the public school teacher population in the United States is 27% male and 73% female (National Center for Education Statistics, 2009). But as children get older, they are more likely to encounter male teachers. According to the 2008 Current Population Survey, 2.4% of teachers in preschool and kindergarten were male compared to 18.8% of teachers in elementary and middle school.

Despite the limited research on the effects of teachers' gender on teacher-child relationship quality, differences have sometimes been found in the classroom interactions of male and female teachers (Duffy, Warren, & Walsh, 2001). In a study of gender-related differences of Greek classrooms, female elementary school teachers were found to be more sensitive than their male counterparts (Hopf & Hatzichristou, 1999). Findings from several studies suggest that teacher-child relationship quality may be influenced more by the interaction between teacher and student gender rather than the main effects of teacher or child gender (Borg

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& Falzon, 1993; McIntyre, 1988; Ritter, 1989). Generally, boys receive more attention in class from both male and female teachers (Smith, 1992). It has been suggested that this is because boys respond to or interact with teachers more than girls do (Duffy et al., 2001). For example, within a sample of American junior high school science classes, male teachers were observed interacting two thirds of the time with male students and only one third of the time with female students (Bellamy, 1994). In contrast, female teachers interacted with male and female students on a 51:49% ratio (Bellamy, 1994). Because inferential statistics were not used within this study, it is unclear whether the difference between male and female teachers' interaction patterns was statistically significant.

The findings regarding the benefits of teacher-child gender matching have been inconsistent in the literature. Researchers have found, however, that having a same-gender teacher may positively influence other outcomes including the decision to pursue higher education and student behavior (Cho, 2012). Because a majority of the teaching force is female, few studies have been able to test whether or not teacher-child relationship quality is influenced by teacher-gender match.

Teacher-child racial match. The race or ethnicity of teachers also seems to influence teacher perception of relationship quality with children in their classrooms. Of particular interest is the role of racial or ethnic match between children and their teachers. Saft and Pianta (2001) found that teachers rated their relationships with children more positively if the child shared the same ethnicity as the teacher. In a study that examined child (gender and ethnicity) and teacher (ethnicity, gender, attachment history) characteristics associated with teacher-child relationship quality, 108 preservice teachers reported on their relationship with 903 students in kindergarten through fifth grade (Kesner, 2000). Teacher ethnicity was divided into three categories: (1)

Caucasian, (2) African-American, and (3) Other (i.e., Hispanic or Asian-American). Analysis of

an interaction between child and teacher ethnicity on the Dependency subscale of the STRS

indicated that Hispanic and Asian-American teachers rated their relationships with African

American children as more dependent than with Hispanic and Asian-American children. In

addition, Caucasian teachers perceived their relationships with all minority children as more

dependent than they perceived their relationships with Caucasian children. These results are

similar to other studies that have also examined child and teacher racial match and teacher-child

relationship quality (e.g. Hall & Bracken, 1996; Ladd et al., 1999).

Education and experience. Studies have not typically examined teacher-child

relationship quality in relation to teachers' education level; however, some researchers have

linked higher levels of teacher education to higher quality preschool classrooms in which

teachers engage in sensitive and responsive interactions that are more likely to foster nurturing

relationships (Elicker & Fortner-Wood, 1995; Mantzicopoulos, 2005; Pianta et al., 2005).

Findings from the National Child Care Staffing Study (NCCSS), a longitudinal study of child

care centers conducted in 1988, 1992, and 1997, indicated that preschool teachers with college

degrees demonstrated more positive behaviors in the classroom (such as greater sensitivity to

children) and fewer negative behaviors (such as harshness and detachment) as compared to

teachers without college degrees (Cassidy, Buell, Pugh-Hoese, & Russell, 1995; Whitebook,

Howes, & Phillips, 1989). More recently, Pianta and colleagues (2005) investigated features of

preschool classrooms predicted to be related to teacher-child interactions. In the sample of 238

preschool classrooms, when teachers lacked a 4-year degree and a teaching certificate in early

childhood, they were rated by independent observers as creating a less positive emotional climate

for the children in their classrooms. It has been suggested that preschool teachers with less than a

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Bachelor's degree may not be able to link current scientific research with their classroom practices, leading to lower teacher-child relationship quality (Bogard, Traylor, & Takanishi, 2008).

It is difficult to draw firm conclusions regarding the role of teachers' education and teacher-child relationship quality because few studies have tested this association directly. Rather, inferences have been drawn based on findings regarding teacher education and the quality of interactions between teachers and children. This gap in the literature suggests a need for more studies that provide a closer examination of the direct link between teachers' education and teacher-child relationship quality.

Inconsistencies have been found in the research regarding years of teaching experience and teacher-child relationship quality. Some studies have found that more years of teaching experience is related to less closeness with teachers (Mashburn et al., 2006). In a study that used observations of teacher-child interactions, teachers with fourteen years or more experience were observed to be less sensitive in their classroom interactions with the target child of the study (Sthulman & Pianta, 2001). On the other hand, in a large sample of upper elementary school students, Battistitch and colleagues (1997) reported no significant association between number of years teaching and child-reported perceptions of teacher emotional support.

Because these findings are inconsistent, it is not clear how important teachers' years of experience are to teacher-child relationship quality, both concurrently and longitudinally. It might be hypothesized for instance that teaches with more years in the field are more likely to experience higher levels of stress and burnout given the sometimes stressful nature of the teaching profession. However, studies from the burnout literature suggest that as teachers gain more experience, they may develop coping skills to alleviate the tendency to treat students in an

impersonal manner (Croom, 2003). Additional studies that examine the association between teacher-child relationship quality and teachers' years of experience directly are necessary in order to determine whether more years of experience is indeed related to lower relationship quality.

Teacher self-efficacy. Teachers' perceived self-efficacy, defined as "the extent to which the teacher believes he or she has the capacity to affect student performance (Berman, McLaughlin, Bass, Pauly, & Zellman, 1977, p. 137)," has emerged as an important topic in current educational research (Caprara, Barbaranelli, Borgogni, & Stecca, 2003). Studies show that low levels of teacher self-efficacy are related to greater difficulties with student misbehavior, more pessimism regarding student learning, and higher levels of job related stress (Caprara, Barbaranelli, Steca, & Malone, 2006). For example, Friedman and Farber (1992) found that teachers who reported lower levels of self-efficacy reported higher levels of burnout than their counterparts with high levels of self-efficacy. Although these findings seem to describe teachers who are less likely to promote a positive classroom environment, which would in turn result in poorer quality relationships with children, surprisingly little work has been done on the link between teacher self-efficacy and teacher-child relationship quality. Masburn and colleagues (2006) investigated teacher and classroom characteristics associated with teachers' ratings of their relationships with pre-kindergarteners. Teachers completed an abbreviated version of the Teacher Self-Efficacy Scale (TSES; Bandura, 1997) to assess their sense of efficacy regarding the motivation and management of children in their classrooms. Teachers' self-efficacy was positively associated with their reports of closeness to children in their classroom. This may indicate that teachers with low levels of perceived self-efficacy are susceptible to depersonalization, which refers to the process by which a person develops a cold and distant

attitude towards work and the people they work with (i.e., students; Maslach & Leiter, 1997). More studies are needed to examine the role that teachers' self-efficacy plays in teacher-child relationship quality, particularly over time.

Only one study was found that examined whether the background and experiences that teachers bring to the classroom have implications for declines in teacher-child relationship quality over time. Results from O'Connor (2010) revealed that greater levels of teachers' perceived self-efficacy was related to less rapid rates of decline in teacher-child relationship quality from preschool to fifth grade.

Despite the importance of what both children and teachers bring to the relationship, the effects of teacher and child characteristics on the trajectories of closeness and conflict in teacher-child relationships have not been examined in the same statistical model. Thus, the relative influence of each of these characteristics on the quality of children's relationships with teachers is unknown. It is possible, therefore, that previous results regarding the quality of children's relationships with their teachers may in fact reflect the effects of unmeasured variables (O'Connor & McCartney, 2006; Pianta, Nimetz, & Bennet, 1997).

Summary

In sum, researchers have demonstrated associations between teacher-child relationship quality as measured by the Student Teacher Relationship Scale (Pianta, 1992) and children's developmental outcomes across a variety of domains. Some studies show however, that the quality of children's relationships is likely to decline as children move through elementary and into middle school. Additionally, researchers have identified several child and teacher characteristics associated with variation in initial levels of teacher-child relationship quality; however, questions remain regarding which characteristics might also be related to the rate of

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change in teacher-child relationship quality. Another area of research that has not been fully

investigated is whether or not trajectories of teacher-child relationship quality across the

elementary and middle school years are associated with outcomes in high school. For example,

in the motivation and education literature, the quality of children's relationships with their

teachers plays a significant role in their motivation to learn (Maldonado-Carreño & Votruba-

Drzal, 2011). Most children begin the process of formal schooling highly motivated to learn and

to do well (Stipek & Ryan, 1997). Motivation begins to decline quickly, however, and by high

school many students are disengaged from the learning process. Although numerous factors are

implicated in decreased levels of motivation in high school, declining relationship quality

between children and teachers is a key, yet seldom studied factor. Therefore, discovering the

processes by which enthusiastic, highly motivated children are transformed into apathetic,

school-avoidant adolescents is a task of paramount importance to educators, scientists, and

policy makers. The next section will provide a more detailed review of the extant literature on

achievement motivation.

Achievement Motivation

Theoretical Framework for Achievement Motivation

How do we explain why some students strive for academic excellence while others accept mediocrity? Researchers interested in basic questions about how and why some students seem to learn and thrive in school contexts, whereas other students seem to struggle to be successful academically, must consider the role of motivation. Motivation, defined as the driving force behind all the actions of an individual, is one of the most essential factors in academic achievement. Within educational settings, drive or degree of motivation has often been referred to as "achievement motivation." Although definitions vary, researchers do agree that achievement motivation represents a complex, multidimensional concept (Hart, Stasson, Fulcher, & Mahoney, 2008). For this project, achievement motivation refers to the tendency to work hard to meet personal goals within a social environment (Cassidy & Lynn, 1989). It should be noted that contemporary motivation literature often uses the term achievement motivation and motivation interchangeably. Unless otherwise specified, for the purposes of this study, the terms "achievement motivation" and "motivation" will also be used interchangeably for clarity and consistency.

There are many different theories of motivation and different motivational constructs within them. One particular theory on achievement motivation is expectancy–value theory, which posits that motivation is determined by the degree to which an individual is confident in accomplishing an academic task (self-efficacy) and the extent to which he/she believes a particular academic task is worth pursuing (task value) (Wigfield & Eccles, 1994; 2000). Expectancy value theory suggests that in order for a student to be motivated, he or she must have a moderate expectation of success on a particular task as well as attribute positive value to the

task. From this perspective, if there are high expectations of success but the task is not valued, students are not likely to feel motivated. They are also less likely to feel motivated if the task is valued highly but there are no expectations of success about completing it.

Attribution theory is another theory of motivation with implications for achievement motivation. Developed by Weiner (1980), this framework suggests that individuals "attribute" causes to behavior, success, and failure, with achievement being attributed to four main factors: (1) effort, (2) ability, (3) task difficulty, and/or (4) luck. This theory has often been used to explain differences in motivation between high and low achievers. High achievers approach rather than avoid tasks because they view success as being due to high ability and effort while viewing failure as due to factors beyond their control such as bad luck. Therefore, failure does not affect the high achiever's self-esteem but success builds their pride and confidence. Rather than give up when the work becomes hard, they tend to persist, attributing failure to a lack of effort, which can be changed by trying harder.

Conversely, low achievers doubt their ability and assume success is attributed to factors they cannot control such as luck or "who you know." Even success is not rewarding to low achievers because they do not feel responsible. In addition, they tend to quit when experiencing difficulty because failure is attributed to a lack of ability, which he or she can nothing about.

Achievement goal theory (Ames, 1992) posits that students' purposes in engaging in a specific academic task are important antecedents to their achievement-related behaviors. This framework differentiates between two goals: *mastery goals* in which individuals focus on gaining competence or mastering a new set of knowledge or skills and *performance goals* in which individuals focus on outperforming others. This theory suggests that individuals who hold performance goals are concerned primarily with documenting their ability in a given area, and

when confronted with challenging work, are more likely to get discouraged. As a result, individuals holding a performance goal are less likely to pursue challenges or persist in the face of failure (Nolen, 1988). Those who hold mastery goals, however, are more apt to see challenges as mechanisms for increasing their learning, and therefore are more likely enter into situations that will test their abilities (Ames, 1992).

Dweck and colleagues (1986, 1988), have conducted extensive research on adaptive and maladaptive cognitive-motivational patterns in children and young adults. Based on their investigative findings, they have developed a model of theories of intelligence which reveals why some students are motivated to work harder whereas others succumb to helplessness and self-defeat. Integrating attribution theory and goals theory, Dweck's self-theory of intelligence posits that students hold two types of views on ability/intelligence, which result in the pursuit of different achievement goals. The *entity view* treats intelligence as fixed and stable; that is, intelligence is uncontrollable and does not change no matter how much a person learns. Students who ascribe to this view have a high desire to prove themselves to others, to be seen as smart, and to avoid looking unintelligent. They also tend to pursue performance goals. Entity theorists are susceptible to learned helplessness because they may feel that circumstances are outside their control (i.e.,there's nothing that could have been done to make things better). As a result, they may avoid situations or activities that they perceive to be challenging (e.g., by procrastinating, being absent, etc.). Alternatively, they may purposely choose easy tasks to maximize the possibility that they will do well.

An *incremental view* of intelligence treats intelligence as malleable, fluid, and changeable, increasing as studying and learning increases. These students see satisfaction coming from the process of learning and often see opportunities to get better. They do not focus

on what the outcome will say about them, but what they can attain from taking part in the venture. They are mastery goal oriented and in order to meet these mastery goals, they are motivated to expend the necessary effort, to seek out challenging or difficult situations that promote learning, and to persist to overcome possible or even necessary setbacks.

Unfortunately, none of the motivation theories just described, attribution theory, goal theories, nor self-theories of intelligence acknowledge the importance that interpersonal relationships with others (e.g., parents, teachers, and coaches) can play in eliciting and shaping students' mastery and performance goals. Self-determination theory (SDT; Deci & Ryan, 2002) more directly addresses ways in which interpersonal relationships affect motivation. In contrast to other motivational theories, SDT views motivation as a dynamic, constantly evolving process. SDT differentiates between two types of motivation: *intrinsic motivation* (performing tasks that in and of themselves have value to the student) and *extrinsic motivation* (performing tasks to obtain an external goal; Ryan & Deci, 2000). Previous work within self-determination theory has shown that extrinsic motivation for pursuing goals results in poorer conceptual learning and performance than doing so for intrinsic reasons (Deci & Ryan, 2000). This is presumably because extrinsic incentives or pressures detract attention from the learning activity, do not directly satisfy individuals' basic psychological needs, and provide only temporary satisfaction (Kasser, 2002; Kasser, Ryan, Couchman, & Sheldon, 2004). Intrinsic motivation is of particular importance to educators because it is associated with outcomes relevant to academic achievement, including increased attention, greater effort and persistence in coursework, and better conceptual understanding (Benware & Deci, 1984; Grolnick & Ryan, 1987; Standage et al., 2006). Intrinsic motivation also is considered the most positive and most adaptive form of achievement motivation (Redd, Brooks, & McGarvey, 2001).

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According to SDT, motivation is strongly influenced by key social agents in a student's life such as friends, parents, and teachers. The influence of these interpersonal relationships is highlighted in Cognitive Evaluation Theory (CET; Deci & Ryan, 1985, 2002), a subtheory of SDT. The central tenet of this perspective is that intrinsic motivation is sustained when three innate and universal needs are nurtured by the social context: autonomy, competence, and relatedness. Autonomy is the need to feel choice and control in one's behavior. It allows students to initiate and regulate their behaviors with a high degree of volition, a sense of choice, and responsibility for themselves (Deci & Ryan, 1985; Reeve, Nix, & Hamm, 2003). Teachers can uphold a student's sense of autonomy by optimizing his or her opportunity to take initiative, while both asking for and respecting the student's opinion.

Competence refers to feeling effective in one's actions and capable of meeting the challenges of everyday life. Receiving feedback regarding their performance through means such as tests and term papers allows the student to put their learning into practice, thereby helping them to meet the need of competence. When they feel competent, students are motivated to exercise their capacities, seek out optimal challenges, and extend their skills (Deci, 1975).

Relatedness refers to the need to establish close and secure attachments with others (Deci & Ryan, 2000). This need is met when students have opportunities to develop relationships with key social figures that care about them. While parents and friends play an integral role in students' feelings of relatedness, in the school context, this need can be met if students and teachers take pleasure in interacting with each other and forming close relationships (Legault, Green-Demers, & Pelletier, 2006).

Studies testing CET with educational outcomes have generally found that when autonomy, competence, and relatedness are supported and nurtured in the classroom, they provide students with the motivational foundation necessary for academic success (Hardre & Reeve, 2003; Vallerand et al., 1997). Many of these studies, however, have tended to focus on autonomy and competence, despite the emphasis in CET that all three needs are essential for motivation. Reeve, Deci, and Ryan (2004) suggest that there is an indirect relationship between motivation and relatedness. This has led to a call by researchers for closer scrutiny of the link between these two constructs. The current study is of particular importance because it fills this gap in the literature by examining how a specific form of relatedness, namely teacher-child relationship quality, is directly associated with students' achievement motivation.

Measuring Achievement Motivation

Although quite a few achievement motivation measures exist in the literature, none have been widely accepted as a comprehensive test for measuring this multi-faceted construct (Byrne, 2004). Some measures are specific to specific domains of performance. For instance, the Academic Motivations Inventory (Moen & Doyle, 1977) and the Student Motivation and Engagement Scale (Martin, 2001, 2003) assess academic motivation; the Sport Motivation Scale (SMS; Pelletier et al., 1995) taps motives for engaging in athletics; and the Work and Family Orientation Questionnaire (WOFO; Helmreich & Spence, 1978) which assess components of achievement motivation and attitudes toward family and career**.** There are a few more general achievement motivation measures that tap multiple domains of performance, including the Cassidy and Lynn (1989) multi-faceted achievement motivation scale (CLAMS) and the Achievement Motivation Inventory (LMI; Schuler & Prochaska, 2001).

In addition to questionnaires, it is not uncommon to find studies that use indirect, proxy, measures of achievement motivation such as self-reports of academic self-efficacy, length of time spent on a particular activity, and teacher ratings of effort (Pelletier & Vallerand, 1996). For example, Rumberger and Larson (1998) used teacher ratings of Latino youth's work habits and social engagement as measures of motivation. Achievement motivation has also been measured indirectly via actual performance (i.e., grades and test scores; Wilkins & Kuperminc, 2009). One of the inherent limitations of measuring achievement motivation in this manner is that it runs the risk of confounding it with its presumed outcomes.

Others have created their own measures of achievement motivation. For example, the NICHD-SEYCCD developed its own questionnaire to measure achievement motivation, academic self-efficacy, and educational aspirations. The How I Do in School questionnaire is a 19-item questionnaire developed specifically for use by NICHD-SECCYD and is a combination of two measures. Fifteen items are taken from the Competence Beliefs Scale of the Self and Task Questionnaire developed by Eccles and colleagues (1983). The Competence Beliefs Scale asks children to use 1 to 7 Likert-style response scales to rate their self-perceived abilities in math (5 items, α = .76), language arts (5 items, α= .82), and sports (5, items α. = .84). Predictive and discriminant validity have been established in numerous studies using different versions of the Self and Task Questionnaire (see Eccles et al., 1984b; Eccles & Wigfield, 1995; Eccles, Wigfield, et al., 1993b; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). Three items on the How I Do in School questionnaire are taken from the work of Cook et al. (1996) who developed an instrument to measure children's educational aspirations. One final item asks adolescents for their opinions about the relative importance of academics vs. sports. Internal consistency of these items are good = .75. The validity of this instrument was demonstrated in a study that showed

significant improvement in aspirations among boys whose parents participated in an anti-poverty

program (Huston et al., 2001).

Importance of Achievement Motivation

With an increasing emphasis on educational standards and high stakes testing as a means

to academic achievement and grade retention, educators are looking for ways to reach every

student. According to former U.S. Secretary of Education Terrell Bell, "There are three

important things to remember about education. The first one is motivation, the second is

motivation, and the third is motivation (Ford, Alber, & Heward, 2006 p. 159)." Decades of

research in the educational psychology field have shown that motivation is related to various

factors that contribute to academic success including higher grades, increased achievement test

scores, lower academic anxiety, and greater persistence (Busato, Prins, Elshout, & Hamaker,

2000; Scales, Benson, Leffert, & Blyth, 2000). For example, in a sample of sixth- through

eighth-grade students, several motivational variables (writing self-efficacy, writing self-concept,

self-efficacy for self-regulated learning, and value of writing) were positively correlated with

student GPAs, the correlations ranged from .18 to .43 (Pajares, Hartley, & Valiente, 2001). In a

cross-sectional sample of first through third graders, motivation and achievement scores on the

Woodcock-Johnson Psycho-Educational Battery were positively correlated, correlations ranged

from .17 to .32 (Gottfried, 1990). Additionally, multiple regression analysis showed that

motivation significantly predicted report card grades in reading and math as well as teacher-rated

math achievement.

Test taking is particularly important during the sophomore year in high school when

students begin taking high stakes exams required to complete high school and/or gain entrance

into college. A fairly consistent finding in the literature is that motivation is correlated with test

performance (Cole, Bergin, & Whitaker, 2008). In a cross-sectional study of students in grades 8 and 12, student "effort" was significantly correlated math performance on the National Assessment of Educational Progress (.24 and .22 respectively; O'Neil, Sugrue, & Baker, 1996). Karmos and Karmos (1984) found that motivational attitudes were significantly correlated with performance on the Stanford Achievement Test for students in grades 6 through 9. Wise and DeMars' (2005) meta-analysis of empirical studies investigating test-taking motivation found a consistent and positive difference in test scores between low- and high-motivated test-takers. With an average effect size (g) of .59, Wise and DeMars assert that, "motivated students perform, on average, more than one-half standard deviation higher than unmotivated students" (p. 5).

In addition to being the year in which students begin taking high stakes tests, the sophomore year of high school marks another pivotal milestone in many students' educational career. Namely, reports indicate that 10th grade is the year of greatest risk of high school dropout (Battin-Pearson, et al., 2000). The consequences of dropping out of high school are devastating to individuals, communities, and our nation. High school drop outs are more likely to become teen parents, end up in prison, rely on government assistance such as food stamps, housing assistance, and government sponsored health-care, and have a lower life expectancy (Eurydice, 2004; Haney, 2003; Alliance for Excellent Education, 2010). Students who drop out of high school are also more likely to be unemployed, earn less than when they are employed, and have a greater likelihood of living in poverty (Eurydice, 2004). In fact, high school graduates earn 30% more than those without a diploma, and those with a college degree earn 132% more (Olsen, 2006). Given the clear economic and personal costs associated with dropping out, identifying

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predictors of dropout before the end of the tenth grade is therefore important for early dropout prevention (Battin-Pearson, et al., 2000).

Although failing grades and poor academic achievement are strong correlates of remaining in school, there is an undeniable link between motivation and school completion (Brooks-Gunn, Guo, & Furstenburg, 1993; Jimerson, Egland, Sroufe, & Carlson, 2000). Using an ex post facto research design, Dohn (1992) conducted a comparison study of students who dropped out of high school and those who remained. Findings from the study revealed that dropouts scored lower on motivational measures relative to persistent students. One of the limitations of Dohn's study was the vulnerability of the study to recall bias when students reported their reasons for dropping out of school.

Vallerand and colleagues (1997) developed a motivational mediation model of high school dropout based on Deci and Ryan's self-determination theory. According to the model, low levels of autonomy-supportive behaviors from teachers undermine students' perceptions of competence and self-determination. In turn, students' levels of perceived competence and self-determination predict intentions to drop out versus continue school. This model was tested with French-Canadian high school students using a prospective design. Support was found for all proposed relations among the model variables for the full sample as well as for each gender separately.

Hardre and Reeve (2003) also tested Vallerand and colleagues' (1997) model; however, unlike the previously mentioned studies (i.e., Dohn, 1992; Vallerand et al., 1997), the authors added the effect of school performance on students' intentions to drop out. This allowed them to test the prediction that motivation explained significant variance in drop out intentions above and beyond variance accounted for by poor academic performance. Results revealed that students'

perceptions that the school environment was supportive of their autonomy predicted their intentions to remain in school; moreover, these findings held even after controlling for the effect of school performance on intention to persist. This suggests that dropout is not just an achievement issue, but a motivation issue as well (Hardre & Reeve, 2003). While this study provides valuable information pertaining to the role of motivation in the decision to drop out of school, it is not without its limitations. First, the authors examined intention to drop out versus actual drop out behavior. It is unclear as to whether students would actually act on their intentions to leave school. Second, the sample consisted of primarily White students from socioeconomically disadvantaged rural schools. Reports indicate that rural youth tend to have lower educational and career aspirations, achievement scores, and high school completion rates than their non-rural peers (Bajema, Miller, & Williams, 2002; Farmer et al., 2006). Therefore, questions remain regarding the generalizability of these findings across a more diverse set of students. And third, neither Hardre and Reeve's (2003) model nor the one proposed by Vallerand and colleagues (1997) considers the role of relatedness in the prediction of motivation. This is a major oversight considering both models are based on self-determination theory, which posits that motivation is sustained when autonomy, competence, and relatedness are nurtured by the social context.

Although testing the association between motivation and actual drop out is beyond the scope of the current study, it is possible to address the other noted limitations, such as conducting studies using larger, more socioeconomically diverse samples. It is also possible to test a model in which a specific form of relatedness (i.e., teacher-child relationship quality) predicts motivation.

Predictors of Achievement Motivation

The literature acknowledges several child, family, and school-level factors associated with motivation that would need to be controlled for in future studies. Child-level factors have received the greatest attention in the research literature. These include child sex, race/ethnicity, and cognitive abilities. Studies have also identified certain family-level factors with implications for adolescents' achievement motivation, such as socioeconomic status (SES) and parental involvement. And finally at the school level, the association between achievement motivation and relationships with peers and teachers has been examined in the literature. While it is not possible to cover every variable found to be related to achievement motivation, the ones listed have received the most attention in the literature and will be examined in greater detail.

Child characteristics associated with achievement motivation.

Child gender. Of the child-level variables found to be related to achievement motivation, only the gender differences in achievement motivation have been consistent across studies with boys reporting lower levels of achievement motivation than girls (Koth, Bradshaw, & Leaf, 2008). For example, Ryan (2001) reported higher levels of intrinsic motivation among 331 seventh grade girls than boys in an economically- and ethnically-diverse sample from an urban middle school. Likewise, Martin (2005) found that although boys' and girls' motivation and engagement is lower in middle high school, only girls' motivation is relatively higher in senior high school. Some have suggested that because boys' tendency to receive lower grades than girls in school may contribute to their willingness to learn (Koth, Bradshaw, & Leaf, 2008).

Race/Ethnicity. Studies that solely examine mean level differences in achievement motivation of minority students are sparse in the literature. The majority of studies that focus on the achievement motivation of minority students typically assess differences in the motivational

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constructs employed by minority and non-minority students. For example, Eaton and Dembo (1997) explored differences in motivational beliefs of Asian-American and non-Asian students. They found that Asian-American students reported lower levels of self-efficacy beliefs than non-Asian students. In addition, when compared to non-Asian students, the fear of academic failure best predicted Asian-American students' achievement motivation. These findings have been supported by other studies that have shown differences in motivational constructs between Asians and Americans (e.g., Heine et al., 1999; Iyengar & Lepper, 1999).

One study was found, however, that did note differences in motivational levels of minority students. In a sample of 2,400 fifth grade students from 37 elementary schools, minority students (N= 1,080) reported lower levels of achievement motivation than did Caucasian youths, even after controlling for factors at both the class and school levels (Koth, Bradshaw, & Leaf, 2008). Further support for mean level differences in motivation of minorities can be drawn from the medical field. In a study of adult patients with schizophrenia by Yamada and colleagues (2010), intrinsic motivation scores between ethnic minority and nonminority individuals differed significantly ($p < 0.05$), with minority patients indicating lower levels (M= 7.88) compared to non-minorities (M= 9.31). These findings seem to suggest that there may be important ethnic and cultural differences in motivation that should be considered in future research.

Intellectual Ability. Findings regarding the association between intellectual abilities and achievement motivation are mixed. Empirical evidence in the gift education literature suggests that gifted children tend to be more motivated. Research in this area has shown that significant differences exist between gifted children and/or adolescents and their peers of average abilities on a variety of measures of motivation including task orientation, intellectual curiosity,

and intellectual intrinsic motivation (Gagné & St. Père, 2002). For example, Gottfried and

Gottfried (1996) examined academic intrinsic motivation of intellectually gifted children and a

comparison group as part of a longitudinal study. The researchers assessed intrinsic motivation

in math, reading, science, social studies, and for school in general for the sample of 9 through 13

year olds. Analyses showed that compared to their peers, gifted children had significantly higher

academic intrinsic motivation across all subjects and school in general.

Gagné and St. Père (2002) examined the association between IQ and motivation in a

sample of Canadian high school girls. Students completed two IQ tests and three motivation-

related measures (intrinsic, extrinsic, and persistence) twice during a semester. Parent and

teacher ratings of student motivation were also collected at both time points. No significant

correlations were found between the IQ measures and both student and parent measures of

motivation. These findings support those of those of other studies which report no association

between intellectual abilities and motivation (e.g., Rotgans, 2009). It should be pointed out,

however, that in the Gagné and St. Père (2002) study, teacher measures of motivation were

significantly correlated with the IQ measures. Because the authors used teacher ratings of

motivation, it is possible that teachers' perception of student motivation was influenced by their

knowledge of students' achievement.

Family level factors associated with achievement motivation.

Socioeconomic status. SES in the achievement motivation literature is typically

measured by one or more factors of the Hollingshead Four Factor Index of Social Status

(Hollingshead, 1975), an index based on parental occupation, education, marital status, and

gender. In a study of family factors related to children's intrinsic and extrinsic motivation and

academic performance, Ginsburg and Bronstein (1993) found that children from more

economically disadvantaged environments performed poorer academically and were also rated

by teachers as less intrinsically motivated. The authors used the mean rating of occupational

prestige on the Hollingshead measure. Studies that have used parental education as a proxy for

SES have yielded similar results. For example, children with parents having postgraduate or

graduate levels of education tended to have higher levels of achievement motivation in

academics in a study that examined the influence of parental education, occupation, and income

on the motivation of adolescents in India (Acharya & Joshi, 2009).

Socioeconomic factors have also been found to be related indirectly to children's

academic achievement and motivation through parents' beliefs and behaviors (Davis-Kean,

2005). For example, compared to low-income families, middle- and high-income families were

better able to provide a more cognitively stimulating home environment, which was in turn

found to lead to higher levels of achievement motivation (Gottfried, Fleming, & Gottfried,

1998). Smith and colleagues' (1997) also found that the association of family income and

parents' education with children's academic achievement was mediated by the home

environment. In line with this reasoning, Hao and Bonstead-Burns (1998) maintain that family

income, education, and occupation are less influential for achievement motivation of adolescents

than parental interaction with children, expectations for their children, and involvement in their

children's education.

Parental involvement. Parental involvement is perhaps one of the most widely studied

family-level variables associated with achievement motivation. It has been measured in a variety

of ways, including participating in parent–teacher conferences, participating in school activities

and/or functions, engaging in students' extracurricular activities, or providing parental control

and/or support at home (Gonzalez-DeHass, Willems, & Holbein, 2005). Regardless of the

measure used, researchers have consistently found that parent involvement produces positive results for children, including greater academic motivation (Marchant, Paulson, & Rothlisburg, 2001; Connell & Halpern-Felsher, 1997).

Studies of students from elementary to high school have shown that a beneficial relationship exists between parental involvement and several motivational constructs, including: intrinsic and extrinsic motivation, school engagement, and perceived competence (Gonzalez-DeHass et al., 2005). For example, Grolnick and colleagues (1994) examined relationships among elementary students' perceptions of their parents' involvement and parenting style on three dimensions of students' motivation: control understanding (degree that children indicate they understand who or what is responsible for their school outcomes); perceived competence (extent children feel sufficiently competent to execute specific actions); and perceived autonomy (degree that initiation and regulation of action emanates from one's core sense of self). Participants were third through sixth grade children from a largely White and socio-economically diverse elementary school. Although students reported more parental involvement from mothers, both parents' involvement was influential on students' motivation. Paternal involvement positively predicted all three motivational constructs, whereas maternal involvement predicted control understanding. Greater parental involvement was related to greater autonomy and increased confidence in abilities.

Ginsburg and Bronstein (1993) investigated parental involvement (surveillance of homework and reaction to students' academic grades) in relation to children's intrinsic and extrinsic motivation. Results from the sample of 93 fifth-grade students showed that the more parents were involved in monitoring, enforcing, or helping with homework, the more students

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reported being extrinsically motivated and dependent on external sources for academic guidance and evaluation.

More recently, Marchant and colleagues (2001) explored the relationship of both family (parenting style and parent involvement) and school contexts on students' motivation (intrinsic motivation, extrinsic motivation, and academic competence). Two scales were developed to measure motivation. The motivation scale was developed to tap intrinsic and extrinsic motivation and consisted of five items addressing students' perceptions of importance of ability, effort, and grades. The academic competence scale was comprised of four items that assessed how academically competent students perceived themselves to be. Findings showed that student motivation was significantly and positively correlated with both measures of parental involvement. This suggests that children who perceived themselves as being highly motivated had parents who were more involved in school functions and were perceived to hold higher values and attitudes about the importance of effort and academic success. Furthermore, regression analyses revealed that 27% of the variance in student motivation was explained by parental values.

School-level factors associated with achievement motivation.

Peer influences. Several studies have sought to understand the role that adolescents' classroom peers play in their achievement motivation. Of those studies that have included peer relationships as a factor related to motivation, the majority have been cross-sectional in design. For example, Wentzel (1998) explored adolescents' supportive relationships with peers in relation to four indices of school motivation: school- and class-related interest, academic goal orientations, and social goal pursuit. Data were gathered from sixth-grade students in late spring of the academic year. Of the four motivational indices, peer support was found to only be an

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independent, positive predictor of prosocial goal pursuit. In an ethnically diverse sample drawn from an urban middle school, Ryan (2001) examined the association between the level of achievement motivation among adolescents' peers and changes in their own levels of achievement motivation across seventh grade. The authors found that while intrinsic motivation generally declined from the beginning to the end of seventh grade, adolescents who had peers that were more intrinsically motivated at the start of the 7th grade experienced less of a decline in their own intrinsic motivation over the school year than those whose peers were less intrinsically motivated. More recently, Murdock and Miller (2003) investigated peer influences on student motivation in an ethnically and socioeconomically diverse sample of eighth grade students. Results showed that peers' academic support was significantly, positively correlated to both student and teacher rated indices of motivation (i.e., academic self-efficacy, effort, and value of education).

Teacher-child relationship quality. The association between teacher-child relationship quality and students' achievement motivation is well documented in the literature. Reasons for why this social aspect of the classroom is related to children's motivation have not been well documented; however, several researchers have suggested that students are likely to internalize the values and standards of their teacher when the relationship is characterized by a sense of relatedness, mutual respect, and admiration (Guthrie & Davis, 2003). This in turn motivates students to become more engaged in the learning process, participating actively and appropriately in the life of the classroom (Anderman & Anderman, 1999; Birch & Ladd, 1997; Skinner & Belmont, 1993). Others in this debate have argued that a relationship with one's teacher is a form of social support and social support aids in alleviating or lessening the negative effects of stress. Thus, students who experience supportive relationships with teachers are

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motivated to do well because they experience less stress and negative affect when faced with the social and academic demands of school (Wentzel, 1997).

Many studies have reported both concurrent and longitudinal associations between teacher-child relationship quality and students' achievement motivation (Murdock & Miller, 2003). For example, Ryan and colleagues (1994) conducted a cross-sectional study on adolescents' representations of their relationships to teachers and various measures of school adjustment, motivation, and self-esteem. Correlational analyses revealed that supportive relationships with teachers were associated with better school adaptation and academic motivation. Among a sample of African American adolescents in an urban junior high school, Connell and Halpern-Felsher (1997) found that higher levels of perceived adult support at school were related to higher levels of self-regulated motivation. More recently, Wentzel and colleagues (2010) examined sixth, seventh, and eighth grade students' perceptions of social support in relation to motivational outcomes (i.e., interest and social goal pursuit). Results indicated that students' perception of emotional support from their teachers predicted students' social goal pursuit. And in a longitudinal study that investigated students' school context, motivation, and behavior across the transition to high school, the quality of the perceived teacher-student relationship in grade 7 predicted students' motivational beliefs (i.e. academic self-concept) and behavior (i.e., effort) in grade 9, even after controlling for seventh grade concept and achievement (Murdock et al., 2000).

Wentzel (1998b) examined students' motivation in relation to the perceived quality of their relationships with parents, teachers, and peers. Participants were 167 sixth-grade students in a predominantly middle class, suburban community. Motivation was measured via student self-report of school- and class-related interest, academic goal orientations, and social goal

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pursuit. Stepwise multiple regression analyses revealed that the relationship between perceived support and motivation depended upon the source of support and the motivational outcome. For teachers, perceived support was an independent, positive predictor of interest in class, school interest, and prosocial goal pursuit.

Murdock and Miller (2003) also investigated the relationship between students' achievement motivation and their perceptions of teacher caring. In this study, however, the authors controlled for parent and peer influences as well as prior motivation. By doing so, the authors hypothesized that teacher caring would explain additional variance in motivation, above and beyond that accounted for by the other variables (i.e., parent support, teacher support, and prior motivation). Motivation was assessed using students' self-reports of academic self-efficacy and intrinsic valuing of education, as well as teacher ratings of effort. Teacher, parent, and peer influences on motivation were based on students' self-reports. Correlations among the variables showed that teacher caring was positively correlated with all three motivational measures. Using hierarchical regression analyses, the authors found that teacher caring accounted for 2% - 14% of the variance in the motivational variables, above that explained by peer and parent influences as well as motivation in seventh grade. Specifically, teacher caring made the largest unique contribution to intrinsic valuing of education, followed by self-efficacy, and then effort.

How Achievement Motivation Changes Over Time

A number of studies, both cross-sectional and longitudinal, have noted declines in students' motivation as they progress through elementary and high school. In a cross-sectional study, Harter (1981) reported a gradual decline in intrinsic motivation for students in 3rd through 9th grade. A longitudinal study from elementary through the high school years conducted by Gottfried and colleagues (2001) found that intrinsic motivation declined for math, science,

reading, and school in general. And in two additional longitudinal studies, motivational outcomes such as value beliefs, which is defined as the perceived importance and interest attached to subject areas, were found to decrease for math and sports both during the transition to middle school and across 1st through 12th grade (Fredericks & Eccles, 2002; Pajares & Graham, 1999).

These declines in motivation have been attributed to numerous factors including puberty, cognitive maturation, and changes in the classroom environment such as a greater emphasis on discipline and academic accomplishment (Eccles, 1999). Other studies have recognized the deterioration of teacher-child relationship quality as a cause of decreased motivation, noting that as children move from elementary to middle school, relationships between teachers and students become less personal, more formal, more evaluative and more competitive (Midgley & Edelin, 1998). These changes can lead to more negative self-evaluations and attitudes toward learning because there is a "mismatch" between children's relational needs and the impersonal and evaluative nature of the relationship context in junior high (Davis, 2003).

Several studies have investigated the parallel declines in teacher-child relationship quality and motivation across the elementary to middle school transition. In a longitudinal study of 1, 301 students and their math teachers, Midgley and her colleagues (1989) examined whether changes in students' perception of supportiveness from their teachers was related to changes in motivation during the transition from elementary to middle school. The authors created their own measure of teacher supportiveness by using a modified version of the Teacher Support subscale of Moos's Classroom Environment Scale (Moos & Trickett, 1974). Change in teacher-child relationship quality was assessed by dividing students into four groups based on their means on the Teacher Support measure at waves 2 and 4 of data collection. And students'

perceptions of the usefulness, importance, and intrinsic value of math were measured as indicators of motivation. Using repeated-measures multivariate analysis of variance, results Using repeated-measures multivariate analysis of variance, results showed that when students moved from sixth-grade elementary teachers they perceived to be low in support to seventh-grade junior high teachers they perceived to be high in support, the intrinsic value of math was enhanced, while students who moved from teachers they perceived to be high in support to teachers they perceived to be low in support, they experienced a sharp decline in both the intrinsic value and perceived usefulness and importance of math.

Ryan and Patrick (2001) investigated how students' perceptions of the social environment of their eighth-grade classroom related to changes in motivation and engagement when they moved from seventh to eighth grade. Data were collected from students in 30 different math classes taught by 15 different teachers. Students reported their perceptions of the extent to which their teacher promoted teacher-student relationships (teacher support), social interaction among peers around academic tasks (promoting interaction), mutual respect among classmates (promoting mutual respect), and competition and comparison among students around academic tasks (promoting performance goals). Students' motivation was measured by a questionnaire specifically designed for this particular study in which students answered questions about their academic efficacy, social efficacy with the teacher, and social efficacy with their peers in math class. In addition, authors measured students' engagement by asking students to answer questions regarding their self-regulated learning and disruptive behavior in math class. Principal axis factor analysis of teacher support, teacher promotes interaction, teacher promotes mutual respect, and teacher promotes performance goals yielded one factor indicating that there was an overall "classroom social environment" construct. Controlling for prior motivation and

engagement, gender, race and prior achievement, the classroom social environment was related to changes in students' social efficacy with their teacher, academic efficacy, self-regulated learning, and disruptive behavior.

The authors also conducted hierarchical multiple regression analyses to examine the independent contributions of the four dimensions of the eighth grade classroom social environment in explaining change in students' motivation and engagement from seventh to eighth grade. Perception of the teacher as supportive was the strongest predictor of increased efficacy relating to the teacher ($\beta = .52$, $p < .001$).

Conclusion

A vast literature attests to the importance of teacher-child relationship quality for children's academic, social, and emotional well-being, both concurrently and longitudinally. Yet, several gaps still remain in our knowledge of this area. First, correlational analysis has shown that teacher-child relationship quality is moderately stable over time (Howes, et al., 2000). A search of the literature, however, has revealed that only two studies have used more sophisticated analytic techniques such as growth modeling to model true change over time in teacher-child relationship quality (O'Connor, 2010; O'Connor & McCartney, 2007). These studies found that teacher-child relationship quality actually declined from preschool to fifth grade.

Several child and teacher characteristics have been examined as predictors of initial levels of teacher-child relationship quality; however, a second gap in the literature is the lack of longitudinal studies that identify which of these variables predicts not only initial levels but change in teacher-child relationship quality over time. Only one study has examined child and teacher characteristics associated with change in teacher-child relationship quality (O'Connor,

2010). Findings from this study show that only characteristics of the teacher (i.e., self-efficacy) are related to less rapid declines in over relationship quality from first through fifth grade. Understanding how and why the quality of children's relationships with their teachers change is important for policy makers and educators looking to promote the academic success of children, in the wake of educational reform policies such as No Child Left Behind.

And third, adolescents' achievement motivation has important implications for their' educational achievement and attainment, including the completion of high school (Legault, Green-Demers, & Pelletier, 2006). Studies show, however, that motivation begins to decline early in children's educational career. Ideally, one would test simultaneous declines in students' perceptions of the quality of their relationship with teachers and achievement motivation but unfortunately, we are limited by the data we have available. A preliminary step towards addressing this gap would be to examine the association between trajectories of teacher-child relationship quality across elementary and early middle school and adolescent achievement motivation in tenth grade. At the same time, it would be necessary to control for those individual-, family-, and school-level factors that have been demonstrated to predict achievement motivation in order to isolate the effects of teacher-child relationship quality trajectories.

Hence, the present project is designed to expand our understanding of teacher-child relationship quality by examining the following questions:

RQ 1. Does teacher-child relationship quality decline across the elementary and middle school years?

Hypothesis 1: Based on previous research, individual growth modeling will show that teacher-child relationship quality declines from third grade to sixth grade. Furthermore, it is expected that children will evidence greater declines in closeness over time. We chose to model

relationship quality from third grade to sixth grade for several reasons. First, we reasoned that

third grade through sixth grade is closer to the outcome of interest – that is, achievement

motivation. Second, third through sixth grade represents a time in children's lives when they

begin experiencing physical, cognitive, and social-emotional changes that may affect teacher-

child relationship quality. And third, having at least 4 time points would allow us to fit both a

linear and quadratic growth model, following the work of O'Connor and McCartney (2007) and

Jerome et al. (2009).

RQ 2. What child characteristics are associated with initial levels and rates of change in teacher-child relationship quality?

Hypothesis 2: Teachers will report relationships characterized as higher in conflict and

lower in closeness in fifth grade for boys, African-American children, and children with higher

levels of externalizing behavior. Furthermore, these groups of children are expected to exhibit

faster rates of decline in closeness over time. Teachers will report higher initial levels of

closeness in fifth grade with children who exhibit higher levels of social skills and lower levels

of internalizing behavior problems.

RQ 3. What teacher characteristics are associated with initial levels and rates of change in teacher-child relationship quality?

Hypothesis 3: Teachers that are Caucasian, female, have more education and experience,

and report higher levels of self-efficacy will exhibit higher initial levels of closeness and lower

initial levels of conflict in fifth grade. Children who match their teachers in terms of race and/or

ethnicity will have higher initial levels of closeness and lower initial levels of conflict in fifth

grade. Children with teachers who report higher levels of self-efficacy will experience less rapid

declines in closeness.   Children who match their teachers in terms of race and/or ethnicity will also experience less rapid declines in closeness.

RQ 4. Do initial status and rate of change in teacher-child relationship quality from third grade to sixth grade predict achievement motivation at age 15?

Hypothesis 4: Higher initial levels of closeness will predict higher levels of achievement motivation at age 15; however, it is expected that higher initial levels of conflict will predict lower levels of achievement motivation at age 15. Furthermore, the rate of change in both closeness and conflict from third grade to sixth grade will predict achievement motivation at age 15. Specifically, declines in closeness will be associated with lower achievement motivation.

<center>**III. Method**</center>

Sample

The data for these analyses were originally gathered as part of the National Institute of Child and Human Development Study of Early Child Care and Youth Development (NICHD-SECCYD). The NICHD-SECCYD is the most comprehensive study to date of children and the many environments in which they develop (Belsky, 2009). Data collection began in 1991 at 10 sites across the United States (Boston, MA; Lawrence, KS; Seattle, WA; Orange County, CA; Little Rock, AR; Pittsburg, PA; Philadelphia, PA; Morganton, NC; Madison, WI; and Charlottesville, VA). Participants were recruited using a conditionally random sampling plan and therefore is not nationally representative. It is, however, representative of families who gave birth in 1991 at one of the 24 hospitals selected for the study. Participants for the study were recruited shortly after giving birth to a child in specific hospitals located within the study sites. In order to participate in the study, mothers were required to be healthy, older than 18 years, and conversant in English with a singleton child whose birth was normal and uncomplicated; families had to be living in a reasonably safe neighborhood less than 1 hour from the research site and not planning to move within the next three years.

Of the 3,015 families selected for participation, 1,526 (51%) agreed to participate. The remaining 1489 families could not participate for a variety of reasons. Of the 1526 families who agreed to participate, 1,364 (89%) completed the initial data collection visit and gave signed consent when the child was 1 month old. Comparisons of several key demographic and child variables were made between the 51% of eligible families who agreed to participate and the 49% who did not. There were several small but statistically significant differences. Mothers who agreed to participate were about a year older on average (mean age, 28.0 vs. 27.0 years), a little

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better educated (65% with more than a high school degree vs. 50%), and less likely to be from minority backgrounds (19% vs. 24%); however, the participating mothers were no more likely to be married. The children from participating families were typically a little heavier at birth (3490 g vs. 3393 g).

Data for the project were collected in four phases, with high participant retention rates in each phase. During Phase I of the study (1991-1994), a cohort of 1,364 children and their families were recruited at 1 month of age and studied through age 3. During Phase II of the study (1995-1999), a cohort of 1,220 of the enrolled children and families were followed through first grade. During Phase III of the study (2000-2004), a cohort of over 1,100 of the enrolled children and families were followed through sixth grade. And follow up data was collected on a cohort of 1,073 enrolled adolescents and families during Phase IV of the study (2005-2008).

Procedure

Data collection for the study began in 1991 when participating children were one month old and continued through age 15. Each child was seen at home, in child care (if used), in elementary school, and in a laboratory playroom by research assistants from the 10 collection sites. Telephone updates were completed every 3 months in Phase 1 and every 4 months in Phase 2, which ended when the child was 54 months old. A 6-month phone follow-up was conducted when the child was 60 months and annual phone contacts were made throughout Phase 3. At kindergarten, second, fourth, and sixth grade, when school visits were not made, information on school achievement and behavior were collected by teacher questionnaire.

A wide range of adolescent outcomes were assessed during one laboratory and one home visit when study children were 15. Also at age 15, children's physical activity was monitored, information was gathered from their middle and high school transcripts, and surveys were

completed by middle and high school personnel. Additional information was collected from health and pubertal maturation examinations at ages 13 ½, 14 ½, and 15 ½.

Measures

Teacher-child relationship quality. From kindergarten to sixth grade, teachers completed the Student-Teacher Relationship Scale: Short Form (STRS-Short Form; Pianta & Steinberg, 1992), a questionnaire designed to assess their perceptions about their relationship with the study child. The STRS-Short Form contains 15-items on a Likert-type scale. The items are based on attachment theory and the Attachment Q-Set (Waters & Deane, 1985). Using a 5-point scale that ranges from 1 = *definitely does not apply* to 5 = *definitely applies*, teachers rated how applicable each statement was to their current relationship with a particular child. Three scores are derived from the questionnaire: Conflict, Closeness, and a Total Score. Only the closeness and conflict subscales from grades three through six were used for this study.

Items on the closeness subscale assess positive affect between the child and teacher/caregiver (e.g., "I share an affectionate, warm relationship with this child"). The conflict subscale consists of items that assess the degree to which the teacher finds themselves at odds with the student (e.g., "This child and I always seem to be struggling with each other").

Internal reliability in this sample was moderately high. From third grade to sixth grade, α = .89 - .91 for conflict and α = .81 - 86 for closeness.

The STRS-Short Form questionnaire was mailed to teachers near the end of the school year in order to insure that teachers had the longest time possible in which to form an impression of their relationship with the children. Teachers who taught a majority of the study child's academic core subjects completed teacher relationship quality measures. When teaching responsibilities for the study child's academic core subjects were divided in half, or more than

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one teacher taught a majority of the student's core subjects, the teacher named on the consent form completed the questionnaire.

Predictive and concurrent validity of the STRS have been well established with samples of children and teachers from diverse ethnic and socioeconomic backgrounds (e.g., Hamre & Pianta, 2001; Koepke & Harkins, 2008; Saft & Pianta, 2001; Taylor & Machida, 1996). A copy of the STRS-Short Form is included in Appendix 2.

Child demographics.

Gender. Based on data collected during the hospital visit at birth, child gender was coded as a dichotomous variable, with 1 = "male" and 2 = "female."

Child race. The only child race comparison for the current study is between Caucasian and African-American children. This was due to the small numbers of children in other ethnic groups. Child's race was dummy coded with 1 = "African-American" and 2 = "Caucasian."

Child behavior problems. Child behavior problems were assessed at kindergarten, first grade, and grades three through six using the parental version of the Child Behavior Checklist (CBCL; Achenbach, 1991). The CBCL is a widely used measure to assess the problem behavior of children between the ages of 4-18 years. A series of behaviors that includes a broad range of children's behavioral/emotional problems (~ 118 items) are rated on 3-point scales from 0 (not true of the child) to 2 (very true of the child). For each item, the respondent was asked to determine how well that item describes the target child currently or within the last six months. Test-retest reliability for the CBCL is .93 over a 7 day period (Achenbach, 1991). Internal consistency coefficients for the CBCL syndrome scales range from 0.78 to 0.97 in norm-referenced samples, indicating good to excellent reliability (Kamphaus & Frick, 2009). The

CBCL also has been shown to predict subsequent problem behavior over a 6-year period (Achenbach, Edelbrock, & Howell, 1987).

The CBCL contains standardized scores for eight syndrome scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. There are also three total scales which are combinations of the eight syndromes. Only scales for internalizing and externalizing behavior problems were used for this study.

The Internalizing scale is the sum of responses from the syndrome scales designated as Withdrawn, Somatic Complaints, and Anxious/Depressed. The possible range of scores is from 0 to 62, with higher scores indicating a greater affinity to act withdrawn, have somatic complaints, and appear anxious or depressed. Research shows substantial stability over time for adult reports of children's and adolescents' behavior problems (Ackerman, Brown, & Izard, 2003; Denham et al., 2000). Furthermore, taking an average of behavior problem scores across time not only provides a more reliable estimate of children's behavioral propensity but also allows us to capture as much of the history of the child's behavior as we can. Correlations across time for internalizing behavior problems in this sample indicated moderate stability; therefore, following the work of O'Connor and McCartney (2007), composite variable for internalizing behavior was created by taking an average of scores from kindergarten to sixth grade. A score for second grade was imputed by using scores from first and third grade. Cronbach's alpha for the internalizing behavior composite was .91.

Externalizing Scales of the CBCL consists of responses from the Delinquent Behavior and Aggressive Behavior scales. The possible range of scores is from 30 to 100 with higher scores indicate a greater display of delinquent and aggressive behaviors. As with internalizing

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behavior problems, correlations across time for externalizing behavior problems indicated moderate stability; therefore, a composite measure was created by taking an average of scores from kindergarten to sixth grade.   A score for second grade was imputed by using scores from first and third grade. Higher scores for both internalizing and externalizing behavior problems indicated higher levels of behavior problems for each subscale. Cronbach's alpha for the externalizing behavior composite was .94.

The CBCL has excellent concurrent and predictive validity and is among the most widely used parent-report measures of youth emotional and behavioral problems in both clinical and research settings (Ebesutani et al., 2010). Additionally, Nakamura and colleagues (2009) found support for scale reliability, as well as convergent and discriminative validity, for all six CBCL DSM-oriented scales using a large and ethnically diverse clinic-referred sample of 673 children and adolescents. Due to copyright restrictions, the CBCL is not included in Appendix 2.

Child social skills. At kindergarten, first grade, and grades three through six, mothers rated children's social skills using the social skills dimension of the Social Skills Rating System (SSRS). The social skills portion of the SSRS includes 38 items that document the perceived frequency of target behaviors that influence the student's development of social competence and adaptive functioning.

The social skills scale identifies deficits in positive social behaviors, grouped under four subscales (C.A.R.S.): Cooperation, Assertion, Responsibility, and Self-Control. The current study used the social skills total raw score which is the sum of the scores for each of the four subscales. Higher scores indicate a stronger affinity to demonstrate socially acceptable learned behaviors as perceived by the child's mother/alternate primary caregiver. The average social skills variable had high internal reliability ($\alpha = 0.95$).

The validity (content, criterion, and construct) of the SSRS is documented extensively in Gresham and Elliot (1990). Criterion/construct validity is evidenced through correlations with several similar and well-regarded measures such as the Social Behavior Assessment (SBA; Stephens, 1981), the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983), and the Harter Teacher Rating Scale (TRS; Harter, 1985). The SSRS Social Skills subscales were negatively related to the CBCL; the SSRS Academic Competence Scale was negatively related to the CBCL total Behavior Problems score (DiPerna & Volpe, 2005). Also, students rated as well-adjusted on the Harter TRS tended to have well-developed social skills, higher academic competence, and relatively fewer problem behaviors, as measured by the SSRS. Due to copyright restrictions, the SSRS is not included in Appendix 2.

Teacher demographics. Each year, teachers completed the Teacher Questionnaire, which provides information on the teachers and aides (e.g., ethnicity, education, credentials, gender, and years of teaching experience), the students (e.g., number and ethnicity), and on the nature of the classroom (e.g., single or multiple grades, class schedule, instructional time, and teacher/child ratio). A copy of the Teacher Questionnaire is included in Appendix 2.

Teacher race. Teacher race was dummy coded into a dummy variable with 1 = "African-American" and 2 = "Caucasian." In addition, dummy codes were created for teacher-child race match variables with 1 = "match" and 2 = "did not match." The only teacher-child racial match comparison for the current study is between Caucasian and African-American teachers and children, given the small sample sizes of other ethnicities.

Teacher gender. Teacher gender is treated as a dichotomous variable with 1 = "male" and 2 = "female." In addition, dummy codes were created for teacher-child gender match variables with 1 = "match" and 2 = "did not match."

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Teacher education. A dichotomous variable was created for teacher education each year

with 1 = "less than a Master's degree" and 2 = "Master's degree or doctorate."

Teacher experience. A dichotomous variable for teacher experience each year was

created with 1 = "less than five years of experience" and 2 = "five or more years of experience."

Teacher self-efficacy. From third through sixth grade, teachers completed the Teacher Self-

Efficacy Scale (TSE; Bandura, 1986). Because time is centered at fifth grade in this study, only

teacher self-efficacy scores from third, fourth, and fifth grades were used. The TSE scale

contains 21 items that measure teachers' beliefs regarding their ability to impact decision

making, teach effectively, discipline effectively, and create a positive environment. Items are

rated on a 9-point Likert scale from "1 (nothing) to "9 (a great deal)". Factor analysis with a

varimax rotation demonstrated that the scale contains one factor that measures overall self-

efficacy. Overall self-efficacy for grades three, four, and five were used in the current study and

is computed as the sum of responses to all 21 items. The possible range of values is from 21 to

189 with higher values indicating more self-efficacy. The TES has demonstrated excellent

reliability across all time points in the NICHD-SECCYD with internal reliability coefficients

ranging from 0.90 – 0.91. Very little research outside of the NICHD-SECCYD is available,

however, using Bandura's scale. A copy of the TSE is included in Appendix 2.

Achievement motivation. When they were 15 years old, children completed the How I Do in

School questionnaire, a 19-item instrument that measures students' motivation to excel in math,

reading, and sports. The questionnaire was administered during the home visit via the Audio-and

Computer-Assisted Interview (ACASI) system on a laptop computer. To assure privacy, both

the teen and the researcher wore headphones. Items from Eccles and colleagues (1993) assess

the child's beliefs about their abilities in math (5 items, Cronbach's alpha = 0.84) and English or

reading (5 items, Cronbach's alpha = 0.83). . Possible scores range from 1 to 7, with higher scores indicating a more positive self-concept of ability in each particular subject. Sample items include, "How good at SUBJECT are you?" and "How well do you expect to do in SUBJECT this year?"

Three items concern adolescents' beliefs about their educational attainment, namely, the likelihood that they will finish high school, attend college, and finish college. These three items are used as single item variables.

A latent variable with three indicators was created by using both the English/reading and math subscales of the How I Do in School questionnaire as well as the three items regarding the likelihood of finishing high school, attending college, and finishing college. These three items were used to create an "educational attainment" subscale (α = .83)   A copy of the How I Do in School questionnaire is included in Appendix 2.

Control variables

Child achievement. The Woodcock-Johnson Psycho-Educational Battery -Revised (WJ-R) is a wide-range, comprehensive set of individually administered tests for measuring cognitive abilities and achievement. At Fifth Grade, Cognitive Ability is assessed in one subscale, Picture Vocabulary. Achievement is assessed in four subscales, Letter-Word Identification, Passage Comprehension, Calculation, and Applied Problems. In addition, the Broad Reading and Broad Mathematics scores were obtained for Fifth Grade. The current study uses both the Broad Reading and Broad Mathematics scored obtained in fifth grade to control for child achievement. Because they are on the same scale, an average of the standardized scores for the fifth grade broad math and broad reading subscales were used (Cronbach's alpha = .78).

The Broad Reading measure is a combination of the Letter-Word Identification and Passage Comprehension tests. The Passage Comprehension subtest assesses language comprehension and reading skills. The first (and easiest) set of questions asks the individual to match a "rebus" (pictographic representation of a word) with an actual picture of the object. The next items are presented in a multiple-choice format and require the person to point to the picture represented by a phrase. The remaining items require the person to read a short passage and identify a missing key word that makes sense in the context of that passage.

The Letter–Word Identification: The first five Letter-Word Identification items involve symbolic learning, or the ability to match a pictographic representation of a word with an actual picture of the object. The remaining items measure the subjects reading identification skills in identifying isolated letters and words. In this test it is not necessary that the subject knows the meaning of any word correctly identified. The items become more difficult as they present words that appear less and less frequently in written English.

The Broad Reading measure standard scores range from 30 to 154, with values above 100 indicating that the raw score was above the mean score of similar students with whom the instrument was standardized. The raw items used to create this score have high internal reliability (100 items, $\alpha = 0.91$)

The Broad Math measure is a combination of the Calculation and Applied Problems subtests. Calculation measures the ability to perform mathematical computations. Items include addition, subtraction, multiplication, division, and combinations of these basic operations, as well as some geometric, trigonometric, logarithmic, and calculus operations.

Applied Problems requires the person to analyze and solve math problems. To solve the problems, the person must listen to the problem, recognize the procedure to be followed, and

then perform relatively simple calculations. Because many of the problems include extraneous information, the individual must decide not only the appropriate mathematical operations to use but also which numbers to include in the calculation (118 items, Cronbach's alpha = 0.91).

McGrew reported that the WJ-R has excellent predictive validity across the lifespan in that it predicts reading achievement (McGrew, 1993), writing achievement (McGrew & Knopik, 1993), and mathematics achievement (McGrew & Hessler, 1995). In a validity study, the correlations between the WJ-R and comparable assessments (Kaufman ABC, McCarthy, Stanford-Binet) were in the .70s (McGrew et al., 1991). The Picture Vocabulary test of the WJ-R correlates at $r = .69$ with the Peabody Picture Vocabulary Test. Due to copyright restrictions, a copy of the Woodcock-Johnson is not included in Appendix 2.

Socioeconomic status. Two variables were used in the current study as an indicator of SES: income-to-needs ratio and maternal education.   The items were obtained from parents using the Family Education and Income questionnaire found in Appendix 2.

Income to needs ratio. The ratio of family income-to-needs was computed by dividing total family income by the poverty threshold for the appropriate family size (U.S. Bureau of the Census, 1999). Income-to-needs ratios less than 1 indicate poverty status. An average across time was created by using income-to-needs as reported at 6 months, 15 months, 24 months, 36 months, 54 months, kindergarten, first grade, and grades three through six ($\alpha = .97$).

Maternal education. Level of maternal education was obtained during interviews and scored as follows: less than 12 = number of years in school, 12 = high school graduate or GED, 14 = some college, 16 = a bachelor's degree, 17 = some graduate school experience, 18 = a master's degree, 19 = a law school graduate, and 21 = more than one master's degree or a

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doctoral degree. A dichotomous variable was created such that 1 = "high school diploma or less" and 2 = "some college or higher."

Parental Involvement.   At age 15, during the home visit, study children were asked to complete a 10- item questionnaire designed to assess the role of important adults in their educational careers with five questions about how often both mother and father helped with homework, kept abreast of school progress, attended school programs, attended student activities, and helped the adolescent with course selection. These items cover involvement at home and at the school as well as parental support and parent regulation. Each item has response values of 0 = "Never," 1 = "Sometimes," 2 = "Always", and 3 = "NA." The current study uses the Parental Involvement in Schooling variable which is computed as the mean of mother and father involvement for cases with complete data. Higher values denote greater parental involvement in schooling. This scale demonstrated moderate internal reliability (2 items, Cronbach's alpha = 0.73). A copy of the parental involvement questionnaire can be found in Appendix 2.

Treatment of missing data

Missing data are almost always a problem in longitudinal research, whether through item non-response, attrition, and/or failure to obtain measurements (Taris, 2000; Wideman, 2006). Because it is more efficient and less biased than listwise and pairwise deletion and mean-imputation methods (Graham & Hofer, 2000), missing data in this project were handled with full-information maximum likelihood (FIML) in Mplus. FIML assumes that data are missing at random (MAR) and does not actually impute missing values but rather, uses all of the information of the observed data, including mean and variance, to estimate a likelihood function for each individual (Wothke, 1998).

Analytic Plan

Univariate and bivariate analyses were conducted first. Next, closeness and conflict trajectories from third grade to sixth grade were examined. Unless otherwise indicated, closeness and conflict were examined in separate models. Changes in closeness and conflict over time, as well as the factors that predict these changes, were analyzed using multilevel growth modeling in MPlus 6 (Muthen & Muthen, 1998). Multilevel growth modeling has two levels: the first level represents the change within individuals, or intra-individual change, whereas the second level represents change between individuals or inter-individual change. At least two components shape the trajectory of individual change (or growth) over time: (1) the intercept, which is where the individual starts, or the value of Y when X = 0, and (2) the slope, or rate of change over time. If an individual's growth is curvilinear, he or she may also have an additional quadratic parameter.

For this study, time was centered at fifth grade. The relationship between students and their teachers in fifth grade takes on unique importance because many middle schools begin at sixth grade. As a result, fifth grade teachers face the daunting task of preparing and supporting students as they transition from elementary school to middle school. Furthermore, fifth grade generally marks the beginning stages of adolescence, a time when it is important for students to feel supported by their teachers as they begin to experience cognitive, biological, and socio-emotional changes (Roeser, Ecceles, & Sameroff, 2000). Centering time insures that the intercept is meaningful and allows for easier interpretation of the findings (Singer & Willett, 2003). Hence, in the scaling of time, third grade equals -2, fourth grade equals -1, fifth grade equals zero, and sixth grade equals 1.

The level-1 growth model is defined as:

$$Y_{ij} = \gamma_{00} + \gamma_{10}(TIME - 5)_{ij} + [\zeta_{0i} + \zeta_{1i}TIME - 5_{ij} + \varepsilon_{ij}]$$

where Y_{ij} represents scores on the closeness and conflict scales for individual i at time j. The

initial level (or intercept) of teacher-reported closeness and conflict is represented by γ_{00}

The linear rate of change (or slope) for individual i at time j, centered at 5th grade, is represented

by $\gamma_{10}(Time - 5)_{ij}$. Time is centered at 5th grade which represents the average score on the

closeness and conflict scales for children in fifth grade.

The within-individual residual variance (level 1) is denoted by ζ_{0i}. The between-

individual (level 2) residual variance is denoted by ε_{ij}. The variance components of the

unconditional means model allows one to quantify the amount of residual variation left—at

either level 1 or level 2—that is potentially explainable by other predictors not yet in the model.

First, separate unconditional means models for closeness and conflict were fitted to

partition the intra-individual (within-individual) and inter-individual (between-individual)

variance in closeness and conflict. An unconditional means model is a model with no

substantive predictors at either level. Fitting an unconditional means model permitted the

examination of the average growth trajectories as well as the presence of individual variability

around the average growth parameters.

The next step was to determine the individual growth form that best represented change

over time in closeness and conflict. A linear change trajectory requires at least three waves of

data. A quadratic model requires at least four waves. Teacher-child relationship quality was

assessed annually from kindergarten to sixth grade in the NICHD dataset; however, for this

project, I examined data from third grade to sixth grade only. Because there were four waves of

data, the data were first fit to a linear growth model. A quadratic term was then added to the

closeness and conflict growth models to determine whether growth was linear or curvilinear. A chi-square difference test indicated that adding a quadratic term significantly improved the model fit for closeness but not for conflict. Thus, the Level 1 growth model for closeness included three individual growth parameters: an intercept, a slope, and a quadratic term representing acceleration of growth in closeness. For conflict, however, there were only two individual growth parameters: an intercept and a slope.

Once the functional form for change in closeness and conflict was determined, control variables were added to each model. After adding the control variables, child and teacher predictors were systematically added to the models, one at a time. The final model for closeness contained both child and teacher characteristics, whereas the final model for conflict contained only child predictors.

Goodness of fit statistics for the final growth models of closeness and conflict were then examined. Model goodness of fit is typically evaluated using multiple indices, the most common of which is the chi-square statistic. For a model that fits the data, the χ2 should be small and not statistically significant (p > 0.05). The model chi-square statistic is highly affected by sample size; therefore, overall model fit requires consideration of several indicators. These include: the comparative fit index (CFI); the Tucker-Lewis Index (TLI); the root mean square error of approximation (RMSEA); and the standardized root mean square residual (SRMR). Ideally, for a model that fits the data, in addition to a small χ^2 that is not statistically significant, the CFI and TLI would be close to .95, the RMSEA would be .06 or lower, and the SRMR would be close to or lower than. 05.

To test whether changes in teacher-child relationship quality, marked by closeness or conflict from third grade to sixth grade, would predict achievement motivation at age 15, latent

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growth curve modeling (LGCA) within a structural equation modeling framework was used. I chose LGCM because (1) it allows trajectories of change over time in closeness and conflict to become predictors of subsequent outcomes (i.e., achievement motivation) and (2) it is possible to incorporate time-specific measurement error into the model, a tremendous advantage compared to traditional procedures. The latent growth curve models contained both closeness and conflict, thereby allowing me to control for one while examining the other. Even though the unconditional growth model showed a quadratic form for changes in closeness from 3rd to 6th grades, the quadratic slope of the final growth model for closeness did not have a statistically significant variance component. Therefore, for the model predicting achievement motivation at age 15, the linear slope of closeness was included but the quadratic slope was fixed to zero. Statistically significant predictors of the closeness and conflict growth models were used as control variables for both intercepts and for achievement motivation. In addition, parental involvement was also used as a control variable for achievement motivation. To avoid having an overly controlled model, control variables were not placed on the slopes.

As an added step, the associations between changes in closeness and conflict and the observed indicators of achievement motivation were also examined. Because there were no statistically significant findings using the observed indicators, only the results using the latent construct of achievement motivation are presented.

IV. Results

Preliminary analysis

As a first step of data analyses, I examined distributions for each of the variables for normality and to detect the presence of outliers. In only one instance did I find an outlier (i.e., a fourth grade teacher with 81 years' of experience). I ran analyses with and without the outlier, and the results were the same. It is common practice to present results including outliers if their inclusion does not change results. However, this practice was not followed here because 81 years' experience seemed an implausible value and likely a data entry error. Therefore, this value was removed and not included in any further analyses. Descriptive statistics for the study variables are presented in Table 1.

On average, at each time point teachers reported that their relationships with children in the study were moderately to very close and had low levels of conflict. Mean levels of closeness appeared to decrease over time. Mean levels of conflict, however, decreased from third grade to fourth grade (time 1 to time 2), increased from fourth grade to fifth grade (time 2 to time 3), and then decreased from grade five to grade six (time 3 to time 4). This suggested that the data should be fit to both linear and quadratic growth models.

I created average scores for academic achievement, internalizing behavior, externalizing behavior, and socials skills because the correlations for these variables across time demonstrated moderate stability. Looking at Table 1, most measures show relatively normal distributions. Particularly noteworthy are the distributions for the behavior problem measures because these often are highly skewed. Both the descriptive statistics and stem-and-leaf plots for

Table 1. *Descriptive Statistics of Study Variables*

Variable	N	M (SD)	Min	Max	Skewness	α	COV
Control Variables							
Mother's education	1363	14.23 (2.51)	7	21	.138		.17
Income	1309	3.84 (3.02)	.15	23.08	2.167	.97	.78
Academic achievement	993	109.00 (14.21)	19.50	155.00	-.759	.78	.13
Parental involvement	870	1.38 (.40)	.00	2.00	-.583	.73	.29
Child predictors of closeness and conflict							
Internalizing behavior problems	1147	4.94 (4.11)	.00	29.93	1.517	.91	.83
Externalizing behavior problems	1147	7.53 (5.70)	.00	38.50	1.190	.94	.76
Social skills	1147	57.07 (8.42)	24.08	77.67	-.455	.92	.15
Achievement motivation at age 15							
Educational outlook	973	4.60 (.69)	1.00	5.00	-2.163	.83	.15
Math efficacy	974	5.14 (1.18)	1.00	7.00	-.525	.84	.23
English efficacy	974	5.64 (1.07)	1.00	7.00	-.917	.83	.19
Third grade							
Closeness	977	33.08 (5.15)	15	40	-.966	.91	.16
Conflict	978	11.62 (6.03)	7	34	1.532	.85	.52
Teacher education	980	3.84 (1.0)	2	6	.335		.26
Teacher experience	973	13.98 (10.44)	0	52	.656		.75
Teacher self-efficacy	978	132.33 (19.48)	73	181	-.297	.90	.15

Table 1 continued

Variable	N	M (SD)	Min	Max	Skewness	α	COV
Fourth grade							
Closeness	916	32.52 (5.11)	12	40	-.698	.84	.16
Conflict	915	11.14 (5.73)	7	34	1.718	.91	.51
Teacher education	909	3.84 (.99)	3	6	.385		.26
Teacher experience	905	13.45 (10.30)	0	52	.648		.77
Teacher self-efficacy	910	132.67 (18.81)	65	189	-.413	.90	.14
Fifth grade							
Closeness	927	31.85 (5.36)	14	40	-.667	.85	.17
Conflict	930	11.44 (5.74)	7	35	1.515	.90	.50
Teacher education	925	3.96 (1.00)	3	6	.117		.25
Teacher experience	921	14.60 (10.68)	0	45	.672		.73
Teacher self-efficacy	928	134.03 (18.91)	69	189	-.286	.90	.14
Sixth grade							
Closeness	857	30.31 (5.74)	12	40	-.576	.86	.19
Conflict	857	11.07 (5.64)	7	33	1.645	.91	.51
Teacher education	845	4.04 (1.00)	3	6	-.041		.25
Teacher experience	842	13.78 (10.39)	0	46	.574		.75

behavior problems in this sample indicated slight positive skews, suggesting that children's behavior problems are on the lower end of the scale. Acceptable skew values range from a low of +/- 1 to a high of +/- 3. Therefore, a decision was made to not transform these variables because they did not exceed +3 (Weston & Gore, 2006). In addition, previous studies of behavior problems with this data set (e.g. O'Connor, 2010) use raw behavior-problem data instead of transformed variables.

When they were 15 years old, students reported mid- to high-levels of parental involvement as well as high levels of achievement motivation (educational outlook math efficacy, and English efficacy. Educational outlook was slightly negatively skewed. Although skew was less than +3, the variable was log transformed as recommended by Tabachnick and Fidell (1996) in order to determine whether non-normality might play a role in subsequent analyses. Analyses using both the transformed and non-transformed values yielded the same results. Therefore, only non-transformed values will be reported for all further analyses.

Independent samples t-tests were performed to test for mean-level differences in teacher-child relationship quality, control variables, child predictors, and achievement motivation as a function of race and gender. Compared to white children, teachers perceived their relationships with African-American children to be significantly lower in closeness in fourth and fifth grade. Teachers perceived their relationships with African-American children to be significantly higher in conflict than were their relationships with white children at every time point. African-American children were also rated as having higher externalizing behavior problems and lower social skills.

Results for mean differences by child gender showed that at each time point, teachers reported being closer to girls than they were to boys. There were also mean level differences for

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conflict at each time point, with teachers reporting that their relationships with boys were characterized by higher levels of conflict than were their relationships with girls. There were no significant differences by race or gender for any of the control variables. Additionally, there were no significant racial or gender differences in achievement motivation. Tables for all *t*-tests can be found in Appendix 1.

The coefficient of variation (COV) was also computed for each variable. The COV is useful for comparing variation across different measures (Snedecor & Cochran, 1989). It is computed by dividing the standard deviation by the mean. A low COV indicates little variation in the variable. Looking at Table 1, we see that the COV ranges from .14 to .83. For example, educational outlook, math efficacy, and English efficacy had low COVs, suggesting small variation in these measures.

Correlations

Table 2 displays within- and between-construct correlations for closeness and conflict from third grade to sixth grade. Both closeness (correlations ranged from .22 -.37) and conflict (correlations ranged from .44 - .53) demonstrated modest to moderate stability over time. As expected, higher levels of closeness were related with lower levels of conflict.

Correlations between teacher-child relationship quality (i.e., closeness and conflict) and child-level predictors are presented in Table 3. Correlations between teacher-child relationship quality measures and achievement motivation are presented in Table 4. Teachers described relationships with children with higher levels of behavior problems (both externalizing and internalizing) as less close and more conflictual. Neither closeness nor conflict was significantly correlated with achievement motivation at age 15. Tables with correlations among predictor, outcome, and control variables are located in Appendix 1.

Confirmatory factor analysis

Confirmatory factor analysis was used to test a measurement model for the latent construct achievement motivation. Items were taken from the *How I Do in School* questionnaire (see Method section for more information) to create three indicators of achievement motivation: educational outlook, efficacy in math, and efficacy in English. Because the measurement model was fully saturated, the model fit the data perfectly ($\chi2$ (*df*) = 0 (1), *p* = 1.00; CFI = 1; TLI = 1; RMSEA = 0; SRMR = 0).

Table 2.
Correlations among Teacher-Child Relationship Quality Measures within and across Grade Levels

Teacher-child relationship quality	1	2	3	4	5	6	7	8
Closeness								
1. Third grade	---							
2. Fourth grade	.37**	---						
3. Fifth grade	.33**	.33**	---					
4. Sixth grade	.25**	.22**	.34**	---				
Conflict								
5. Third grade	-.38**	-.14**	-.17**	-.17**	---			
6. Fourth grade	-.23**	-.36**	-.18**	-.18**	.53**	---		
7. Fifth grade	-.13**	-.10**	-.35**	-.19**	.46**	.50**	---	
8. Sixth grade	-.06	-.07	-.10**	-.31**	.44**	.45**	.53**	---

* *p* < .05 ** *p* < .01 *** *p* < .001

Table 3.

Between-Construct Correlations for Teacher-Child Relationship Quality and Child-level Predictors

Teacher-child relationship quality	Grade	Child-level predictors		
		Internalizing behavior problems	Externalizing behavior problems	Social skills
Closeness	3rd	-.04	-.13***	.24***
	4th	-.10**	-.10**	.17***
	5th	-.04	-.07*	.20***
	6th	-.03	-.04	.13***
Conflict	3rd	.10***	.35***	-.28***
	4th	.17***	.37***	-.32***
	5th	.09***	.33***	-.30***
	6th	.13***	.35***	-.27***

$* p < .05$ $** p < .01$ $*** p < .001$

Table 4.

Correlations between Teacher-Child Relationship Quality in Third through Sixth Grades and Achievement Motivation at age 15

Teacher-child relationship quality	Grade	Achievement motivation at age 15		
		Educational outlook	Math efficacy	English efficacy
Closeness	3rd	.02	.02	-.06
	4th	-.00	-.05	.03
	5th	.06	.01	.03
	6th	.03	-.02	-.01
Conflict	3rd	-.01	-.05	.04
	4th	.03	.02	-.01
	5th	-.03	.02	-.04
	6th	.02	-.01	.06

Multilevel growth models

Closeness. To examine how teacher-child relationship quality changes over time, I fit the data to a series of multilevel models. The results of fitting the unconditional means model, Model 1, are presented in Table 5. The initial status in average closeness in 5th grade (γ_{00}= 32.87, p=.001) is statistically significantly different from zero, indicating that there is variability in initial levels of closeness that can be explained. Examining the random effects portion of the unconditional means model, we see that both variance components were significantly different from zero (the estimated value of the between-person variance (σ^2_0) = 7.50 and the estimated value of the within-person variance (σ^2_ε) = 22.00). The null hypotheses that there is no variation within and between subjects on closeness can be rejected. The variance within individuals is about three times the variance between individuals. An intraclass correlation was computed to determine what portion of the total variance in closeness was attributable to between-individual differences. Twenty-five percent of the total variation in closeness was attributable to differences between individuals; three quarters of the total variation (75%) lay within individuals. This suggested that although both time-varying and time-invariant predictors could be added to subsequent models, given the tremendous amount of within-person variance in closeness, a greater proportion of the variance in closeness might be accounted for by using time-varying predictors.

Next, an unconditional growth model, that is, a model with time as the only predictor of closeness, was fit to the data. Although the linear model (see Model 2, Table 5) appeared to fit the data well, the model containing both linear and quadratic terms (see Model 3, Table 5) provided a significantly better fit than the linear model alone. In addition, the chi-square difference test resulted in a difference of 17.64 with 4 degrees of freedom. Rejecting the null

Table 5.

Taxonomy of Multilevel Models in which Closeness is Predicted by Child Gender, Internalizing behavior, Externalizing behavior, Social skills, and Teacher Self-Efficacy in Grades 4 and 5

	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects					
Initial status	32.87 (.10)***	31.50 (.13)***	31.69 (.14)***	30.40 (1.2)***	13.90 (1.75)***
Income				.14(.05)*	.04 (.04)
Mother's education				.91 (.36)*	.33 (.27)
Achievement				-.01 (.01)	-.01 (.01)
Gender					1.87 (.27)***
Internalizing					-.10 (.04)*
Externalizing					.07 (.03)*
Social skills					.08 (.02)***
TSE Grade 4					.03 (.01)***
TSE Grade 5					.04 (.01)***
Time		-.85 (.07)***	-1.12 (.11)***	-1.09 (.11)***	2.87 (1.46)*
Income					
Mother's education					
Achievement					
Gender					.09 (.23)
Internalizing					.00 (.04)
Externalizing					.03 (.03)
Social skills					.00 (.02)
TSE Grade 4					-.02 (.01)**
TSE Grade 5					-.01 (.01)
Time x time			-.23**	-.22(.01)**	3.36 (.95)***
Income					
Mother's education					
Achievement					
Gender					.10 (.15)

Table 5 continued.

	Model 1	Model 2	Model 3	Model 4	Model 5
Time x time			-.23**	-.22(.01)**	3.36 (.95)***
Income					
Mother's education					
Achievement					
Gender					.10 (.15)
Internalizing					.03 (.02)
Externalizing					-.01 (.02)
Social skills					.10 (.01)
TSE Grade 4					-.01 (.00)**
TSE Grade 5					-.02 (.00)***
Random effects					
Initial status	7.50 (.50)***	9.27 (.79)***	9.77 (1.05)***	9.70 (.82)***	6.84 (.93)***
Rate of change	22.00 (.41)***	.92 (32)*	4.38 (1.32)**	4.22 (1.30)**	3.94 (1.31)**
Quadratic rate of change			.66 (.41)	.75 (.37)*	.36 (.41)
Goodness of fit statistics					
χ^2(df)	174.57 (8)***	19.25 (5)*	1.611 (1)	8.90 (5)	66.62 (13)***
CFI	.58	.96	.99	.99	.92
TLI	.68	.96	.99	.97	.85
RMSEA	.11	.05	.02	.02	.05
SRMR	.14	.04	.01	.01	.02

$* p < .05$ $** p < .01$ $*** p < .001$

hypothesis that both models fit the data equally well, the quadratic model of the growth in teacher-child closeness was a better fit to the data.

The parameter estimates for the closeness unconditional growth model indicated that the average intercept (β = 31.69, p < .001), the average slope (β = - 1.11), and average quadratic slope (β = -.23), were all significantly different from zero. On average, fifth-grade students began their closeness trajectories significantly above zero. They also demonstrated a significant decline of 1.11 points per assessment on the closeness scale with a concurrent significant deceleration (see Figure 1).
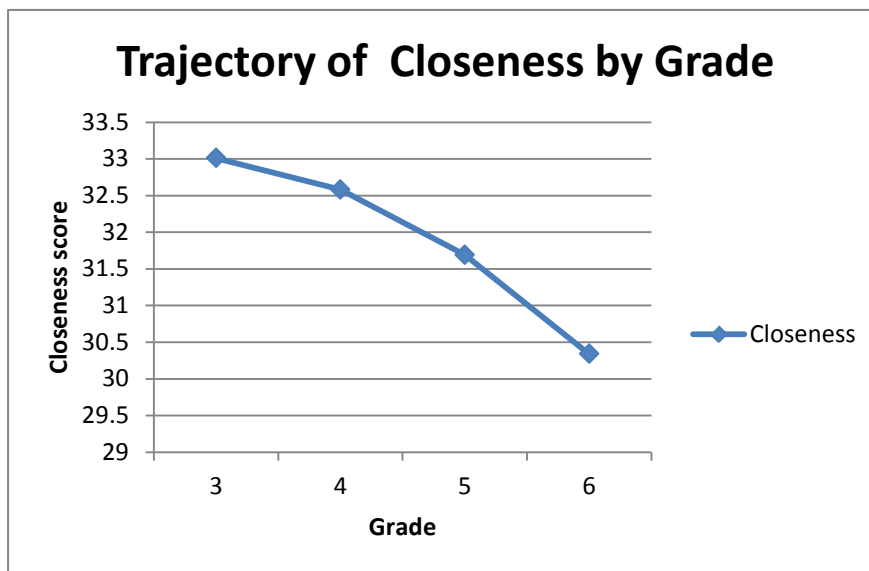
Figure 1. Average Student Trajectory of Teacher Ratings of Closeness from Third Grade to Sixth Grade

In terms of variation in the growth parameters, there was significant variation, which could then be predicted, in the intercept (β = 9.77, p = .000) and slope (β = 4.38, p = .001), but there was no variation in the quadratic term (β = .66, p = .112). This implied that although students varied widely in their initial levels and in linear growth of teacher-reported closeness, the quadratic rate of change in closeness was similar across students. Based on the pseudo-R statistic, 7% of the variation in closeness was explained by time.

Once the functional form of the closeness trajectory was determined, I systematically added the child and teacher predictors to the model, one at a time, entering control variables first. Variables that were not statistically significant predictors of the intercept were removed from the model to improve fit. The final model (see Model 5, Table5) contained statistically significant child and teacher predictors, suggesting that they both contribute to relationships that teachers perceive to be high in closeness. The model fit the data relatively well. Looking at Model 5, controlling for all else in the model, the estimated average level of closeness in fifth grade is 13.90 and closeness increases by 2.87 points per year. This is counter to what I expected, given the literature on teacher-child relationship quality which has found that closeness declines over time. In addition, in the previous models (see Models 1- 4), the slope was negative, indicating a decline in closeness over time. In Model 5, with the addition of the predictor variables, the slope became positive. The statistically significant quadratic component ($\beta = 3.36$) indicated that the average child experienced an exponentially greater increase in closeness over time. The models were refitted using: no control variables, one control variable at a time, and each predictor variable separately. In these models, the slope for closeness was in the expected direction (i.e., negative). I concluded that the apparent increase in closeness over time was an artifact of the large number of control variables and other predictors in the model. This finding will not be discussed further.

In Model 5, Table 5, we see that girls' estimated initial level of relationship quality is higher than boys by 1.87 points, controlling for all other variables in the model. The coefficient for internalizing was negative, suggesting that teachers felt less close to children with more internalizing symptoms. For every one-point increase in internalizing, closeness to teachers was .09 points lower, controlling for all else in the model. In contrast, for every additional

externalizing behavior point, teacher-perceived closeness was .07 points higher. Again, the finding for externalizing was not expected given that others have found that teachers perceive their relationships to be lower in closeness with children who have higher externalizing behavior problems. As with the counter-intuitive findings regarding the increase in closeness, I concluded that this finding was an artifact of the large number of control variables in the model.

A number of significant predictors were consistent with expectations. For every one-point increase in children's mother-rated social skills, teachers reported being .08 points closer to children. Teacher self-efficacy also significantly predicted teacher-child closeness. For every one-point increase in fourth-grade teacher self-efficacy, teachers reported .03 points greater closeness to children. Similarly, for every one-point increase in fifth-grade teacher self-efficacy, teachers reported a .04-point greater closeness to children. Although children varied in their initial levels of closeness in fifth grade as a function of their sex, internalizing behavior problems, social skills, and teacher self-efficacy in both 4th and 5th grades, differences in rate of growth in closeness were not significantly predicted by child gender), internalizing behavior problems, externalizing behavior problems, social skills, and teacher self-efficacy in fifth grade.

The linear rate of change in closeness was, however, significantly predicted by teacher self-efficacy in fourth grade. The quadratic rate of change in closeness was significantly predicted by teacher self-efficacy in fourth grade and in fifth grade. This would imply that children whose teachers report higher self-efficacy have faster rates of decline in closeness. These findings appear to be spurious, as with the other unexpected findings. They are reported here for completeness but will not be discussed further. It should be noted that no other variables were statistically significant predictors of the slope and quadratic terms.

Both the intercept and slope had statistically significant variance components; however, the quadratic slope did not. This suggests that further variance in initial levels and linear change in closeness might still be explained by additional predictor variables that were not included in the model.

Conflict. As with closeness, I fit the conflict data to a series of multilevel models. Looking at the unconditional means model (see Model 1, Table 6), the initial status in average conflict ($\beta = 11.10$) is statistically significantly different from zero. This indicated that children varied in their initial levels of conflict. Both the within-person and between-person variation in conflict were significantly different from zero as well. This led me to reject the null hypothesis that there is no variation within and between subjects on conflict. Based on the intraclass correlation, 45% of the variance occurs between individuals. This meant that a little over half, or 55% of the variance in conflict occurred within-individuals and I could use both time-varying and time-invariant predictors in my models.

Next, a linear growth model (Model 2, Table 6) was fit to the conflict data. Model fit statistics indicated a good fit to the data. A quadratic model was also fit to the conflict data. The quadratic model did not appear to be a better fit than the linear model. This was tested directly using the chi-square significance test. Because the resulting chi-square of 2.44 and 4 degrees of freedom did not exceed the critical value, the null hypothesis was not rejected. Therefore, the linear model was selected as the final functional form of change in conflict over time.

Figure 2 displays the prototypical trajectory of conflict. Looking at the figure, we see that the average child in fifth grade had a teacher rating of 11.34 points on the conflict scale, which could range from 0 to 40. As seen in Table 6, Model 2, the estimate of the slope was

negative and was not statistically significantly different from zero. On average, conflict declined by .13 points per year, with the rate of decline similar across students.
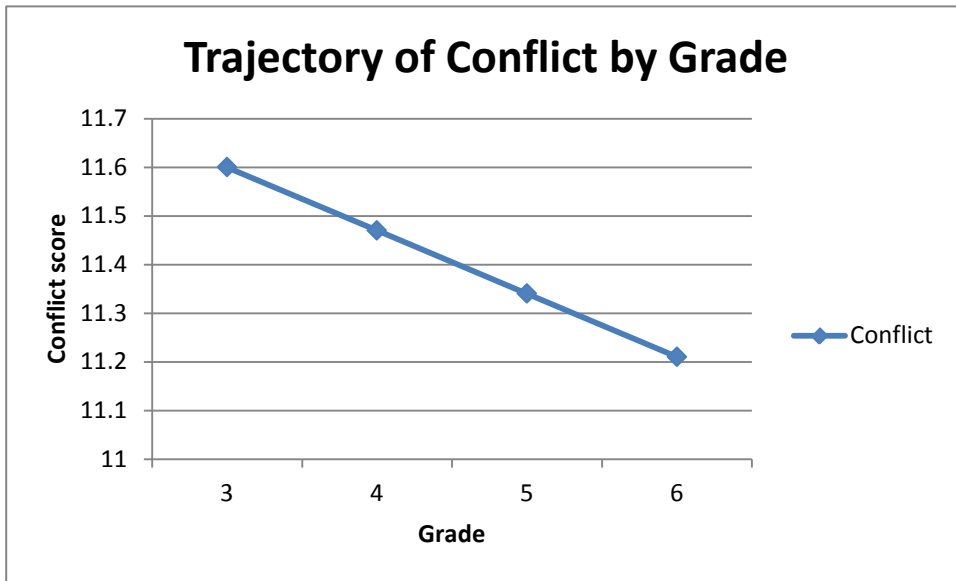
Figure 2. Average Student Trajectory of Teacher Ratings of Conflict from Third Grade to Sixth Grade

Teachers reported very low levels of conflict at 5th grade. Examination of the variance components of the growth model (see Model 2, Table 6) showed significant variance estimates for the intercept and slope. The significant variance components for both the intercept and slope suggested that children vary in both their initial levels and rate of change in conflict. The significant variance component for the slope suggested that there was additional variance that was not explained by time. Based on the pseudo-R statistic, approximately 12% of the total variation in conflict is explained by time.

Thus, once the function form of the conflict trajectory was determined (i.e., linear), I systematically added the child and teacher predictors to the model, one at a time, entering control variables first (Model 4, Table 6). Variables that were not statistically significant predictors of the intercept were removed from the model to improve fit (Model 5, Table 6). Unlike the final model for closeness, none of the teacher predictors were statistically significant predictors of

either the intercept or the slope of conflict. This seemed to suggest that children drive relationships perceived by teachers to be high in conflict, whereas both children and teachers contribute to closeness in relationships.

The final model (see Model 5, Table 6) contained only statistically significant child predictors and fit the data relatively well. On average, boys, children identified as African-American and children with higher levels of both internalizing and externalizing behavior problems had higher initial levels of conflict, controlling for all else in the model. More specifically, boys were almost 2 points higher than girls on the conflict scale. African-American children were nearly four points higher than Caucasian children on the conflict scale. For every one point increase in internalizing and externalizing behavior problems, conflict was .14 and .35 points higher, respectively. Unlike closeness, children's initial levels of conflict were not predicted by social skills. The non-significant association between these variables and the slope parameter indicted that although children experience different levels of conflict with their teachers in fifth grade, the growth trajectory of conflict was similar across children.

The variance components for both the intercept ($\sigma^2 = 9.91$, $p = .000$) and slope ($\beta = 1.18$, $p = .000$) were statistically significantly different from zero. This suggests that additional differences in the initial level and rate of change of conflict could be explained by other variables not included in the model.

Table 6.

Taxonomy of Multilevel Models in which Conflict is Predicted by Child Gender, Internalizing Behavior, Child Race, and Externalizing Behavior

	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects					
Initial status	11.10 (.13)**	11.34 (.15) ***	11.33 (.16) ***	20.53 (1.19)**	22.26 (1.2)***
Income				-.221 (.05)***	-.05 (.05)
Mother's education				-1.27 (.35)***	-.64 (.30)*
Achievement				-0.06 (.01)***	-.02 (.01)*
Gender					-1.81 (.25)***
Internalizing					.14 (.04)***
Child race					-3.53(.42)***
Externalizing					.35 (.03)***
Time		-.13 (.07)	-.13 (.10)	-.14 (.07)*	-.13 (.48)
Income					
Mother's education					
Achievement					
Gender					-.04 (.14)
Internalizing					.01 (.02)
Child race					.08 (.22)
Externalizing					-.02 (.02)

* *p* < .05 ** *p* < .01 *** *p* < .001

Table 6. continued

	Model 1	Model 2	Model 3	Model 4	Model 5
Time x time			.01 (.01)		
Income					
Mother's education					
Achievement					
Gender					
Internalizing					
Child race					
Externalizing					
Random effects					
Initial status	13.86 (.83)**	17.37 (1.04)***	17.92 (1.33)***	14.91 (.94)***	9.91 (.73)***
Rate of change	16.88 (.45)**	1.25 (.29)***	2.48 (1.22)*	1.24 (.29)***	1.18 (.28)***
Quadratic rate of change			.55 (.35)		
Goodness of fit statistics					
χ^2 (df)	30.40 (8)	6.38 (5)	3.94 (1)*	11.53(11)	37.34 (22)*
CFI	.98	.99	.99	1.0	.99
TLI	.98	.99	.98	.99	.98
RMSEA	.05	.016	.05	.01	.02
SRMR	.03	.013	.01	.01	.02

Latent growth curve analyses

Next, latent growth modeling within a structural equation modeling framework was used to test whether changes in teacher-child relationship quality, marked by closeness or conflict from third grade to sixth grade, would predict achievement motivation at age 15. The model contained both closeness and conflict, thereby allowing me to control for one while examining the other. The quadratic slope of the final growth model for closeness (see Model 5, Table 5) did not have a statistically significant variance component. Therefore, for the model predicting achievement motivation at age 15, the linear slope of closeness was included but the quadratic slope was fixed to zero. Statistically significant predictors of the closeness and conflict growth models were used as control variables for both intercepts and achievement motivation. In addition, parental involvement was also used as a control variable for achievement motivation. In order to avoid having an overly controlled model, no control variables were placed on the slopes.

The hypothesized latent growth curve model for predicting students' achievement motivation from changes in closeness is presented in Figure 3. On the left side of the figure is a 3-factor measurement model with factor loadings of the intercept fixed to the value of 1, the slope fixed to age, centered at 5th grade, and the quadratic slope fixed to age squared. The model parameterization yielded three latent constructs, η_1, $\eta_{2\text{ and }}\eta_3$, to present true initial status, true rate of change, and true quadratic growth of the individual growth in closeness. On the right side of Figure 3, a pair of structural paths, denoted by β_1 and β_2, represent the prediction of outcomes at age 15 by the hypothesized individual growth parameters, adjusted for the covariates.

Looking at Figure 3, we see that the path from the intercept of closeness to achievement motivation at 15, denoted by β_1, is not statistically significant from zero ($\beta = .01$, $p = .85$). This

indicated that teacher-perceived closeness in 5th grade did not significantly predict children's achievement motivation in high school. The path from the slope parameter of closeness to achievement motivation at 15, denoted by β_2, was not statistically significantly different from zero also indicating that the rate of growth in closeness did not predict children's achievement motivation in high school.

The hypothesized latent growth curve model for predicting student's achievement motivation from changes in conflict is presented in Figure 4. On the left side of Figure 4 is a 2-factor measurement model with factor loadings of the intercept fixed to the value of 1 and the slope fixed to age, centered at fifth grade. The model parameterization yielded two latent constructs, η_1 and η_2, to present true initial status and true rate of change of the individual growth in conflict. On the right side of Figure 4, a pair of structural paths, denoted by β_1 and β_2, represent the prediction of outcomes at age 15 by the hypothesized individual growth parameters, adjusted for the covariates.

Looking at Figure 4 we see that the path from the intercept of conflict to achievement motivation, denoted by β_1, is not statistically significantly different from zero ($\beta = .01$, $p = .46$). This means that children's initial level of teacher-perceived conflict in 5th grade is not a significant predictor of achievement motivation at age 15. The path from the slope parameter of conflict to achievement motivation at 15, denoted by β_2, was not statistically significantly different from zero ($\beta = -.08$, $p = .53$), indicating that the growth in conflict was not a significant predictor of achievement motivation in high school.

Of the control variables, only parental involvement was a significant predictor of achievement motivation ($\beta = .20$, $p < .05$). Children who reported higher levels of parental involvement also had higher reports of achievement motivation. It appears that in this sample,

parental involvement plays a greater role in achievement motivation in high school than

student's closeness and conflict with teachers in fifth grade.

Figure 3.
Unstandardized Parameter Estimates (Standardized Estimates in Parentheses) of the Fitted Latent Growth Curve Model with Closeness predicting Achievement Motivation, Controlling for Income, Mother's Education, Academic Achievement, Child Gender, Internalizing Behavior, Externalizing Behavior, Social Skills, Teacher Self-Efficacy in Grades 4 and 5, and Parental Involvement, (χ^2 (df) = 352. 68 (109); CFI = .91; TLI = .85; RMSEA = .040; SRMR = .037. Dashed lines indicate nonsignificant path fixed to zero.
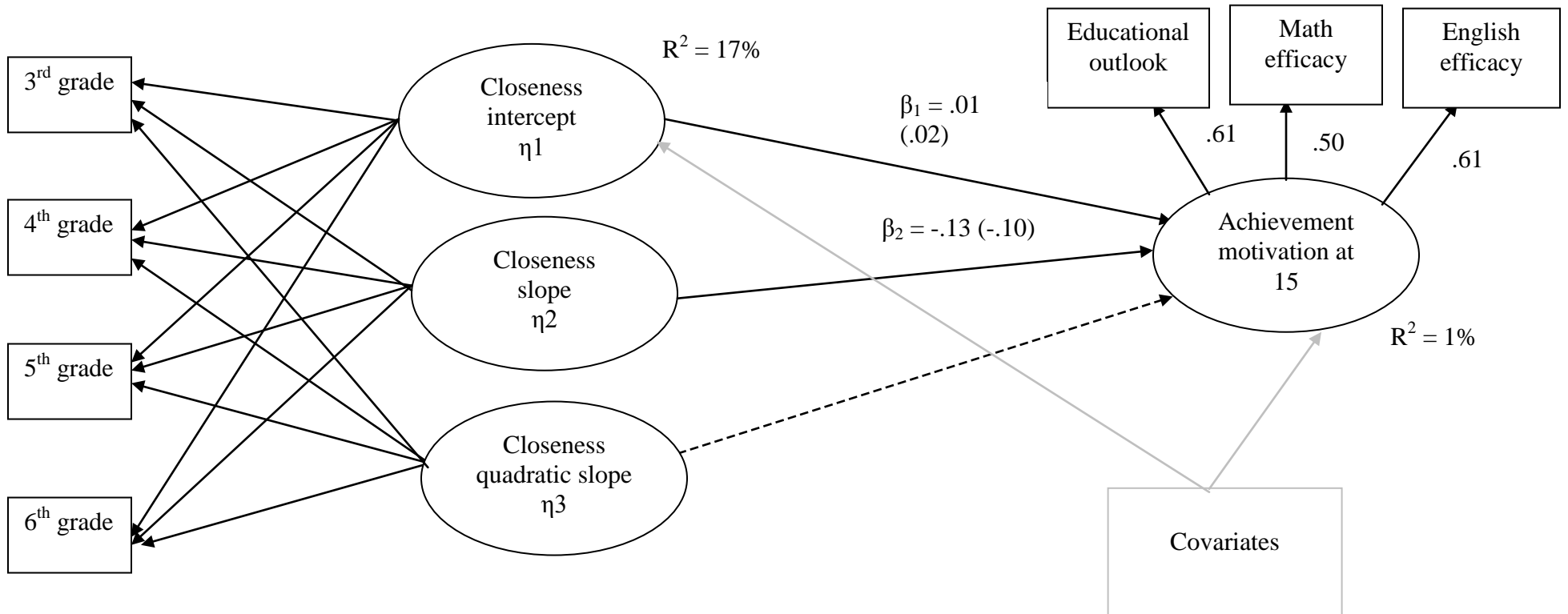
Figure 4.

Unstandardized Parameter Estimates (Standardized Estimated in Parentheses) of the Fitted Latent Growth Curve Model with Conflict Predicting Achievement Motivation, Controlling for Income, Mother's Education, Academic Achievement, Child Gender, Internalizing Behavior, Externalizing Behavior, Child Race, and Parental Involvement, (χ^2 (df) = 352. 68 (109); CFI = .91; TLI = .85; RMSEA = .040; SRMR = .037.
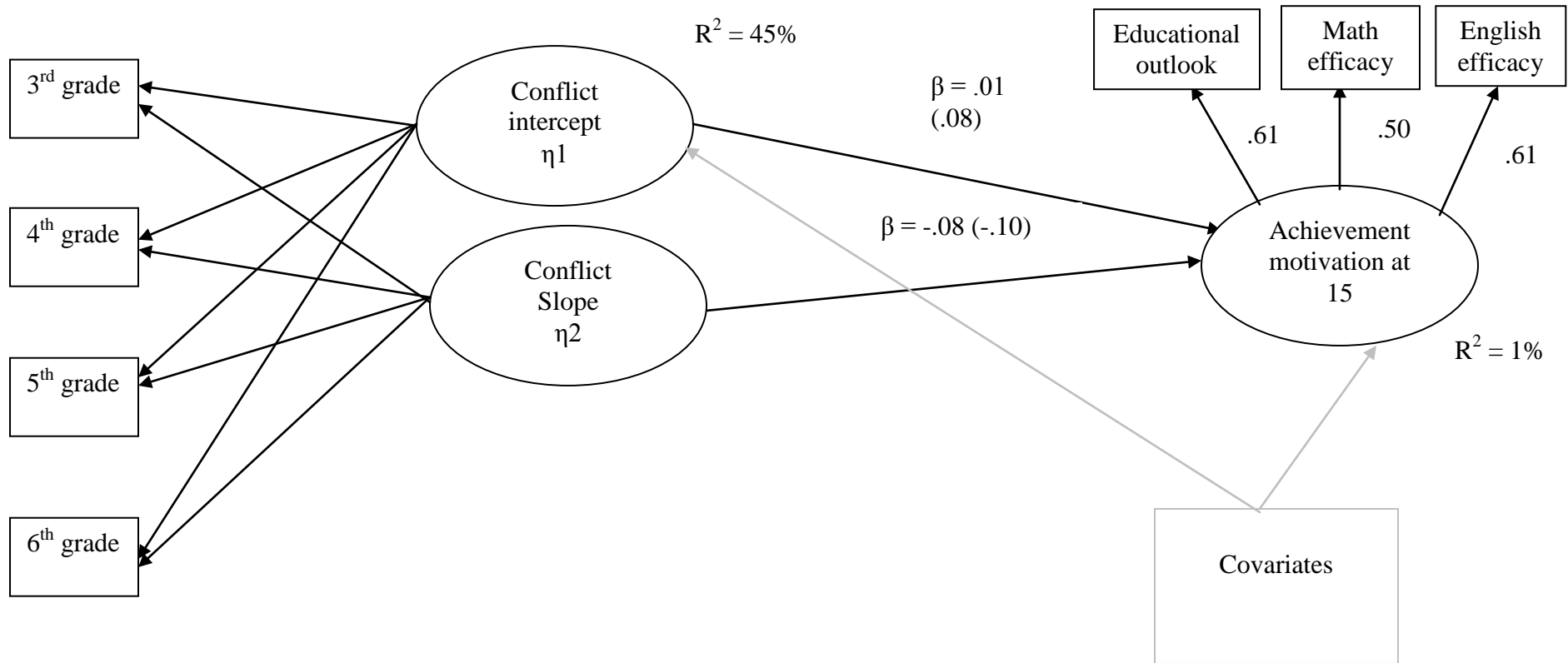
V. Discussion

The major goals of this study were to: (1) examine changes in teacher-child relationship quality from third grade to sixth grade; (2) explore child and teacher characteristics associated with initial levels and rate of change in closeness and conflict; and (3) determine whether these change trajectories predicted achievement motivation when students were in high school. Consistent with previous findings, children evidenced declines in both closeness and conflict with their teachers over time; however there was considerable variation across children in initial levels and rate of change for both measures. Some children evidenced relationships characterized by very low levels of closeness and/or conflict while others experienced very high levels. Moreover, differences among children in closeness and conflict at fifth grade confirmed many of my predictions. Results showed higher levels of closeness for girls, children with low levels of internalizing behavior problems, and children with high social skills, after controlling for income, mother's education, and achievement. Teachers with higher self-efficacy also reported higher levels of closeness. Boys, African-American children, and children with high levels of behavior problems, both internalizing and externalizing, had higher levels of conflict in the fifth grade. The rate of change in closeness and conflict also varied among children but, for the most part, individual differences in slope were not predicted by variables in the models.

A unique contribution of the current study to the literature is the examination of the long-term outcomes associated with teacher-child relationship quality change trajectories. Results showed that neither initial levels nor rate of change in closeness and conflict from third grade to sixth grade predicted achievement motivation in high school. However, higher levels of parental involvement at age 15, as reported by students, predicted higher levels of achievement motivation, concurrently.

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Trajectories of closeness and conflict

Using individual growth modeling, I found that on average, both closeness and conflict declined from third to sixth. More specifically, children experienced a decrease of 1.11 and .13 points per year, respectively, on the closeness and conflict subscales of the Student Teacher Relationship Scale (STRS; Pianta et al., 1995). In addition, the statistically significant quadratic term for closeness indicated that children experienced a greater deceleration in closeness across the later years of school. It should be noted that although closeness and conflict declined over time in this sample, teachers tended to report having moderately high initial levels of closeness and relatively low levels of conflict with students in fifth grade.

These findings are in line with other studies that have examined stability in teacher-child relationship quality (Baker, Blacher, & Eisenhower, 2009; Howes, 2000; Howes & Hamilton, 1992b; Pianta & Stuhlman, 2004) including more recent studies that have utilized growth modeling to analyze *how* this change occurs over time (O'Connor, 2010; O'Connor & McCartney, 2006; 2007). For example, Jerome and colleagues (2009) analyzed changes in closeness and conflict over time in a sample of children from kindergarten to fifth grade. The researchers found that both conflict and closeness decline over time; however there was a curvilinear effect for each variable. More specifically, closeness decreased from kindergarten to fifth grade, with greater rates of decline in closeness over the later years of schooling while conflict increased from kindergarten to third grade and then declined from third grade to fifth grade.

Results from the current study indicate that as children move through elementary school, the quality of their relationships with their teachers become less conflictual but also less close over time (Pianta & Stuhlman, 2004. The decline in closeness between teachers and student may

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be attributed to various reasons including the structure of middle school and the importance of other social relationships.

The structure of middle schools reduces opportunities for adolescents to form close relationships with their teachers. For example, during middle school, students begin to change classes for many of their subjects, rotating between more than 6 teachers daily, causing decreased amount of contact with a single teacher (Baker, 2006). Consequently, it is not uncommon for teachers to work with several groups of students each day and seldom teach the same student for more than one year. Furthermore, the interactions between teacher and student usually focus on academic content or on disciplinary issues, undermining the sense of closeness between early adolescents and their teachers (Baker, 2006).

As children move into early adolescence, other relationships such as peer networks, close friendships, and even romantic relationships become increasingly important. These relationships begin to surpass in importance relationships with adults other than parents (Bee & Boyd, 2004), including teachers, as primary sources of social support and contributors to adolescents' well-being. In addition, adolescents have the opportunity to interact with these peer groups more frequently and for longer periods of time than they do with their teachers (Akos, Hamm, Mack, & Dunaway, 2007).

Despite the statistically significant variation in the slopes of closeness and conflict, none of the variables in my models predicted this variation. My findings suggest that more was predicted in teacher-child relationship quality in fifth grade than in the rate of change in teacher-child relationship quality over time. This might be attributed to the predictors that were used in my models. Many of the variables I used were time invariant. Seventy-five percent of the variability in closeness and 55% of the variability in conflict was attributed to differences within-

individuals. This is a large amount of variability, much of which was not accounted for by the variables in my analyses. These findings highlight the need to explore other time-varying predictors not analyzed in this study such as children's sleep patterns and mental health status, which have been shown to vary over time (Ohayon, Carskadon, Guillenment, & Vitiello, 2004; Park, Fertig, & Allison, 2011).

Child gender. As predicted, teachers reported higher levels of closeness and lower levels of conflict in their relationships with girls in the 5th grade. These results are in line with those of other studies which have consistently found gender differences in teacher-child relationship quality, even after controlling for other child and family level variables including: age, race, socio-economic status, and behavioral problems (Jerome, Hamre, & Pianta, 2009; Masburn, Hamre, Downer, & Pianta, 2006).

It has been suggested that gender differences in teacher-child relationship quality may be attributed to the *gender role socialization perspective*. According to this perspective, girls are expected to develop relationships that are greater in intimacy and affiliation, which is consistent with closeness in the teacher-child relationship (Maccoby, 1998). Additionally, girls may have a greater advantage in developing emotionally vested relationships with their teachers because they are more relationally attuned than boys during development (Baker, 2006). It has also been suggested that boys display more conflict-related behavior such as aggression which is generally less acceptable for girls (Roorda et al., 2011).

Despite differing in levels of closeness and conflict in fifth grade, on average, boys and girls in this sample did not differ significantly in their rates of decline of closeness and conflict. On the contrary, Jerome, Hamre, and Pianta (2009) found that the slope in closeness was predicted by gender such that compared to girls, boys evidenced greater decreases in closeness

over the later years of elementary school. Although I did not find support for my hypothesis that closeness in boys' relationships with teachers would decline faster over time than it does for girls, this does not negate the finding that overall, boys tend to be less close to their teachers as well as have more conflict with them. It may be particularly important for teachers to monitor the emergence of early conflict in their relationship with boys and to take steps to ameliorate these difficulties.

Child race. My findings regarding race and teacher-child relationship quality were mixed. Teachers reported higher levels of conflict in fifth grade with African-American children; however, there were no differences in levels of closeness by child race. Furthermore, I did not find support for my hypothesis that there would be faster rates of decline in closeness for African-American children. While there is a consistent finding in the literature that African-American children tend to have less positive relationships (i.e., lower levels of closeness and teacher support) with their teachers than do White or Hispanic students (Hamre & Pianta, 2001; Hughes, Gleason, & Zhang, 2005; Yiu, 2010), the results of the current study along with others (Jerome et al., 2009; Murray & Murray, 2004) seem to suggest that African-American children are as close to their teachers as are Caucasian children. However, they experience more conflict in their relationships. Murray and Murray (2004) found that teachers, regardless of their race, reported the highest levels of conflict in their relationships with African-American children in 3rd, 4th, and 5th grade. Child race was not a significant predictor of closeness in the study. Additionally, Jerome, Hamre and Pianta (2009) examined child race as predictors of closeness and conflict trajectories from kindergarten to sixth grade. Individual growth modeling revealed higher initial levels of conflict in kindergarten for African-American children but initial levels of

closeness did not vary by child race. The authors did find, however, that African-American children had a faster rate of growth in conflict than Caucasian children.

It is not exactly clear why teachers in the current study, as well as in the others, tended to report higher levels of conflict with African-American children but similar levels of closeness. This seemingly paradoxical finding might mean that teachers feel average levels of warmth and affection with African-American children at one moment but then abruptly shift to higher levels of anger and hostility. This is not without merit as it has been suggested that it is difficult for African-American students and their teachers to form cohesive relationships due to the social, economic, and cultural gaps between them (Wimberly, 2002). Furthermore, the attitudes and beliefs teachers form about children who are different from them ethnically influences how they interact with these students (Pigott & Cowen, 2000).

The small numbers of Hispanic ($N = 83$) and Asian students ($N = 19$) in this sample only allowed for one comparison: African-American versus Caucasian children. Hispanic students make up one of the three largest ethnic groups in U.S. schools (Hughes, Gleason, and Zhang, 2005). Furthermore, according to the U.S. Census Bureau (2010), Asians are the fastest growing racial group. Yet in the studies that have examined race and teacher-child relationship quality, Hispanic and Asian students have not been the focus of inquiry. Additional research is needed with larger samples of Hispanic and Asian children. Moreover, larger sample sizes would increase the statistical power needed to detect differences in teacher-child relationship quality among Hispanic, Asian, African-American, and Caucasian children (Meehan, Hughes, & Cavell, 2003) making a significant contribution to the literature.

Child behavior problems. I hypothesized that teachers would report lower levels of closeness in fifth grade with children who were rated by their mothers as having higher levels of

internalizing behavior problems. I also hypothesized that teachers would report higher levels of conflict in fifth grade with children who were rated by their mothers as having higher levels of externalizing behavior problems. I also expected faster rates of decline in closeness for children with higher levels of externalizing behavior problems. My hypotheses were only partially supported. Specifically, children whose mothers reported higher levels of internalizing behavior problems experienced lower levels of closeness in 5th grade, controlling for child gender, child race, academic achievement, mother's education, and income. In addition, children with higher levels of externalizing behavior problems, as reported by mothers, were rated as having higher levels of conflict with teachers in 5th grade, also controlling for child gender, child race, academic achievement, mother's education, and income. The slopes for closeness and conflict were not predicted by either internalizing or externalizing behavior problems.

The finding that internalizing behavior problems was related to lower levels of closeness is not surprising and corroborates other findings in the literature on children's behavioral orientation and teacher-child relationship quality. For example, in a large, ethnically diverse sample of first through fifth grade students, Yiu (2012) found that on average, as students' internalizing behavior ratings increased by one standard deviation above the grand mean, teachers rated them almost a third of a standard deviation lower on closeness.

Additionally, Ladd and Burgess' (1999) study of aggressive, withdrawn, and aggressive/withdrawn children found that teachers rated the withdrawn children as being less close in kindergarten. Both Yiu (2010) and Ladd and Burgess (1999), however, used teacher reports of behavior problems. Thus, the associations between teacher–child relationship quality and children's behavioral problems could be inflated due to shared method variance. Because I used mothers' reports of behavior problems, the findings from my study may be more robust.

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Children evidencing higher levels of internalizing behavior problems are considered overly-controlled, showing various symptoms including anxiety, social withdrawal, and depression (Sourander & Helstela, 2005). These children can be more difficult to notice because they typically don't draw attention to themselves (Brophy & Rohrkemper, 1989). Teachers often overlook children with internalizing behavior problems because they exhibit behaviors consistent with characteristics of the *ideal* student: quiet and compliant (Walker, Ramsey, & Gresham, 2004.) Therefore, they may go unnoticed and receive little attention, making it difficult for teachers to develop close relationships with them.

What was unexpected in the current study was the finding that teachers reported higher levels of conflict in 5th grade with students whose mothers reported higher internalizing problems. There have only been a few reports in the literature with similar results. Yiu (2010) found a positive association between internalizing behaviors and student-teacher conflict ($r = .26$). Arbeau, Copeland, and Weeks (2010) explored teacher–child relationship quality and socio-emotional adjustment in a sample of first grade students. In the study, the *anxiety-fearful* and *asocial with peers* subscales of the Child Behavior Scale were used as measures of social-emotional adjustment. The authors found that higher levels of conflict were modestly correlated with higher levels of anxiety ($r = .25$) and higher levels of asocial behavior ($r = .17$). And in a sample of Swedish elementary school students, children with higher levels of internalizing behaviors experienced more conflict in their relationships with teachers than did children who had no behavior problems (Henricsson & Rydell, 2004). One interpretation of this finding is that because children who display higher levels of internalizing behaviors seldom initiate social interactions or call attention to themselves, teachers must be proactive in their efforts to reach out to these children, get to know them, and initiate activities with them (Brophy & Rohrkemper,

1989). Children who want to be left alone may then become distressed by teachers' efforts to help them. As a result, teachers become frustrated at having to sustain their efforts without any form of reciprocation or effort from the children themselves (Brophy & Rohrkemper, 1989). Brophy and Stevenson (1981) assert that teachers tend to reject children with disturbing behavior and respond to them with more punishment and harshness than other children.

Another possible explanation for these findings is that I did not exclude children who were both aggressive and withdrawn. In a longitudinal investigation of children's behavioral characteristics that place them at risk for relational difficulties with teachers and peers, Ladd and Burgess (1999) compared aggressive, withdrawn, and aggressive/withdrawn children to normative and matched control groups from kindergarten through second grade. The authors found that after controlling for child and family variables (i.e. family/child ethnicity, family income, and parents' SES), children who were both aggressive and withdrawn experienced greater levels of conflict than either of the other groups.

I expected teachers to report that they experienced lower levels of closeness and higher levels of conflict with children evidencing higher levels of externalizing behavior. Only partial support was found for this hypothesis. My results revealed that when controlling for all other variables in the model, higher mother reported externalizing behavior problems predicted higher levels of conflict in 5th grade but not lower levels of closeness. This is in line with results from other studies (e.g., Murray & Murray, 2004; Yiu , 2010). In Murray and Murray's (2004) study of teacher-child relationship quality and child level correlates, the authors found that students rated as greater in externalizing symptomology had greater teacher-perceived conflict, but not lower levels of closeness, after controlling for student demographics and student achievement variables (i.e. e., tardiness, absences, and effort). Unlike my study, however, Murray and Murray

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did not use parent report of behavior problems but rather, used teacher-reports. Jerome, Hamre, and Pianta (2009) who did use maternal reports of externalizing behavior had similar findings to Murray and Murray (2004). Individual growth modeling revealed that mother reported externalizing behavior problems at 54 months predicted higher initial levels of conflict, but not lower levels of closeness, in kindergarten.

Externalizing behavior problems tend to be the strongest predictor of student-teacher conflict (Birch & Ladd, 1998; Ladd et al., 1999; Murray & Greenberg, 2000; Murray & Murray, 2004). These behaviors, such as disobedience, aggression, and deliberate rule violation require more attention from teachers because they are disruptive to classroom activities, cause problems between peers, and make it difficult for teachers to do their jobs (Chenier, 2010; LaPointe, 2003). It has been suggested that students' inability to meet the classroom demands of behavioral regulation and teachers' constant disruptions to deal with this behavior leads to heightened conflict between students and teachers (Baker, 2006). Furthermore, child behavior problems have been found to be associated with teachers' emotional exhaustion and burnout (Hastings and Brown, 2002).

Based on the findings for both externalizing and internalizing behavior problems, early intervention efforts aimed at enhancing children's psychosocial functioning by addressing current behavior problems and helping to prevent future behavioral problems are warranted. Considerable evidence exists that providing parent training and education programs for families of young children is an effective means for directly reducing child behavior problems (Feinfield & Baker, 2004).

When asked to identify students exhibiting emotional or behavioral problems, teachers often miss those exhibiting higher levels of internalizing behavior problems because the signs are

often difficult to detect (Smith, 2011). This is problematic given the finding in this study that teachers reported higher levels of conflict and lower levels of closeness with children evidencing higher levels of internalizing problems, as reported by their mothers. Therefore, it is necessary to provide training for teachers and school mental health professionals on the identification of signs and symptoms of internalizing behaviors that may go unrecognized, leaving children without the appropriate intervention (O'Connor, Dearing, & Collins, 2011; Smith, 2011).

Child social skills. As predicted, teachers in 5th grade reported higher levels of closeness with children whose mother's rated them higher in social skills, controlling for all other variables in the model. I did not however, find faster rates of decline in closeness for children with lower social skills. These results are similar to other findings in the literature (Birch & Ladd, 1997; Hamre & Pianta, 2001). In Eisenhower et al.'s study (2007), teachers reported lower closeness with children who had poor social skills, independent of behavior problems. Additionally, in Blacher, Baker, and Eisenhower (2009)'s study of teacher-child relationship quality with elementary school students with and without intellectual disabilities, the researchers found that closeness was strongly predicted by higher levels of social skills whereas high levels of conflict were not predicted by lower levels of social skills, controlling for behavior problems.

Social competence, a broad construct encompassing many related skills, refers to a child's ability to have positive relationships with peers and adults (Raver & Zigler, 1997). Engaging in social interactions with peers such as sharing, helping, and taking initiatives, may make children more likely to be adept at interacting in positive ways with teachers. My findings suggest that although children who lack such skills do not develop close relationships with their teachers, they also do not suffer more conflict in their relationships. However, the benefits of having a close relationship with teachers are well documented in the literature. Specifically,

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children who have close relationships with their teachers tend to like school more, have fewer behavior problems, and perform better academically (Palermo, Hanish, Martin, Fabes, & Reiser, 2007). Providing teachers with professional development opportunities to learn more about dealing with children who lack social skills may prove to be an effective way at fostering close relationships.

Teacher education and experience. A review of the literature did not reveal any studies that have examined child and teacher characteristics together as predictors of closeness and conflict trajectories. Contrary to my expectations, I did not find evidence that teacher education and experience were related to teachers' perception of closeness and conflict in their relationships with children. Additionally, I did not find evidence that children who had teachers with lower levels of education and more experience would evidence faster rates of decline in closeness. This finding has significance for two reasons. First, studies have not typically examined the direct link between teacher education and experience and teacher-child relationship quality but rather, have drawn inferences based on the link between teacher education and experience and the quality of interactions between teachers and children (e.g. Elicker & Fortner-Wood, 1995; National Child Care Staffing Study, 1997). And second, studies that have examined associations between teacher education and teacher-child interactions have typically used preschool samples (e.g. Pianta et al. 2005). For example, the National Child Care Staffing Study found that preschool teachers with college degrees demonstrated greater sensitivity to children and less harshness and detachment.

I did not find that teacher education was related to teacher reports of closeness and conflict in their relationships with students but this might be attributed to the way that "education" was conceptualized. When referring to education, this study, as well as others,

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generally considers a college degree as teachers' primary form of education. Consideration is

not given to continuing education courses and professional development that teachers receive

throughout their careers. According to Kedzior (2004), positive changes occur in teachers'

classroom practices when they receive sustained, high quality professional development.

Teachers in elementary and middle school undergo professional development throughout their

careers, yet little is known how these educational experiences might influence the quality of the

relationships teachers develop with their students.

Another possibility regarding the lack of association between teacher education and

trajectories of closeness and conflict might be the variation in teacher education in this sample.

The coefficient of variation (COV) for the teacher education variables ranged from 24.75 to

26.04, indicating that there was not a great deal of variation in teachers' education in this sample.

K – 12 public school teachers are required to attain at least a Bachelor's degree (Early et al.,

2006; Pianta, La Paro, Payne, Cox, & Bradley, 2002) while there is significant variation in the

level of education of preschool teachers. It is plausible that this variation is why teacher

education is linked to teacher interactions in preschool samples but not in elementary and middle

school samples.

Previous findings regarding the role of teacher experience and teacher-child relationship

quality are inconsistent, with some studies demonstrating negative associations between teacher

experience and closeness to students (Mashburn et al., 2006), and others finding no significant

association (Battistitch et al., 1997). Mashburn and colleagues found that teachers with more

years of teaching experience rated children as having less closeness with teachers. This contrasts

my finding that teacher experience was not associated with closeness. This may reflect a

difference in the types of teachers in the two samples—Masburn et al.'s sample was comprised

of pre-kindergarten teachers, whereas my sample was comprised of third through sixth grade teachers. Although the sample in Battistitch et al. (1997) was upper elementary school students, the researchers used child-reported measures of teacher emotional support, rather than teacher-reported measures of relationship quality.

Perhaps experience is not as important to closeness and conflict as other variables not addressed in this study such as teachers' attitudes, emotional states, and personality traits (e.g. extraversion). Findings from Pianta et al. 2005 suggest that teachers' authoritarian attitudes are associated with their own conflict-inducing behaviors such as negativity and low sensitivity in the classroom. In Valencic (2001), teachers who reported high levels of extraversion were rated by students as more caring. Additionally, Parkay (1980) found that personality was indicative of teaching style in different groups of teachers: one group of teachers emphasized teacher-determined rules, leading to conflict with students while another group expressed care and concern with students, developing warm and supportive relationships with them.

Due to the limitations of the data, I am not able to test whether other variables such as teachers' attitudes or personality traits are stronger predictors of closeness and conflict than are education and experience. Thus, my findings underscore the need for replication efforts using some of the aforementioned variables.

Ethnic match. Despite my predictions, results showed no significant differences in levels of closeness and conflict based on ethnic match between children and teachers. This finding is consistent with some studies (Ewing & Taylor, 2009; Rey et al. 2007) but not with others (Saft & Pianta, 2001; Yiu, 2010) and indicates that racial congruence between teachers and students is not predictive of teacher-child relationship quality in this sample. Specific hypotheses regarding the ethnic match and the rate of change in closeness were not advanced.

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Nevertheless, children who matched their teachers ethnically did not experience less rapid declines in closeness over time.

Ewing and Taylor (2009) examined the role of ethnic match on teacher-child relationship quality in a sample of Head Start classrooms. There were no significant differences in teacher-child relationship quality between children who did or did not match their teacher ethnically. However, the number of teachers who matched ethnically with their students was relatively small (i.e., less than 25). In Rey et al. (2007) there were no significant teacher-race effects on either the child or teacher reports of their relationship quality; however, the researchers note that the study was not designed to look at the effects of teacher race and "caution interpretation of these race-related findings" (p.360).

On the contrary, Saft and Pianta (2001) found that when students and teachers did not share ethnic backgrounds, teachers were more likely to perceive their relationships with students less favorably (i.e., less closeness and more conflictual). This is consistent with other studies (e.g., Howes & Shivers, 2006; Yiu, 2010; and Zimmerman et al., 1995) who found that teacher-child ethnic match was associated with greater closeness.

Given the inconsistencies in the findings regarding ethnic match, matching teachers and children solely on ethnic backgrounds may not be an effective strategy for enhancing teacher-child relationship quality. Furthermore, this may not be practical in the classroom setting (Meehan, Hughes, & Cavell, 2003). Helping teachers to understand and appreciate the ethnically diverse cultures within their classrooms may be a better alternative.

Gender match. Due to the small number of male teachers included in studies, little research has examined the effect of teacher gender and/or gender match on teacher-child relationship quality (Yiu, 2010). In my sample, the number of male teachers from third to sixth

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grade ranged from 61- 138; however the N's for gender match between male students and male teachers ranged from 31 – 68. I did not find evidence of gender match predicting of teacher reported closeness and conflict in fifth grade. As with ethnic match, there was no effect of gender match on the rate of change in closeness. My findings suggest that in this sample, girls in fifth grade with female teachers and boys in fifth grade with male teachers do not experience higher levels of closeness in their relationships. Although teachers on average felt closer to female students, the interaction between teacher and student gender was not significant, after controlling for all other variables in the model (i.e., child race, behavior problems, child social skills, mother's education, income, cognitive abilities, and characteristics of teachers). One explanation is that there was not enough variance left to be predicted by teacher-gender match after all other variables were included in the models. Another possibility is that although on average teachers report closer relationships with girls, the interaction between teacher and student gender is just not a significant predictor of teacher-child relationship quality.

Interpersonal similarity has been theorized to be a significant predictor of how much people like each other (Bates, 2002; Clark & Lemay, 2010) and has been conceptualized in at least two distinct ways: demographic similarity and attitudinal similarity (Bates, 2002). Demographic similarity refers to the similarity of individuals along characteristics such as gender, race, education level, etc. while attitudinal similarity refers to perceived similarity in terms of attitudes, values, and perspectives (Fawcett & Markson, 2010). My results regarding ethnic and gender match between teachers and children suggest that in this sample, on average, demographic similarity is not predictive of teachers' perception of closeness with students.

Teacher self-efficacy. Of the teacher variables included in the growth models (i.e., gender, race, education, experience, and self-efficacy), only teacher self-efficacy emerged as a

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significant predictor of teacher-child relationship quality. As expected, teacher self-efficacy in fourth and fifth grades was positively associated with higher levels of closeness in 5th grade. Teacher self-efficacy in third grade was not predictive of closeness in fifth grade. Contrary to what was hypothesized, however, there was not a less rapid decline in closeness based on teacher's self-efficacy. In O'Connor (2010), children whose teachers reported higher levels of self-efficacy experienced less rapid declines in the quality of their relationships from first through fifth grade. Teachers with high self-efficacy also reported having higher quality relationships with students in fifth grade. It should be noted, however, that O'Connor used average self-efficacy scores while I used self-efficacy scores at third, fourth, and fifth grade. This might be why there were differences in our findings regarding the association between teacher-child relationship quality and teacher self-efficacy.

My results suggest that teachers with higher levels of self-efficacy have relationships with children characterized by higher levels of closeness, both concurrently and longitudinally. According to Bandura (1982), self-efficacy beliefs are important determinants of whether or not a person will expend effort on a task and persist in the face of difficulty. Highly-efficacious teachers tend to work harder with struggling students; they tend to be less critical of student mistakes; and are more willing to take risks (Knoblauch & Hoy, 2008). In addition, Skaalvik and Skaalvik (2010) found that teachers with high self-efficacy tend to collaborate constructively with parents of students with behavioral problems. So perhaps highly efficacious teachers chose to build close relationships with students, even when it is difficult to do so.

Teacher-self efficacy has been found to be predicted by teacher experience, support, and mentoring (Capa & Hoy, 2005), yet a review of the literature did not yield empirical studies examining how teacher-child relationship quality might influence teacher self-efficacy. In

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addition, Hoy and Spero (2005) found that teacher self-efficacy declined during the early years of teaching; however studies have not examined changes in teacher self-efficacy as a function of change in teacher -child relationship quality, or vice versa. Therefore it is not clear whether closeness in teacher-child relationships and teacher self-efficacy mutually influence each other. Additional longitudinal research aimed at addressing these issues will enable researchers to better understand the direction of effects.

Predicting achievement motivation

A significant contribution of the current study to the extent literature is the examination of closeness and conflict change trajectories from third grade to sixth grade as predictors of outcomes in high school, namely achievement motivation. Contrary to my expectations, teacher-reported closeness and conflict in 5th grade did not predict achievement motivation when students were fifteen. Furthermore, the rate of change in closeness and conflict from third grade to sixth grade did not predict achievement motivation. Based on my findings, declining relationship quality with teachers during late elementary and early middle school is not predictive of how motivated students feel in high school. This finding was surprising since it is well documented in the literature that declines in teacher-child relationship quality are linked to lower levels of motivation (Baker, 2006; Midgley, Feldlaufer, & Eccles, 1989). However, to my knowledge, only one study has examined how change trajectories of teacher-child relationship quality are related to later outcomes. Using the NICHD-SEYYD, O'Connor and McCartney (2007) found that that declines in closeness were associated with lower achievement in third grade. Differences in outcome variables (i.e. achievement vs. achievement motivation) may be why trajectories of teacher-child relationship quality were related to one outcome but not the

other. However, my results are reassuring as they suggest that the effects of change in teacher-child relationship quality are short-term, given limited evidence of their effect in high school.

Several possibilities exist as to why I did not find support for my hypotheses that change in closeness and conflict from third to sixth grade would predict achievement motivation in high school. It is plausible that trajectories of closeness and conflict are not predictive of achievement motivation but may be of other outcomes. Additional studies might consider examining a wider range of academic outcomes that are markers for school success including performance in specific subject areas, classroom engagement, and attendance (Hughes & Kwok, 2007; Furrer & Skinner, 2003).

It is important to emphasize that there is no exact definition of achievement motivation in the literature. According to Schunk (2000), definition influences measurement and interpretation. It is quite possible that the latent construct created for achievement motivation in this study did not adequately tap all the aspects of motivation most relevant to the research questions in this study. In a review of the literature on motivation in student learning, Knowles and Kerkman (2007) identify several ways in which student motivation can be measured including "depth of study process." So perhaps a more telling index of how motivated students are is how much time they spend studying or their persistence in academic studies.

Another possibility for my lack of findings may be the variation in achievement motivation itself. The COV for each of the indictors of achievement motivation ranged from 15 to 22.96, thus indicating little variation in achievement motivation for the students in this sample. Children in the NICHD-SECCYD were from homes that were above average in terms of income and maternal education (O'Connor, 2007). Students from economically advantaged homes tend to report higher levels of motivation than their peers in low-income communities

(Strobel & Bursato, 2010). Thus, the results of my study may reflect a "ceiling effect" in which students are already highly motivated and teacher-child relationship does not make a unique contribution to the prediction of achievement motivation. Although I controlled for income and mother's education status, it is not possible to control for all factors that may be attributed indirectly to socioeconomic status such as tutoring (Orr, 2003).

An interesting finding was that at age 15, higher levels of parental involvement predicted higher levels of achievement motivation. When parents are actively involved in their child's schooling whether through parent-teacher conferences, attending school events or supervising homework, children tend to be more strongly motivated (Bee & Boyd, 2004); however studies have consistently reported declines in parent involvement with considerably lower levels of parental involvement in high school (Xu, 2002). The results of the current study indicate that although parental involvement may decline, it remains a significant source of support and guidance for adolescents (Bee & Boyd, 2004). It should be noted that adolescents in this study reported mid- to high-levels of parental involvement. This sample was also comprised of a large number of parents with college degrees and higher than average socioeconomic status (SES). According to McDermott and Rothenberg (2000), low-income urban parents are more reluctant to become involved in their children's schooling. Future studies should include a more diverse sample of parents in terms of SES and geographic region (e.g., urban or rural) to examine whether the current findings hold with more diverse samples.

Limitations and Future Directions

An inherent limitation of secondary data analysis is that the researcher must use the measures selected by the original research team. In the current study, the way in which achievement motivation was measured was certainly a shortcoming. The How I Do in School

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measure was created specifically for the NICHD-SECCYD and has not been validated in any samples outside of that used for the current study. There were no other measures for achievement motivation in the dataset, making it difficult to establish criterion and concurrent validity.

In addition, the How I Do in School survey which was used to assess achievement motivation, included questions regarding student's beliefs about the likelihood that they would finish high school, attend college, and finish college. Two key factors have been found to significantly influence students' college decisions: parental expectations and parents' level of education (Masino & Hodapp, 1996). Parents who have attended college want their children to do so as well. In the NICHD-SECCYD, over 30% of mothers reported having some college and another 21% reported having a college degree. Therefore, when answering the questions on the How I Do in School survey, students may not have drawn on motivation but rather parental expectation.

Furthermore, the questions on the How I Do in School survey appeared to be aimed at capturing student performance. Thus, it may reflect more of students' desire to excel than their actual motivation. Including survey questions that directly asks students about their motivation to complete high school and college (e.g., How motivated are you to graduate from high school?) may prove to be a better index of motivation. It has also been recommended that other forms of assessing motivation be used in conjunction with questionnaires, including interviews with students themselves (Dela Rosa & Eskenazi, 2011) in order to obtain a more comprehensive and accurate picture of students' motivation.

It should also be noted that there was relatively little variance in achievement motivation for this sample, based on the low coefficient of variation (COV) for each indicator (i.e., Math

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efficacy, English efficacy, and educational outlook). With little variability to predict in

achievement motivation, it is not surprising that our hypothesis was not supported. Perhaps one

reason for this lack of variability was the composition of the sample. Study respondents were

primarily White, middle-class families. Although the sample did contain families who were

ethnic minorities, it was not representative of the African-American or Latino populations, which

comprise large portions of the American population. Furthermore, there were very few Asian

families in the sample ($N = 19$). Future studies examining achievement motivation should

consider including more ethnically and socioeconomically diverse families. This would not only

help to increase the variability of achievement motivation in those studies, but it would also

make the results more generalizable.

In the current study, we tested a direct effects model, namely teacher-child relationship

quality trajectories from third grade to sixth grade would predict achievement motivation at age

15. It possible that the two variables of interest were separated by too much time.. It is also

possible that teacher-child relationship quality predicts other variables such as peer relationships

which, in turn, predict achievement motivation. Future studies might include mediation models

to test both of these hypotheses directly.

Teachers rated the quality of their relationships with students. The importance of

teachers' perspectives cannot be denied. However, by using the Student Teacher Relationship

Scale (STRS) to assess teacher-child relationship quality, researchers only gain one person's

perspective of a dyadic relationship, namely that of the teacher. The literature would be

strengthened by studies using alternate measures of teacher-child relationship quality such as

observations of teacher-student interactions and/or student perspectives on the quality of their

relationships with their teachers.

And last, to reduce shared method variance, mothers reported on children's behavior problems and social skills. However, these measures are based on perception rather than objective indicators (Blacher, Baker, & Eisenhower, 2009). Incorporating observations of child behavior problems and/or social skills would strengthen the findings of future studies.

Implications and Conclusion

Overall, the results of this study are generally consistent with other findings in the literature regarding the decline in teacher-child relationship quality as children move through elementary and early middle school. Only one study was found in which closeness and conflict were examined separately (i.e., Jerome, Hamre, & Pianta, 2009). Prior studies on how teacher-child relationship quality changes over time have typically focused on total relationship quality, blurring the distinct trajectories of closeness and conflict over time (e.g., O'Connor, 2010; O'Connor & McCartney, 2007). Based on the findings of my study, there appears to be value in examining conflict and closeness separately because the correlates of these subscales varied. In the final growth models, closeness was predicted by both child and teacher characteristics while conflict was only predicted by child characteristics. This suggests that closeness may depend on a combination of child attributes and teachers' interpersonal style; conflict, on the other hand, may rely on stable child characteristics such as behavior problems (Pianta & Stuhlman, 2004).

I found that on average, teacher-perceived closeness and conflict in their relationships with students in fifth grade were influenced more by child and teacher characteristics than were the rate of change in closeness and conflict over time. However, under the assumption that children grow at similar rates, those who start with lower levels of teacher-reported closeness and higher levels of conflict will end with less closeness and greater conflict (Jerome, Hamre, & Pianta, 2009). This is particularly disconcerting for the groups of children found to experience

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lower levels of teacher-perceived closeness and higher levels of teacher-perceived conflict. More specifically, boys, African-American children, and children with higher level of behavior problems, both internalizing and externalizing, had relationships rated by teachers as higher in conflict. Children with lower levels of social skills, boys, and children with higher levels of internalizing behavior problems had relationships characterized by lower levels of closeness.

On average, children with higher levels of externalizing behavior problems were rated by teachers as having higher levels of conflict in their relationships in fifth grade. This is not surprising, given that externalizing behaviors, such as acting out and verbal or physical aggression, are more likely to elicit responses from teachers, due to the disruptiveness of such behaviors (Lane, 2003). Questions have been raised regarding the effectiveness of social skills training programs for children exhibiting behavior problems (Fisher, Calderella, Young, & Renshaw, 2007). Studies have found that even after aggressive children receive social skills training and their behavior improves, they still experience problems (Hughes, Cavell, & Wilson, 2001). An alternative that has not been explored is interventions that focus directly on addressing closeness in teacher-child relationship quality (Yiu, 2010). Teachers may be more capable of developing skills to help control their own positive and supportive interactions with children, particularly those with conduct problems (Hughes, Cavell, & Wilson, 2001), than in controlling their levels of conflict with children. More specifically, teachers might feel the need to correct disruptive behavior, which has the potential to lead to more conflict; however teachers may be able to learn how to be more proactive in initiating positive interactions with difficult children.

Internalizing behavior problems have been found to be negatively associated with psychological adjustment, academic performance, and physical health (Flook, Repetti, &

Ullman, 2005). Due to the covert nature of internalizing behavior, children and adolescents who experience these problems are often overlooked because they are considered "shy" and as a result, they often miss being referred for treatment (Marchant, et. al, 2007). This suggests that teachers may be insensitive to internalizing behaviors such as somatic complaints, anxiety, and depression (Chen et. al, 2003). However, in the current study, children who were identified by their mothers as having higher levels of internalizing behavior problems had lower teacher-perceived closeness and higher teacher-perceived conflict in fifth grade. This finding underscores the importance of not only providing prevention and intervention for children exhibiting such behavior but also helping teachers to identify them. By identifying students who are in need of additional support before behavior patterns are firmly established, teachers and school counselors can be proactive in assuring the likelihood of favorable outcomes for children experiencing internalizing behavior problems (Lane, 2003).

In the current sample, teachers rated their relationships with children of African-American status as higher in conflict in 5th grade. This finding is concerning since some reports estimate that minorities will comprise 54% of the U.S. population within the next 30 years (U.S. Census Bureau, 2008). These population changes make it imperative that teacher education programs adequately prepare teachers for working with diverse groups of students. When cultural identity is supported in the classroom, students begin to develop a greater sense of trust and respect for their teachers (Wimberly, 2002). Therefore, a deeper understanding of the impact culture has on behavior, learning styles, and preferred teaching styles may be needed to help teachers foster relationships low in conflict with African-American children.

Of the teacher variables in the models, only teacher self-efficacy was predictive of teacher-child relationship quality. More specifically, higher initial levels of closeness in fifth

grade were predicted by higher levels of teacher reported self-efficacy in fourth and fifth grades. This finding highlights the importance of cultivating strong efficacy beliefs in teachers. According to Tschannen-Moran and Hoy (2007), teachers' self-efficacy is "a little idea with big impact" (p. 24). Teachers' sense of self-efficacy has been consistently related to teacher behavior, student attitudes, and student achievement (Tschannen-Moran & Hoy, 2007). More information regarding how these beliefs are created and sustained throughout a teachers' career is crucial.

There was no evidence that the trajectories of closeness and conflict were associated with achievement motivation in high school, despite empirical evidence linking declines in teacher-child relationship quality and lower motivation during the transition to and through middle school (Ryan & Deci, 2000; Wentzel, 1998). However, caution should be taken when interpreting this finding. First, this is the only study to date that has examined the long-term effects of teacher-child relationship quality trajectories. Before it can be definitively said that declines in teacher-child relationship quality are of no long term consequence, future studies would benefit from replication efforts addressing the limitations outlined earlier. Namely, (1) identifying different and/or additional measures of achievement motivation; (2) using a more diverse sample in terms of ethnicity and socioeconomic status; and (3) using additional outcome measures.

And second, a lengthy and well-established literature has documented the associations between teacher-child relationship quality and child outcomes from preschool to high school (Birch & Ladd, 1997; Crosnoe, Johnson, & Elder, 2004; Hamre & Pianta, 2001; O'Connor & McCartney, 2007). Therefore, the importance of relationships between teachers and students characterized by low levels of conflict and high levels of closeness cannot be denied. Moreover,

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empirical evidence has shown that teacher-child relationship quality can serve as a compensatory resource for children at risk for maladaptive outcomes due to behavior problems, African-American status, or social skills deficits (Copeland-Mitchell, Denham, & DeMulder, 1997; Meehan, Hughes, & Cavell, 2003). For example, researchers have found decreases in children's aggressive behavior and increases in social skills deficits when they experienced relationships with teachers that were high in closeness (Blacher, Baker, & Eishenhower, 2007; Silver et al., 2005). Thus, the results from the current study suggest that it is critical to find ways of helping teachers connect with children who are at risk for developing lower quality relationships with them. Teacher education programs must take steps to ensure that teacher education programs include components to help teachers understand what child and teacher characteristics are associated with lower levels of closeness and higher levels of conflict. Increasing teacher awareness of behavioral and demographic characteristics known to influence teacher-child relationship quality may offer an important and underutilized avenue for helping teachers as they face increasingly heterogeneous classrooms.

References

Acharya, N. and Joshi, S. (2009) Influence of parents' education on achievement motivation of adolescents. *Indian Journal Social Science Researches, 6*, 72-79.

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.

Achenbach, T.M., & Edelbrock, C.S. (1983). *Manual for the Child Behavior Checklist*. Burlington: University of Vermont, Department of Psychiatry.

Achenbach, T. M., Edelbrock, C., & Howell, C. T. (1987). Empirically based assessment of the behavioral/ emotional problems of 2- and 3-year-old children. *Journal of Abnormal Child Psychology*, *15*, 629−650.

Ackerman, B.P., Brown, E., & Izard, C.E. (2003). Continuity and change in levels of externalizing behavior in school of children from economically disadvantaged families. *Child Development, 74*, 694 – 709.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation.* Hillsdale, N.J.: Erlbaum.

Akos, P., Hamm, JV, Mack, S.G., & Dunaway, M. (2007). Utilizing the development influence of peers in middle school groups. *Journal for Specialists in Group Work*, 51-60

Aldwin, C. M., Spiro, A., Levenson, M. R., & BossS, R. (1989). Longitudinal findings from the normative aging study: 1. Does mental health change with age? *Psychology and Aging, 4*, 295-306.

Alliance for Excellent Education (2010). *High school dropouts in America*. [Fact Sheet]. Retrieved from http://www.all4ed.org/files/HighSchoolDropouts.pdf.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261–271.

Anderman, L. H., & Anderman, E. M. (1999). Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology, 25*, 21-37.

Ang, R. (2005). Development and validation of the Teacher-Student Relationship Inventory using exploratory and confirmatory factor analysis. *The Journal of Experimental Education*, 74, 55 – 73.

Arbeau, K., Coplan, R., & Weeks, M. (2010). Shyness, teacher-child relationships, and socio-emotional adjustment in grade 1. *International Journal of Behavioral Development, 34*, 259 – 269.

Bajema, D., Miller, W., & Williams, D. (2002). Aspirations of rural youth. *Journal of Agricultural Education, 43*, 61 – 71.

Baker, J. A. (1999). Teacher-student interaction in urban at-risk classrooms: Differential behavior, relationship quality, and student satisfaction with school. *Elementary School Journal, 100*, 57-70.

Baker, J. (2006). Contributions of teacher-child relationships to positive school adjustment during elementary school. *Journal of School Psychology, 44*, 211-229.

Baker, B. L., Blacher, J., & Eisenhower, A.S. (2009) Student-teacher relationship stability across early school years for children with intellectual disability or typical development. *American Journal on Intellectual and Developmental Disabilities, 114*, 322-339.

Baker, J., Grant, S., & Morloch, L. (2008). The teacher-student relationship as a developmental context for children with internalizing or externalizing behavior problems. *School Psychology Quarterly, 23*, 3-15.

Bandura, A., (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, p.

    122-147.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.*

    Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bates, R. (2002). Liking and similarity as predictors of multi-source ratings. *Personnel Review,*

    31, 540 – 552.

Battin-Pearson, et. al (2000). Predictors of early high school dropout: A test of five theories.

    Journal of Educational Psychology, 92, 568 -582.

Battistich, V., Solomon, D., Watson, M., & Schaps, E. (1997). Caring school communities.

    Educational Psychologist, 32, 137-151.

Bee, H., & Boyd, D. (2004). *The developing child.* (10th ed.). Boston: Pearson.

Bellamy, N. (1994). Bias in the classroom: Are we guilty? *Science Scope, 17,* 60-63.

Belsky, J. (2009). Classroom composition, child-care history and social development: are

    child-care effects disappearing or spreading? *Social Development, 18,* 230-238.

Benware, C.A., & Deci, E.L. (1984). Quality of learning with an active versus passive

    motivational set. *American Educational Research Journal*, *21*, 755- 765.

Belsky, J. (2009). Classroom composition, child care history and social development: Are

    childcare effects disappearing or spreading? *Social Development, 18*, 230-238.

Berman, P., McLaughlin, M., Bass, G., Pauly, E., & Zellman, G. (1977). Federal programs

    supporting educational change. *Factors effecting implementation and continuation, Vol.*

    7. Santa Monica, CA: The Rand Corporation.

Birch, S. H. & Ladd, G. W. (1997). The teacher–child relationship and children's early school
    adjustment, *Journal of School Psychology, 35*, 61–79.

Birch, S.H., & Ladd, G.W. (1998). Children's interpersonal behaviors and the teacher–
    child relationship. *Developmental Psychology, 34*, 934–946.

Bogard, K., Traylor, F., & Takanishi, R. (2008). Teacher education and PK outcomes: Are we
    asking the right questions? *Early Childhood Research Quarterly*, 23, 1 – 6.

Borg, M.G. & Falzon, J.M. (1993). A factor analytic study of teachers' perception of pupils'
    undesirable behaviors: A rejoinder to Langfeldt (1992). *British Journal of Educational
    Psychology*, 63, 513 – 518.

Bowman, B., Donovan, M., and Burns, M. (Eds.). (2001). *Eager to learn: educating our
    preschoolers.* Washington, DC: National Academy Press.

Brooks-Gunn, J. & Duncan, G.J. (1997). The effects of poverty on children. In R. Behrman
    (Ed.), *The Future of Children: Children and Poverty, 7*, 55-71.

Brooks-Gunn, J., Guo, G., & Furstenberg, F. F., (1993). Who drops out of and who
    continues beyond high school? A 20-year follow-up of black urban youth. *Journal of
    Research on Adolescence, 3,* 271–294.

Brophy, J., and M. Rohrkemper. (1989). *Teachers' strategies for coping with perfectionist
    students.* Research Series No. 198. East Lansing, MI: Institute for Research on Teaching,
    Michigan State University.

Buhs, E. S., Ladd, G. W., & Herald, S. L. (2006). Peer exclusion and peer abuse: Processes that
    mediate the relation between peer group rejection and children's classroom engagement
    and achievement? *Journal of Educational Psychology*, *98*, 1-13.

Burgess, K. B., Wojslawowicz, J. C., Rubin, K. H., Rose-Krasnor, L., & Both-LaForce, C. (2006). Social information processing and coping strategies of shy/withdrawn and aggressive children: Does friendship matter? *Child Development, 77*, 71−383.

Busato, V.V., Prins, F.J., Elshout, E.J., & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher education. *Personality and Individual Differences*, 29, 1057 – 1068.

Buyse, E., Verschueren, K., Doumen, S., Van Damme, J., & Maes, F. (2008) Classroom behavior and teacher-child relationships in kindergarten: The moderating role of classroom climate. *Journal of School Psychology, 46*, 367-391.

Capa, Y., & Hoy, A. (2005). What predicts student teacher self-efficacy? *Academic Exchange Quarterly*, *10* (4).

Caprara, G., Barbaranelli, C., Borgogni, L,, & Steca, P.(2003). Efficacy beliefs as determinants of teachers' job satisfaction. *Journal of Educational Psychology, 95*, 821 – 832.

Caprara, G., Barbaranelli, C., Steca, P., & Malone, P. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology, 44*, 473-490.

Cassidy, C., Buell, M., Pugh-Hoese, S., & Russell, S. (1995). The effect of education in child care providers' beliefs and classroom quality: Year one evaluation of the T.E.A.C.H. early childhood associate degree scholarship program. *Early Childhood Research Quarterly*, 10, 171-184.

Cassidy, T., & Lynn, R. (1989). A multifactorial approach to achievement motivation: The development of a comprehensive measure. *Journal of Occupational Psychology, 62*, 301-312.

Chen et al. (2003). Parental reports of externalizing and internalizing behaviors in Chinese

    children: Relevancy to social, emotional, and school adjustment. *Journal of Psychology*

    in Chinese Societies, 3, 233 – 260.

Chenier, J.S. (2010). *A treatment components analysis in positive peer reporting for socially*

    withdrawn children. (Master's thesis). Retrieved from

    http://etd.lsu.edu/docs/available/etd-04132010-215312/unrestricted/Chenier_Thesis.pdf.

Cho, I. (2012). The effect of teacher-student gender matching: Evidence from OECD countries.

    Economics of Education Review, 31, 54 – 67.

Clark, M. S., & Lemay, E. P., Jr. (2010). Close relationships. In S. T. Fiske, D. T. Gilbert, & G.

    Lindzey (Eds.), *Handbook of social psychology* (5th ed., Vol. 2, pp. 898-940). Hoboken,

    NJ: John Wiley & Sons.

Cole, J. S., Bergin, D. A.,& Whittaker, T. A. (2008). Predicting student achievement for low

    stakes tests with effort and task value. *Contemporary Educational Psychology, 33*, 609-

    624.

Connell, J.P., & Halpern-Felsher, B.L. (1997). How neighborhood affect educational outcomes

    in middle childhood and adolescence: Conceptual issues and an empirical example. In

    Brooks-Gunn, J., Duncan, G.J., & Aber, J.L. (Eds.), *Neighborhood poverty: Context and*

    consequences for children (pgs. 174-199). New York: Russell Sage.

Cook, T. D., Church, M. B., Ajanaku, S., Jr., Shadish, W. R., Jeong-Ran, K., & Cohen, R.

    (1996). The development of occupational aspirations and expectations among inner-city

    boys. *Child Development*, 67, 3368-3385.

Cooney, T.M. & Radina, M.E. (2000) Adjustment problems in adolescence: Are multicultural

    children at risk? *American Journal of Orthopsychiatry, 70*, 433-444.

Croom, D. (2003). Teacher burnout in Agricultural Education. *Journal of Agricultural Education, 44*, 1-13

Croninger, R. G., and Lee, V. E. (2001). Social capital and dropping out of high school: benefits to at-risk students of teachers' support and guidance. *Teachers College Record, 103*, 548-581.

Crosnoe, R. (2004). Social capital and the interplay of families and schools. *Journal of Marriage and Family, 66,* 267-280.

Dela Rosa, K., Eskenazi, M. (2011). *Self-assessment of motivation: explicit and implicit indicators in l2 vocabulary learning.* Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011).

Davis, H. (2003). Conceptualizing the role and influence of student–teacher relationships on children's social and cognitive development. *Educational Psychologist, 38*, 207-234.

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: the indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19*, 294-304.

Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Deci, E. L., & Ryan, R. M. (2002). Self-determination research: Reflections and future directions. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 431-441). Rochester, NY: University of Rochester Press.

Decker, L., Gregg, G., & Decker, V. (1996). *Teacher's manual for parent and community involvement.* Alexandria, VA: National Community Education Association.

Denham, S.A., Workman, E., Cole, P.M., Weissbrod, C., Kendziora, K.T., & Zahn-Waxler, C. (2000). Prediction of externalizing behavior problems from early to middle childhood: The role of parental socialization and emotion expression. *Development and Psychopathology, 12*, 23 – 45.

DiPerna, J.C., & Volpe, R.J. (2005). Self-report on the Social Skills Rating System: Analysis of reliability and validity for an elementary sample. *Psychology in the Schools, 42,* 345-354.

Dohn, H. (1992). "Drop-out" in the Danish high school (gymnasium): An investigation of psychological, sociological, and pedagogical factors. *International Review of Education, 37,* 415-428.

Doumen, S., Verschueren, K., Buyse, E., De Munter, S., Max, K., & Moensi, L. (2009). Further examination of the convergent and discriminant validity of the student–teacher relationship scale. *Infant and Child Development, 18,* 502 – 520.

Duffy, J., Warren, K., & Walsh, M. (2001). Classroom interactions: Gender of teacher, gender of student, and classroom subject. *Sex Roles*, 45, 579–593.

Dunn, L.M., & Dunn, L.M. (1981). *Peabody Picture Vocabulary Test—Revised.* Circle Pines, MN: American Guidance Service.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040-1048.

Early, D.M., et al. (2006). Are teachers' education, major, and credentials related to classroom quality and children's academic gains in pre-kindergarten? *Early Childhood Research Quarterly*, *21*, 174 – 195.

Eaton, M. J., & Dembo, M. H. (1997). Differences in the motivation beliefs of Asian American and non-Asian students. *Journal of Educational Psychology, 89,* 443-440.

Ebesutani C., Brenstein, A., Nakamura, B.J., Chorpita, B.F., Higa-McMillan, C., & Weisz, J.R. (2010) Concurrent validity of the Child Behavior Checklist DSM-oriented scales: Correspondence with DSM diagnoses and comparison to syndrome scales. *Journal of Psychopathology and Behavioral Assessment, 32*, 373–384.

Eccles, J. S. (1999). The development of children ages 6-14. *The Future of Children, 9*, 30 - 44.

Eccles, J., J., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J., and Midgley, C. (1983). Expectancies, values and academic behaviors. In Spence, J. T. (ed.), *Achievement and achievement motives.* San Francisco: W. H. Freeman.

Eccles, J. S. & Harold, R. D. (1993). Parent-school involvement during the early adolescent years. *Teachers College Record, 94,* 568-588.

Eccles, J., Midgley, C., Adler, T. (1984). Grade-related changes in the school environment: effects on achievement motivation. In J. Nicholls (Ed.), *The development of achievement motivation*, (Vol. 3, pp. 282-331). Greeenwich CT: JAI Press.

Eccles, J. S., Midgley, C., Wigfield, W. D., Buchanan, C. M., Reuman, D., Flanagan, C., & MacIver, D. (1993). Development during adolescence the impact of stage environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48*, 90-101.

Eccles, J. S., & Wigfield, A. (1995). In the mind of the achiever: The structure of adolescents' academic achievement related-beliefs and self-perceptions. *Personality and Social Psychology Bulletin, 21*, 215–225.

Eccles, J. S., Wigfield, A., Midgley, C., Reuman, D., MacIver, D., and Feldlaufer, H. (1993b). Are traditional middle grades schools undermining the academic motivation of early adolescents? *Elementary School Journal, 93*, 553 – 574. 93: 553

Eisenhower, A.S., Baker, B.L., & Blacher, J. (2007). Early student–teacher relationships of children with and without intellectual disability: Contributions of behavioral, social, and self-regulatory competence. *Journal of School Psychology, 45*, 363–383.

Elicker, J., & Fortner-Wood, C. (1995). Research in review. Adult-child relationships in early childhood settings. *Young Children, 51*(1), 69–78.

Eurydice. (2004). *Integrating immigrant children into schools in Europe*. Brussels, Germany: Author.

Ewing, A.R., & Taylor, A.R. (2009). The role of child gender and ethnicity in teacher-child relationship quality and children's behavioral adjustment in preschool. *Early Childhood Research Quarterly*, *24*, 92 – 105.

Farmer, T.W., Dadisman, K., Latendresse, S.J., Thompson, J., Irvin, M. J., & Zhang, L. (2006). Educating out and giving back. Adults' conceptions of successful outcomes of African-American high school students from impoverished rural communities. *Journal of Research in Rural Education, 21,* 1-21.

Fawcett, C.A., & Markson, L. (2010). Similarity predicts liking in 3-year old children. *Journal of Experimental Child Psychology*, *105*, 345 – 358.

Feinfeld K.A., and Baker, B.L. (2004). Empirical support for a treatment program for families of young children with externalizing problems. *Journal of Clinical Child and Adolescent Psychology, 33*, 182-195.

Feldlaufer, H., Midgley, C., & Eccles, J. S. (1988). Student, teacher, and observer perceptions of

      the classroom environment before and after the transition to junior high school. *Journal*

      of Early Adolescence, 8, 133-156.

Flook, L., Repetti, R.L., & Ullman, J.B. (2005). Classroom social experiences as predictors of

      academic performance. *Developmental Psychology*, 41, 319–327.

Ford, D.Y., Alber, S.R., & Heward, W.L. (2005) Setting "motivation traps" for underachieving

      gifted students. In Susan K. Johnsen and James Kendrick (eds). *Teaching strategies in*

      gifted education. Waco, Texas: Prufrock Press, Inc.

Fredericks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from

      childhood through adolescence: Growth trajectories in two male-sex-typed domains.

      Developmental Psychology. 55, 519-533.

Friedman, I.A. & Farber, B.A. (1992). Professional self-concept as a predictor of teacher

      burnout, *Journal of Educational Research*, *86,* 28-35.

Furrer, C. & Skinner, E. (2003). Sense of relatedness as a factor in children's academic

      engagement and performance. *Journal of Educational Psychology, 95*, 158-162.

Gagné, F., & St Père, F. (2002). When IQ is controlled, does motivation still predict

      achievement? *Intelligence, 30*, 71–100.

Ginsburg, G. S., & Bronstein, P. (1993). Family factors related to children's intrinsic/extrinsic

      motivational orientation and academic performance. *Child Development, 64,* 1461-1474.

Gonzalez-DeHass, A.R., Willems, P., & Doan Holbein, M. (2005). Examining the relationship

      between parent involvement and student motivation. *Educational Psychology Review*.17,

      99-123.

Gottfried, A. E. (1990). Academic intrinsic motivation in young elementary school children. *Journal of Educational Psychology,* 82, 525-538.

Gottfried, A. E., Fleming, J. S., & Gottfried, A. W. (1998). Role of cognitively stimulating home environment in children's academic intrinsic motivation: A longitudinal study. *Child Development, 69,* 1448-1460.

Gottfried, A. E., & Gottfried, A. W. (1996). A longitudinal study of academic intrinsic motivation in intellectually gifted children: Childhood through adolescence. *Gifted Child Quarterly. 40*, 179-183.

Graham, J. W., & Hofer, S. M. (2000). Multiple imputation in multivariate research. In T. D. Little, K. U. Schnabel, & J. Baumert, (Eds.), *Modeling longitudinal and multiple-group data: Practical issues, applied approaches, and specific examples*. (201-218). Hillsdale, NJ: Erlbaum.

Gregory, A. & Weinstein, R. S. (2004). Connection and regulation at home and in school: Predicting growth in achievement for adolescents. *Journal of Adolescent Research*, *4,* 405-427.

Gresham & Elliott (1990). *Social Skills Rating System*. Circle Pines, MN: American Guidance Service.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy-support in education: Creating the facilitating environment. In N. Hastings & J. Schwieso (Eds.), *New directions in educational psychology, Volume 2: Behavior and motivation*. London, England: Falmer Press.

Grolnick, W.S., Ryan R.M., & Deci, E.L. (1991). The inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508-517.

Grolnick, W.S., & Slowiaczek, M.L. (1994). Parents' involvement in children's schooling: A

    multidimensional conceptualization and motivational model. *Child Development, 65,*

    237-252.

Guthrie, J. T.,&Davis, M. H. (2003). Motivating struggling readers in middle school through an

    engagement model of classroom practice. *Reading and Writing Quarterly, 19,* 59–85.

Gutman, L. M., & Midgley, C. (2000). The role of protective factors in supporting

    the academic achievement of poor African American students during the middle

    school transition. *Journal of Youth and Adolescence, 29*, 223-248.

Hall, W. N., & Bracken, B. A. (1996). Relationship between maternal parenting styles and

    African American and White adolescents' interpersonal relations. *School Psychology*

    International, 17, 253-267.

Hamilton, C.E., & Howes, C. (1992). A comparison of young children's relationships with

    mothers and teachers. In: R.C. Pianta, Editor, *Relationships between children and*

    nonparental adults: New directions in child development. San Francisco: Jossey-Bass.

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.

Hamre, B., & Pianta, R. (2004). Self-reported depression in nonfamilial caregivers: Prevalence

    and associations with caregiver behavior in child care settings. *Early Childhood Research*

    Quarterly, *19*, 297-318.

Hamre, B. K., Pianta, R. C., Downer, J. T., Mashburn, A. J. (2008). Teachers' perceptions of

    conflict with young students: looking beyond problem behaviors. *Social Development,*

    17, 115-136.

Haney, W. (2003, April). *High school graduation rates and high stakes testing.* Paper

    Presented at the Annual Meeting of the American Education Research Association,

    Chicago, IL.

Hao, L. & Bonstead-Burns. M. (1998). Parent-child differences in educational expectations and

    the academic achievement of immigrant and native students. *Sociology of Education,* 71,

    175-198.

Hardre, P. L., & Reeve, J. (2003). A motivational model of rural students' intentions to persist in,

    versus drop out of, high school. *Journal of Educational Psychology*, *95*, 347-356.

Harrison, L.J., Clarke, L. & Ungerer, J.A. (2007). Children's drawings provide a new perspective

    on teacher-child relationship quality and school adjustment. *Early Childhood Research*

    Quarterly, 22, 55-71.

Hart, J. W., Stasson, M. F., Fulcher, K. H., & Mahoney, J. M. (2008). Assessing achievement

    motivation as a multi-faceted construct: Examining the psychometric properties of the

    Cassidy and Lynn achievement motivation scale. *Individual Differences Research, 6*,

    169-180.

Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the

    classroom: motivational and informational components. *Developmental Psychology,* 17,

    300-312.

Harter, S. (1985). *Manual for the Social Support Scale for Children.* University of Denver.

Hastings, R.P., & Brown, T. (2002). Coping strategies and the impact of challenging behaviors

    on special educators' emotional reactions to challenging behaviors. *Journal of*

    Intellectual Disability Research, *46*, 144 -150.

Heine, S.J., Lehman, D.R., Markus, H.R., & Kitayama, S. (1999), Is there a universal need for positive self regard? *Psychological Review, 106,* 766-794.

Helmreich, R. L. & Spence, J. T. (1978). The Work and Family Orientation Questionnaire: An objective instrument to assess components of achievement motivation and attitudes toward family and career. *JSAS Catalog of Selected Documents in Psychology, 8*, MS #1677.

Hess, B. (2000). Assessing program impact using latent growth modeling: a primer for the evaluator. *Evaluation and Program Planning, 23*, 419 – 428.

Henricsson, L., & Rydell, A.M. (2004). Elementary school children with behavior problems: Teacher-child relations and self-perception. A prospective study. *Merrill-Palmer Quarterly, 50*, 111-136.

Henricsson, L., & Rydell, A.M. (2006). Children with behavior 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, l5,* 347-366.

Hildrith, G. H., Griffiths, N. K., & McGauvran, M. E. (1965), *Metropolitan Reading Test*. New York: Harcourt, Brace, and World.

Hollingshead, A. (1975). *The Hollingshead Index.* New Haven, CT.

Hopf, D. & Hatzichristou, C. (1999). Teacher gender-related influences in Greek schools. *British Journal of Educational Psychology, 69*, pp. 1 – 18.

Howes, C. (2000). Socio-emotional climate in child care, teacher-child relationships and children's second grade peer relations. *Social Development, 9*, 191-203.

Howes, C., & Hamilton, C. E. (1992a). Children's relationships with caregivers: Mothers and

  child care teachers. *Child Development, 63,* 859-866.

Howes, C., & Hamilton, C. E. **(1992b).** Children's relationships with child care teachers: stability

  and concordance with parental attachments. *Child Development*, 63, 867-78.

 Howes, C., Hamilton, C.E., & Matheson, C.C. (1993). Children's relationships with peers:

  Differential association with aspects of the teacher-child relationship. *Child*

  Development, *65*, 253-263.

Howes, C., Phillipsen, L. C., & Peisner-Feinberg, E. (2000). Consistency of perceived teacher–

  child relationships between preschool and kindergarten. *Journal of School Psychology,*

  38, 113–132.

Howes, C., Phillips, D., & Whitebook, M. (1992). Thresholds of quality in child care centers and

  children's social and emotional development. *Child Development, 63*, 449–460.

Howes,C. & Ritchie, S. (2002) *A Matter of Trust: Connecting Teachers and Learners in the*

  Early Childhood Classrooms. New York: Teachers College Press.

Howes, C. & Shivers, E. M. (2006). New child-caregiver attachment relationships: Entering

  child care when the caregiver is and is not an ethnic match. *Social Development, 15*, 574-

  590.

Hoy, A., & Spero, R. (2005). Changes in teacher efficacy during the early years of teaching: A

  Comparison of four measures. *Teaching and Teacher Education*, *21*, 343-356.

Hughes, J., Cavell, T., & Willson, V. (2001). Further support for the developmental significance

  of the quality of the teacher-student relationship. *Journal of School Psychology, 39*, 289-

  301.

Hughes JN, Gleason K, Zhang D. (2004). Relationships as predictors of teachers' perceptions of academic competence in academically at-risk minority and majority first-grade students. *Journal of School Psychology*. *43*, 303–320.

Hughes, J., & Kwok O. (2007). Influence of student-teacher and parent-teacher relationships on lower achieving readers' engagement and achievement in the primary grades. *Journal of Educational Psychology, 99,* 39-51.

Hughes, J. N., Zhang, D., Hill, C. R. (2006). Peer assessments of normative and individual teacher-student support predict social acceptance and engagement among low-achieving children. *Journal of School Psychology, 43,* 447 - 463.

Huston, A. C., et al. (2001). Work-based anti-poverty programs for parents can enhance the school performance and social behavior of children. *Child Development, 72*, 318-336.

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the role of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76,* 349–366.

Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: Gender and domain differences across grades one through twelve. *Child Development*, *73*, 509-527.

Jerome, E.M., Hamre, B.K., & Pianta, R. (2009). Teacher-child relationships from kindergarten to sixth grade: Early childhood predictors of teacher-perceived conflict and closeness. *Social Development*, *18*, 915 – 945.

Jia, Y., et al. (2009). The influence of student perceptions of school climate on socioemotional and academic adjustment: A comparison of Chinese and American adolescents. *Child Development, 80*, 1514-1530.

Jimerson, S. R., Egeland, B., Sroufe, L. A., & Carlson, E. (2000). A prospective longitudinal study of high school dropouts: Examining multiple predictors across development. *Journal of School Psychology, 38,* 525-549.

Kamphaus, R., Frick, P. (2009). *Clinical assessment of child and adolescent personality and behavior*, 2nd edition. New York: Springer Science + Business Media

Karmos, A. H., & Karmos, J. S. (1984). Attitudes toward standardized achievement tests and their relation to achievement test performance. *Measurement and Evaluation in Counseling and Development, 17,* 56-66.

Kasser, T. (2002). Sketches for a self-determination theory of values. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 123-140). Rochester, NY: University Of Rochester Press.

Kasser, T., Ryan, R. M., Couchman, C. E., & Sheldon, K. M. (2004). *Materialistic values: Their causes and consequences*. In T. Kasser, & A. D. Kanner (Eds.), Psychology and Consumer Culture (pp. 11−28). Washington, D.C.: American Psychological Association.

Kember, D. (2000). Misconceptions about the learning approaches, motivation, and study practices of Asian students. *Higher Education, 40*, 99-121.

Kesner, J.E. (2000). Teacher characteristics and the quality of child-*teacher* relationships. *Journal of School Psychology, 28*, 133-149.

Kedzior, M. (2004). Teacher professional development. (Education policy brief). Retrieved from http://www.losmedanos.edu/deved/documents/v15_May.pdf.

Knoblauch, D., & Hoy, A.W. (2008). "Maybe I can teach *those* kids." The influence of contextual factors on student teachers' efficacy beliefs. *Teaching and Teacher Education*, *24*, 166 – 179.

148

Knowles, E., & Kerkman, D. (2007). An investigation of students' attitude and motivation toward online learning. *Student Motivation*, *2*, 70 – 80.

Koepke, M. & Harkins, DA (2008). Conflict in the classroom: Gender differences in the teacher-child relationship. *Early Education and Development*, *19*, 843-864.

Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2008). Examining the relationship between classroom-level factors and students' perception of school climate. *Journal of Educational Psychology*, 100, 96-104.

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,* 1373-1400.

Ladd, G. W. & Burgess, K. B. (1999). Charting the relationship trajectories of aggressive, withdrawn, and aggressive/withdrawn children during early grade school. *Child Development, 70,* 910-929.

Lane, K.L. (2003). Identifying young students at risk for antisocial behavior: The utility of "teachers as tests." *Behavioral Disorders*, 28, 360 – 369.

Lapointe, J. M. (2003). Teacher-student conflict and misbehavior: Toward a model of the extended symmetrical escalation. *Journal of Classroom Interaction, 38*, 11-19.

Legault, L., Green-Demers, I., & Pelletier, L. G. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic motivation and social support. *Journal of Educational Psychology*, *98*, 567-582.

Lerner, J.V., Lerner, R. M, & Zabski, S. (1985). Temperament and elementary school children's actual and rated academic performance: a test of a 'goodness-of-fit' model. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 26,* 125-136.

Lynch, M., & Cicchetti, D. (1992). Maltreated children's reports of relatedness to their teachers.

In R.C. Pianta (Ed.), *Beyond the Parent: The Role of Other Adults in Children's Lives*

(pp. 81-107). San Francisco, CA: Jossey-Bass Publishers.

Lynch, M., & Cicchetti, D. (1997). Children's relationships with adults and peers: An examination

of elementary and junior high school students. *Journal of School Psychology*, *35*, 81-99.

Maccoby, E.E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA:

Harvard University Press.

Main, M., & Solomon, J. (1986). Discovery of an insecure-disorganized/ disoriented pattern. In:

Brazelton, T.B., and Yogman, M., (Eds.) *Affective development in infancy*. Norwood, NJ:

Ablex Publishing,

Maldonado-Carreño, C., & Votruba-Drzal, E. (2011). Teacher-child relationships and the

development of academic behavioral skills during elementary schools: A within- and

between-child analysis. *Child Development*, *82*, 601 – 616.

Mantzicopoulos, P. (2005). Conflictual relationships between kindergarten children and their

teachers: Associations with child and classroom context variables. *Journal of School

Psychology, 43*, 425-442.

Mantzicopoulos, P., & Neuharth-Pritchett, S. (2003). Development and validation of a

measure to assess head start children's appraisals of teacher support. *Journal

of School Psychology, 41,* 431-451.

Marchant et al. (2007). Modifying socially withdrawn behavior: A playground intervention for

students with internalizing behaviors. *Psychology in the School*, *44*, 779 – 794.

Marchant, G.J., Paulson, S.E., and Rothlisburg, B.A. (2001). Relations of middle school

    students' perceptions of family and school contexts with academic achievement.

    Psychology in the School, 38, 505-519.

Martin, A.J. (2001). The Student Motivation Scale: A tool for measuring and enhancing

    motivation. *Australian Journal of Guidance and Counseling*, *11*, 1-20.

Martin, A.J. (2003). The Student Motivation Scale: Further testing of an instrument that

    measures school students' motivation. *Australian Journal of Education, 47*, 88-106.

Martin, A.J. (2005). Exploring the effects of a youth enrichment program on academic

    motivation and engagement. *Social Psychology of Education*, 8, 179–206.

Mashburn, et al. (2008). Measures of classroom quality in prekindergarten and children's

    development of academic language, and social skills. *Child Development, 79,* 732-749.

Mashburn, A., Hamre, B., Downer, J., & Pianta, R. (2006). Teacher and classroom factors

    associated with teachers' ratings of preschoolers' relationships and behaviors. *Journal of*

    Psychoeducational Assessment, 24, 367-380.

Masino, L. L.& Hodapp, R. M. (1996). Parental educational expectations for adolescents with

    disabilities. *Exceptional Children, 62, 515-519.*

Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal*

    stress and what to do about it. San Francisco, CA: Jossey-Bass.

McDermott, P., & Rothenberg, J. (2000, October). Why urban parents resist involvement in their

    children's elementary education. *The Qualitative Report* [On-line serial], *5*(3/4).

    Retrieved from http://www.nova.edu/ssss/QR/QR5-3/mcdermott.html.

McGrew, K. S. (1993). The relationship between the WJ-R *Gf-Gc* cognitive clusters and reading achievement across the lifespan. *Journal of Psychoeducational Assessment* (Monograph Series: WJ-R Monograph), 39–53.

McGrew, K.S., & Hessler, G.L. (1995). The relationship between the WJ-R Gf-Gc cognitive clusters and mathematics achievement across the life-span. *Journal of Psychoeducational Assessment, 13*, 21–38.

McGrew, K. S., Werder, J. K., & Woodcock, R. W. (1991). *WJ-R Technical Manual*. Itasca, IL: Riverside Publishing.

McIntyre, L. (1988). Teacher gender: A predictor of special education referral? *Journal of Learning Disabilities*, 21, 382-384.

McIntyre, L. L., Blacher, J., & Baker, B. L. (2006). The transition to school: Adaptation in young children with and without intellectual disability. *Journal of Intellectual Disability Research, 50,* 349-361.

Meehan, B.T, Hughes, J.N., & Cavell, T.A. (2003). Teacher-student relationships as compensatory resources for aggressive children. *Child Development*, *74*, 1145 – 1157.

Midgley, C. & Edelin, K. (1998). Middle school reform and early adolescent well-being: The good news and the bad. *Educational Psychologist*, 33, 195-206.

Midgley, C., Feldlaufer, H., Eccles, J. (1989). Student/teacher relations and attitudes toward mathematics before and after the transition to junior high school. *Child Development, 60*, 981-992.

Mitchell-Copeland, J., Denham, S.A., & DeMulder, E. K. (1997). Q-Sort assessment of child-teacher attachment relationships and social competence in the preschool. *Early Education & Development*, 8, 27-39.

Moen, R. E., & Doyle, K.O. (1977). Construction and development of the Academic Motivations Inventory. *Educational and Psychological Measurement, 37*, 509-512.

Moos, R.H., 7 Trickett, E. (1974). *Classroom Environment Scale Manual*. Palo Alto, CA: Consulting Psychologists Press.

Mroczek, D., & **Griffin, P.W.** (2007). The use of growth curve modeling in estimating stability and change in well-being over time. In A. D. Ong & M. van Dulmen (Eds.), *Handbook of methods in positive psychology*. New York: Oxford University Press.

Murdock, T. B., Anderman, L. H., & Hodge, S. A. (2000). Middle-grade predictors of students' motivation and behavior in high school. *Journal of Adolescent Research, 15*, 327–351.

Murdock, T. B. & Miller, A. (2003). Teacher as sources of middle school students' motivational identity: Variable-centered and person-centered analytic approaches. *The Elementary School Journal, 103(4),* 383-399.

Murray, C., & Greenburg, M.T. (2000). Children's relationship with teachers and bonds with school an investigation of patterns and correlates in middle childhood. *Journal of School Psychology, 38,* 423-445.

Murray, C. & Murray, K.M. (2004). Child level correlates of teacher-student relationships: An examination of demographic characteristics, academic orientations, and behavioral orientations. *Psychology in the Schools*, 41, 751 – 762.

Murray, C., Murray, K.M., & Waas, G.A. (2008). Child and teacher reports of teacher-student relationships: Concordance of perspectives and associations with adjustment in urban kindergarten classrooms. *Journal of Applied Developmental Psychology, 29*, 49-61.

Muthén, L.K. and Muthén, B.O. (1998). *Mplus User's Guide. Sixth Edition*. Los Angeles, CA: Muthén & Muthén.

Nakamura, B.J., Ebesutani, C., Bernstein, A., & Chorpita, B.F. (2009). A psychometric analysis

of the Child Behavior Checklist *DSM*-Oriented scales. *Journal of Psychopathology and*

Behavioral Assessment, 31, 178–189.

National Center for Education Statistics. (2009). *Schools and Staffing Survey* (SASS) Retrieved

from: http://nces.ed.gov/surveys/sass/tables_2004.asp#Teachers (accessed March 22,

2009

NICHD Early Child Care Research Network. (2003). Social functioning in first grade: Prediction

from home, child care and concurrent school experience. *Child Development, 74,* 1639-

1662.

Nolen, S. B. (1988). Reasons for studying: Motivational orientations and study strategies.

Cognition and Instruction, 5, 269-287.

O'Connor, E. (2010). Teacher-child relationships as dynamic systems. *Journal of School*

Psychology, 48, 187 – 218.

O'Connor, E., Dearing, E., & Collins, B. (2011). Teacher-child relationship trajectories:

Predictors of behavior problem trajectories and mediators of child and family factors.

American Educational Research Journal, 48), 120-162.

O'Connor E. & McCartney, K, (2006). Testing associations between young children's

relationships with mothers and teachers. *Journal of Educational Psychology*, 98, 87- 98.

O'Connor, E. & McCartney, K. (2007). Examining teacher-child relationships and achievement

as part of an ecological model of development*. American Educational Research Journal,*

44, 340-371.

O'Neil, H.F., Sugrue, B., & Baker, E.L. (1996). Effects of motivational interventions on the

    National Assessment of Educational Progress Mathematics Performance. *Educational*

    Assessment, 3, 135-157.

Ohayon, M.M., Carskadon, M.A., Guilleminault, C., & Vitiello, M.V. (2011). Meta-analysis of

    quantitative sleep parameters from childhood to old age in healthy individuals:

    Developing normative sleep values across the human lifespan. *Sleep*, 27, 1255-1273.

Olson, L. (2006). Economic trends fuel push to retool schooling. *Education Week, 25*, 20 – 24.

Ormrod, Jeanne Ellis (2003). *Educational Psychology: developing learners*. (4th ed.)

    pp. 368-425.

Orr, A. J. (2003). Black-White differences in achievement: The importance of wealth. *Sociology*

    of Education, 76, 281-304.

Pajares, F. & Graham, L. (1999). Self-efficacy, motivation constructs, and mathematics

    performance of entering middle school students. *Contemporary Educational Psychology*,

    24,124–139.

Pajares, F., Hartley, J., & Valiante, G. (2001). Response format in writing self-efficacy

    assessment: Greater discrimination increases prediction. *Measurement & Evaluation in*

    Counseling & Development, 33, 214–221.

Palermo, F., Hanish, L.D., Martin, C.L., Fabes, R.A., & Reiser, M. (2007). Preschoolers'

    academic readiness: What role does the teacher-child relationship play? *Early Childhood*

    Research Quarterly, 22, 407-422.

Park, J.M., Fertig, A.R., & Allison, P.D. (2011). Physical and mental health, cognitive

    development and health care use by housing status of low-income young children in 20

American cities: A prospective cohort study. *American Journal of Public Health*, 101, 255 – 261.

Parkay, F. W. (1980). Inner-city high school teachers: The relationship of personality traits and teaching style to environmental stress. *Urban Education, 14*, 449-470.

Pelletier, L.G, Tuscon, D.M., Fortier, M.S., Vallerand, R.J., Brière, N.M., & Blais, M.R. (1995) Toward a new measure of intrinsic motivation, extrinsic motivation, and motivation in sports: The Sport Motivation Scale. *Journal of Sport & Exercise Psychology*, 17, 35 – 53.

Pelletier, L. G., & Vallerand, R. J. (1996). Supervisors' beliefs and subordinates' intrinsic motivation: A behavioral confirmation analysis. *Journal of Personality and Social Psychology, 71*, 331-340.

Pianta, R. C. (1992). Conceptual and methodological issues in research on relationships between children and nonparental adults. In R. C. Pianta (Ed.), *Beyond the parent: The role of other adults in children's lives* (pp. 121-130). San Francisco: Jossey-Bass.

Pianta, R. C. (1999) *Enhancing Relationships Between Children and Teachers*, 1st edition. Washington, DC: American Psychological Association, Edition.

Pianta, R. C. (2001). *Student– Teacher Relationship Scale: Professional manual.* Florida, USA: Psychological Assessment Resources.

Pianta, R. C., Howes, C., et al. (2005). Features of prekindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions? *Applied Developmental Science, 9*(3), 144-159.

Pianta, R.C., La Paro, K.M., Payne, C., Cox, M.J., & Bradley, R. (2002). The relation of
kindergarten classroom environment to teacher, family, and school characteristics and
child outcomes. *The Elementary School Journal*, 102, 225 – 238.

Pianta, R. C., & Nimetz, S. L. (1989). The Student–Teacher Relationship Scale: Results of a
pilot study (Report\Research\Technical Tests\Evaluation Instruments PS 018146).
Harrisonburg, VA: James Madison University.

Pianta, R.C., & Nimetz, S.L. (1997). Relationships between children and teachers: Associations
with classroom and home behavior. *Journal of Applied Developmental Psychology, 12,*
379-393.

Pianta, R. C., Nimetz, S., & Bennett, E. (1997). Mother-child relationships, teacher–child
relationships, and school outcomes in preschool and kindergarten. *Early Childhood
Research Quarterly*, *12*, 263–280.

Pianta, R. C., & Steinberg, M. (1992). Teacher-child relationships and the process of adjusting to
school. In W. Damon (Series Ed.) & R. C. Pianta (Vol. Ed.) Beyond the Parent: The role
of other adults in children's lives (Vol. 57, pp. 61-80). San Francisco: Jossey-Bass Inc.

Pianta, R. C., Steinberg, M., & Rollins, K. (1995). The first two years of school: Teacher-child
relationships and deflections in children's classroom adjustment. *Development of
Psychology, 7,* 295-312.

Pianta, R.C., & Stuhlman, M. (2004). Teacher-child relationships and children's success in the
first years of school. *School Psychology Review, 33,* 444-458.

Pigott, R.L, & Cowen, E.L. (2000). Teacher race, child race, racial congruence, and teacher
ratings of children's social adjustment. *Journal of School Psychology*, *38*, 177 – 196.

Raver, C. C., & Zigler, E. F. (1997). Social competence: An untapped dimension in evaluating

    Head Start's success. *Early Childhood Research Quarterly, 12*, 363-385.

Redd Z., Brooks, J. & McGarvey, A. M. (2001). *Background for community level work on*

    educational adjustment in adolescence: Reviewing the literature on contributing factors.

    Washington, D.C.: Child Trends.

Reeve, J., Deci, E. L., & Ryan, R. M. (2004). Self-determination theory: A dialectical framework

    for understanding socio-cultural influences on student motivation. In D. M. McInerney &

    S. Van Etten (Eds.), *Big theories revisited* (pp. 31-60). Greenwich, CT: Information Age

    Press.

Reeve, J., Nix, G., & Hamm, D. (2003). Testing models of the experience of self determination

    in intrinsic motivation and the conundrum of choice. *Journal of Educational Psychology,*

    95, 375–392.

Rey, R.B., Smith, A.L., Yoon, J., Somers, C., & Barnett, D. (2007). Relationships between

    teachers and urban African American Children. *School Psychology*, *International*, 28,

    346 – 364.

Ritter, D.R. (1989). Teachers' perceptions of problem behavior in general and special education.

    Exceptional Children, 55(6), 559-564.

Roeser, R. W., Midgley, C., & Urdan, T. C.(1996). Perceptions of the school psychological

    environment and early adolescents' psychological and behavioral functioning in

    school: The mediating role of goals and belonging. Journal of Educational

    Psychology, 88, 408-422.

Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher-student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research, 81*, 493–529.

Rotgans, J. I. (2009). *Motivation, achievement-related behaviors, and educational outcomes.* Rotterdam: Erasmus University Rotterdam, EUR publishing.

Rudasill, K.M., & Rimm-Kaufman, S.E. (2009). Teacher-child relationship quality: The roles of child temperament and teacher-child interactions. *Early Childhood Research Quarterly*, 24, 107 – 120.

Rumberger, R. W., & Larson, K. A. (1998). Student mobility and the increased risk of high school dropout. *American Journal of Education, 107*, 1-35.

Ryan, A.M. (2001). The peer group as a context for the development of young adolescents' motivation and achievement. *Child Development*, *72*, 1135-1150.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.

Ryan, A.M., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38*, 437-460.

Saft, E.W., & Pianta, R.C. (2001). Teachers' perceptions of their relationships with students: Effects of child age, gender, and ethnicity of teachers and children. *School Psychology Quarterly, 12,* 125-141.

Scales, P. P., Benson, N., Leffert, L., & Blyth, D.A. (2000). The contribution of developmental assets to the prediction of thriving among adolescents. *Applied Developmental Science*, 4, 27–46.

Schuler, H. & Prochaska, M. (2001). *Leistungsmotivations-Inventar (LMI).* Göttingen: Hogrefe.

Schunk, D. H. (2000). Motivation for achievement: Past, present, and future. *Issues in Education*, *6*, 161-166.

Silver, R. B., Measelle, J. R., Armstrong, J. M., & Essex, M. J. (2005). Trajectories of classroom externalizing behavior: Contributions of child characteristics, family characteristics, and the teacher-child relationship during the school transition. *Journal of School Psychology, 43*, 39-60.

Singer, J.D., & Willett, J.B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.

Skaalvik, S. & Skaalvik E. M. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, *26*, 1059 – 1069.

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85, 571-581.

Smith, D. (1992). A description of classroom interaction and gender disparity in secondary business education instruction. *Delta Pi Epsilon Journal, 34,* 183-193.

Smith J.R., Brooks-Gunn J., & Klebanov, P.K. (1997). Consequences of living in poverty for young children's cognitive and verbal ability and early school achievement. In Duncan, G.J. & Brooks-Gunn, J (Eds.), *Consequences of growing up poor*. (pp 132- 189). New York: Russell Sage Foundation.

Snedecor, G.W., & Cochran, W.G. (1989). Statistical methods. Ames, IA: Iowa State University

     Press.

Sourander, A. & Helstelä, L. (2005). Childhood predictors of externalizing and internalizing

     problems in adolescence: A prospective follow-up study from age 8 to 16. *European*

     Child Adolescent Psychiatry, *14,* 415 – 423.

Standage, M., Duda, J.L., & Ntoumanis, N. (2006). Students' motivational process and their

     relationship to teacher ratings in school physical education: A self-determination theory

     approach. *Research Quarterly for Exercise and Sport, 77*, 100 – 110.

Stephens, T.M. (1981). *Technical information: Social behavior assessment.* Columbus, OH:

     Cedars Press.

Stipek, D., & Miles, S. (2008). Effects of aggression on achievement: Does conflict with the

     teacher make it worse? *Child Development, 79*, 1721-1735.

Stipek, D., & Ryan, R. (1997). Economically disadvantaged preschoolers: Ready to learn by

     further to go. *Developmental Psychology, 33*, 711–723.

Strobel, K. & Bursato, G. (2010). Practices that promote middle school students' motivation and

     achievement. (Issue brief). Retrieved from

     http://jgc.stanford.edu/resources/publications/Motivation%20-%20Feb%202012.pdf.

Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics* (3rd edition). New York,

     New York: HarperCollins.

Taris, T.W. (2000). Nonresponse in longitudinal research. *A Primer in Longitudinal Data*

     Analysis (pp 17- 38). Thousand Oaks, CA: Sage Publications.

Taylor, A. (1989). Predictors of peer rejection in early elementary grades: Roles of problem

   behavior, academic achievement, and teacher preference. *Journal of Clinical Child

   Psychology, 18,* 360–365.

Taylor, A., & Machida, S. (1996). Student-teacher relationships of Head Start children. Paper

   presented at the annual meeting of the American Educational Research Association, New

   York.

Taylor, A.R. & Trickett, P.K. (1989). Teacher preference and children's sociometric status in the

   classroom. *Merrill-Palmer Quarterly, 35*, 343–361.

Tschannen-Moran, M., & Hoy, A.W. (2007). The differential antecedents of self-efficacy beliefs

   of novice and experienced teachers. *Teaching and Teacher Education*, 23, 944 – 956.

Urban Institute & Child Trends. *National Survey of America's Families* (NSAF), 2002.

   ICPSR04582-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social

   Research [distributor], 2007-10-03. doi:10.3886/ICPSR04582.v1.

U.S. Census Bureau (1999). *Poverty in the United States*. Retrieved from

   http://www.census.gov/prod/www/abs/p60.html.

U.S. Census Bureau (2008). *An older and more diverse nation by midcentury*. Retrieved from

   http://www.census.gov/newsroom/releases/archives/population/cb08-123.html.

U.S. Census Bureau (2010). *The Asian Population: 2010*. Retrieved from

   http://www.census.gov/prod/cen2010/.

Valencic, K. M. (2001). *An investigation of teachers temperament and students perceptions of

   teachers communication behavior and students attitudes toward teachers.* Unpublished

   doctoral dissertation, West Virginia University, Morgantown.

Valeski. T. N. (2000). *Young children's social competence and relationships with teachers: pathways to early academic success* (Doctoral Dissertation). Retrieved from ProQuest Dissertations and Thesis Database October 23, 2010. (UMI number: 9976216).

Valeski, T., & Stipek, D. (2001) Young children's feelings about school. *Child Development* **72,** 1198–1213.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72,* 1161–1176.

Walker, H., Ramsey, E., & Gresham, F. (2004). *Antisocial behavior in schools: Evidence-based practices* (2nd ed.). Belmont, CA: Wadsworth.

Waters, E., & Deane, K. E. (1985). Defining and assessing individual differences in attachment relationships: Q-methodology and the organization of behavior in infancy and early childhood. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. *Monographs of the Society for Research in Child Development, 50* (Serial No. 209), 41-65.

Weiner, B. (1980). *Human motivation*. New York: Holt-Rinehart & Winston.

Wentzel, K.R. (1993). Motivation and achievement in early adolescence: The role of multiple classroom goals. *Journal of Early Adolescence, 13*, 4-20.

Wentzel, K. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology, 89,*411-419.

Wentzel, K.R. (1998). Social relationships and motivation in middle school: The role of parents, teachers and peers. *Journal of Educational Psychology, 90*, 202-209.

Wentzel, K. R., Battle, A., Russell, S. L., & Looney, L. B. (2010). Social supports from teachers

and peers as predictors of academic and social motivation. *Contemporary Educational Psychology, 35,* 193-202.

Weston, R. & Gore, P. A. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist, 34*, 719 – 751.

Whitebook, M., C. Howes, & D.A. Phillips. (1989). *Who cares? Child care teachers and the quality of care in America. The National Child Care Staffing Study.* Oakland, CA: Child Care Employee Project.

Wideman, K. (2006). Missing data: What to do with or without them. In K. McCartney, M. Burchinal, & K.L. Bub (Eds.), *Best Practices in Quantitative Methods for Developmentalists, Monographs of the Society for Research in Child Development, 71(3).* Boston, MA: Blackwell Publishing.

Wigfield, A., & Eccles, J. (1994). Children's competence beliefs, achievement values, and general self-esteem: Change across elementary and middle school. *Journal of Early Adolescence, 14*, 107-138.

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25*, 68-81.

Wilkins, N., & Kuperminc, G.P. (2010). Why try? Achievement motivation, perceived academic climate and academic outcomes among Latino youth. *Journal of Early Adolescence, 30,* 246 –276.

Wilson-Sadberry, K.R., Winfield, L.F., & Royster, D.A. (1991). Resilience and persistence of African-American males in post-secondary enrollment. *Education and Urban Society, 24*(1), 87-102.

Wimberly, G. L. (2002). *School relationships foster success for African American students*. Iowa

    City, IA: ACT.

Wise, S. L. & DeMars, C. E. (2005). Low examinee effort in low-stakes assessment: Problems

    and potential solutions. *Educational Assessment 10*, 1-17.

Woodcock, R. W. (1990). Theoretical foundations of the WJ-R measures of cognitive ability.

    Journal of Psychoeducational Assessment, 8, 231-258.

Woodcock, R. W., & Johnson, M. B. (1989). Woodcock-Johnson Psycho-Educational Battery –

    Revised. Allen, TX: DLM.

Wothke, W. (1998). Longitudinal and multi-group modeling with missing data. In T. D. Little,

    K. U. Schnabel, and J. Baumert (Eds.). *Modeling longitudinal and multiple group data:*

    Practical issues, applied approaches and specific examples. Mahwah, NJ: Lawrence

    Erlbaum Publishers.

Wyrick, A. J., & Rudasill, K. M**.** (2009, April). *Parent involvement as a predictor of teacher-*

    child relationship quality in third grade. Poster presented at the Society for Research in

    Child Development biennial conference. Denver, CO.

Xu, J. (2002). Do early adolescents want family involvement in their education? Hearing voices

    from those who matter most. *The School Community Journal, 12*, 53–72.

Yamada, A.M., Lee, K.K., Dinh, T.Q., Barrio, C., & Brekke, J.S. (2010). Intrinsic motivation as

    a mediator of relationships between symptoms and functioning among individuals with

    schizophrenia spectrum disorders in a diverse urban community. *The Journal of Nervous*

    and Mental Disease, 1, 28-34.

Yiu, H. L. (2010). *Teacher ratings of student behaviors and the student-teacher relationship: A focus on Asian American students*. Unpublished manuscript. Department of Counseling and Personnel Services, University of Maryland, College Park.

Yiu, H.L. (2012). The influence of student and teacher characteristics on student-teacher closeness. (Master's thesis, University of Maryland). Retrieved December 19, 2011 from http://drum.lib.umd.edu/bitstream/1903/11618/1/Yiu_umd_0117N_11972.pdf.

Zimmermann, R.S., Khoury, E.L., Vega, W.A., Gil, A.G., & Warheit, G.J. (1995). Teacher and parent perceptions of behavior problems among a sample of African-American, Hispanic and Non-Hispanic White students. *American Journal of Community Psychology,* 23, 181-197.

Appendix 1: Additional Tables

Table 1
Between-Construct Correlations among Teacher-Child Relationship Quality and Control Variables

Teacher-child relationship quality	Grade	Control variables			
		Mother's education	Income	Achievement	Parental involvement at age 15
Closeness	3rd	.13***	.11***	.10**	.15***
	4th	.10***	.15***	.05	.13***
	5th	.14***	.08***	.04	.17***
	6th	.03	.04	.01	.11***
Conflict	3rd	-.21***	-.18***	-.22**	-.13**
	4th	-.18***	-.22***	-.22***	-.15***
	5th	-.22***	-.23***	-.22***	-.10**
	6th	-.18***	-.19***	-.20***	-.13***

Table 2

Correlations among Control Variables, Child Predictors, and Achievement Motivation

	1	2	3	4	5	6	7	8	9	10
Control variables										
1. Mother's education	-									
2. Income	.41***									
3. Academic achievement	.34***	.37***								
4. Parental involvement	.23***	.17***	.04							
Child predictors										
5. Internalizing behavior problems	-.07*	-.11***	-.07*	-.09**						
6. Externalizing behavior problems	-.22**	-.23***	-.19**	-.12**	.60***					
7. Social skills	.26**	.26***	.31**	.23***	-.36***	-.54***	.			
Achievement Motivation										
8. Education Outlook	.02	.05	.05	.05	-.03	-.01	.03			
9. Math efficacy	-.03	.06	.06	.12**	.05	.00	-.02	.29***		
10. English efficacy	.00	.01	.00	.08**	-.04	-.00	-.00	.27***	.13***	

Table 3

Means of Closeness and Conflict Means for African-American and Caucasian Students by Grade

	Race			
Closeness	African-American	Caucasian	*t*	*df*
Third	32.38	33.21	1.40	132
Fourth	31.37	32.84	2.70**	806
Fifth	30.30	32.14	2.93**	116
Sixth	29.75	30.46	1.26	133
Conflict				
Third	15.49	11.06	5.30***	120
Fourth	15.88	10.47	6.34***	103
Fifth	16.62	10.66	7.48***	107
Sixth	14.54	10.61	5.32***	120

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 4

Means of Closeness and Conflict for Males and Females by Grade

	Gender			
Closeness	Male	Female	*t*	*df*
Third	31.94	34.21	7.08***	975
Fourth	31.33	33.73	7.29***	914
Fifth	30.97	32.73	5.08***	916
Sixth	29.13	31.47	6.08***	840
Conflict				
Third	12.81	10.45	6.23***	927
Fourth	12.20	10.07	5.74***	865
Fifth	12.44	10.43	5.41***	890
Sixth	12.36	9.80	6.82***	761

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5

Means of Control Variables, Child Variables, and Achievement Motivation for African-American and Caucasian Students

	Race			
Control variables	African-American	Caucasian	*t*	*df*
Academic achievement	96.23	111.50	11.71	884
Child variables				
Internalizing behavior	5.08	4.89	.473	1019
Externalizing behavior	9.04	7.31	3.26*	160
Social skills	52.20	58.07	7.76*	1019
Achievement motivation				
Educational outlook	4.56	4.60	-.76	868
Math efficacy	5.19	5.14	.479	869
English efficacy	5.66	5.64	.097	869

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 6

Means of Control Variables, Child Variables, and Achievement Motivation for Male and Female Students

	Gender			
Control variables	Male	Female	*t*	*df*
Academic achievement	108.88	109.66	-.868	991
Child variables				
Internalizing behavior	4.71	5.20	-1.98	1145
Externalizing behavior	7.95	7.09	3.552	1145
Social skills	56.19	57.98	-3.608	1145
Achievement motivation				
Educational outlook	4.63	4.57	1.24	971
Math efficacy	5.19	5.08	1.43	972
English efficacy	5.69	5.57	1.73	943

* $p < .05$ ** $p < .01$ *** $p < .001$

Appendix 2: Measures

STUDENT-TEACHER RELATIONSHIP SCALE – SHORT FORM

Robert C. Pianta

Child: _____ Teacher:_____ Grade:_____

Please reflect on the degree to which each of the following statements currently applies to your relationship with this child. Using the scale below, circle the appropriate number for each item.

Definitely does not apply 1	Not really 2	Neutral, not sure 3	Applies somewhat 4	Definitely applies 5

1.	I share an affectionate, warm relationship with this child.	1	2	3	4	5
2.	This child and I always seem to be struggling with each other.	1	2	3	4	5
3.	If upset, this child will seek comfort from me.	1	2	3	4	5
4.	This child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
5.	This child values his/her relationship with me.	1	2	3	4	5
6.	When I praise this child, he/she beams with pride.	1	2	3	4	5
7.	This child spontaneously shares information about himself/herself.	1	2	3	4	5
8.	This child easily becomes angry with me.	1	2	3	4	5
9.	It is easy to be in tune with what this child is feeling.	1	2	3	4	5
10.	This child remains angry or is resistant after being disciplined.	1	2	3	4	5
11.	Dealing with this child drains my energy	1	2	3	4	5
12.	When this child is in a bad mood, I know we're in for a long and difficult day.	1	2	3	4	5
13.	This child's feelings toward me can be unpredictable or can change suddenly.	1	2	3	4	5
14.	This child is sneaky or manipulative with me.	1	2	3	4	5
15.	This child openly shares his/her feelings and experiences with me.	1	2	3	4	5

TEACHER QUESTIONNAIRE

This questionnaire is designed to give us general information about the classrooms that the study children are in and about their instructional program. We are also very interested in the types of supports and challenges (e.g., language and cultural differences, school resources, parent involvement) teachers face. Thank you for taking the time to answer all of these questions. Please seal forms in the enclosed envelope and return to the front office at your earliest convenience.

Note: For some children, "parents" may refer to a step-parent, grandparent, foster parent, or another individual who has primary responsibility for the child.

Today's date is

_____ / _____ / _____
  MM   *DD*   *YY*

1. How many years have you worked as a FULL-TIME elementary or secondary teacher in the PUBLIC SCHOOLS?
Include the current school year if you are a full-time teacher this year. Record whole years, not fractions or months. If less than 4 months, circle "None."

1 None

2 _____ Years

2. How many years have you worked as a PART-TIME elementary or secondary teacher in PUBLIC SCHOOLS?
Include the current school year if you are a part-time teacher this year. Record whole years, not fractions or months. If less than 4 months, circle "None."

1 None

2 _____ Years

3. Have you ever worked as an elementary or secondary teacher in a PRIVATE SCHOOL?

1 Yes

2 No

4. Do you have a bachelor's degree?

1 Yes

2 No

5. Do you have a master's degree?

1 Yes

2 No

6a. Have you earned any other degrees?

1 Yes → Please answer question 6b.

2 No

6b. What other degree(s) have you earned?
Circle all that apply.

1 Associate degree

2 SECOND bachelor's degree

3 SECOND master's degree

4 Educational specialist or professional diploma (at least one year beyond master's level)

5 Certificate of Advanced Graduate Studies

6 Doctorate or first professional degree (Ph.D., Ed.D., M.D., L.L.B., J.D., D.D.S)

7a. What type of certificate do you hold in this field?
Circle one answer only.

1 Advanced professional certificate or regular or standard state certificate

2 Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period)

3 Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program"

4 Temporary certificate (requires some additional college coursework and/or student teaching before regular certification can be obtained)

5 Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching)

6 NONE

Note: If you circled #3, 4, 5, or 6, please answer question 7b.

7b. Are you currently in a program to obtain certification in your MAIN teaching field in this state?

1 Yes

2 No

8. In the past 12 months, have you participated in any of the following activities related to teaching?
Please circle all that apply.

1 University course(s) taken for recertification or additional certification (exclude courses taken for your *first* certification)

2 Other university course(s) in your main assignment field

3 Visits to other schools

4 Individual or collaborative research on a topic of interest to you professionally

5 Independent professional reading

6 School or district committee, excluding department meetings

7 Regularly scheduled, formal collaboration with other teachers, excluding faculty meetings that are held for administrative purposes

8 Mentoring and/or peer observation and coaching, as part of a formal arrangement that is recognized by the school or district

9 Participating in a teacher network (e.g., organized by an outside agency over the Internet)

10 Workshops or conferences in your main assignment field

11 Workshops or training in which you were the presenter

12 Attending professional association meetings

13 Other (*Please specify:* _____

_____)

9. How often does your school principal...

	Very Often	Often	Once In Awhile	Never
a. Discuss curriculum standards with the teaching staff?	1	2	3	4
b. Discuss student evaluation results or your students' progress with the teaching staff?	1	2	3	4
c. Discuss curriculum materials and methods with the teaching staff?	1	2	3	4
d. Encourage professional collaboration among teachers?	1	2	3	4
e. Participate in the professional development activities of teachers?	1	2	3	4
f. Work with teaching staff to solve problems?	1	2	3	4

	Very Often	Often	Once In Awhile	Never
g. Encourage teachers to change teaching methods if the students are not doing well?	1	2	3	4
h. Develop broad agreement among faculty about the school's mission?	1	2	3	4
i. Communicate respect for and value of teachers?	1	2	3	4

10. How often do you have scheduled meetings with other teachers in your subject area or grade level to discuss and plan curriculum or teaching approaches?
Circle one answer only.

1 Never

2 Once or twice a year

3 Once every other month

4 Once a month

5 2-3 times a month

6 Once a week

11. In what grades are the students in the classes you currently teach?
Circle all that apply.
If you teach at more than one school, report only for the classes you teach at THIS SCHOOL.

1 Ungraded

2 Prekindergarten

3 Kindergarten

4 1st

5 2nd

6 3rd

7 4th

8 5th

9 6th

12. Which of these categories best describes the way your classes at this school are organized?
Circle one answer only.

1 DEPARTMENTALIZED INSTRUCTION – You teach subject matter courses (e.g., biology, history, keyboarding) to several classes of different students all or most of the day

2 ELEMENTARY ENRICHMENT CLASS – You teach *only one* subject (such as art, music, physical education, computer skills) in an *elementary* school

3 REGULAR CLASS – You teach multiple subjects to the same class of students all or most of the day

4 TEAM TEACHING – You collaborate with one or more teachers in teaching multiple subjects to the same class of students

5 "PULL-OUT" CLASS – You provide instruction (e.g., special education, reading) to certain students who are released from their regular classes

13. During your most recent FULL WEEK of teaching, approximately how may hours did you spend teaching each of these subjects at THIS school?
If you taught two or more subjects at the same time, apportion the time to each subject as best you can. Report hours to the nearest whole hour; do not record fractions or minutes. If you did not teach a particular subject during the week, circle "None."

a. English / Reading / Language Arts

    1 None

    2 _____ Hours per week

b. Arithmetic / Mathematics

    1 None

    2 _____ Hours per week

c. Social Studies / History

    1 None

    2 _____ Hours per week

d. Science

    1 None

    2 _____ Hours per week

14. Of the total students you teach, how many are special education students, that is, how many have an Individual Education Plan (IEP)?

1 _____ Students

2 None

15. During the past 3 years, have you had any training or professional development of 8 hours or more on how to teach special education students?

1 Yes

2 None

16. Of the total students you teach at this school, how many are of limited English-proficiency? *(Limited English-proficient students are those whose native or dominant language is other than English and who have sufficient difficulty speaking, reading, writing, or understanding the English language as to deny them the opportunity to learn successfully in an English-speaking-only classroom.)*

1 _____ Students

2 None

17. During the past 3 years, have you had any training or professional development of 8 hours or more on how to teach limited English-proficient students?

1 Yes

2 No

18. To what extent do you use state or district standards to guide your instructional practice in your main teaching assignment field?

1 Not at all

2 A little

3 Somewhat

4 Often

5 To a great extent

19. Do you use different groupings of students in your classroom to teach students who learn at different rates?

1 Yes

2 No

20. Are students assigned to your classes on the basis of achievement or ability level?

1 Yes

2 No

21. Are you a Title I teacher, that is, are you paid in full or in part by federal funds under the Elementary and Secondary Education Act?

1 Yes

2 No

22a. Do you receive your students' scores on state or local achievement tests?

1 Yes ⟶ Please answer question 22b.

2 No

3 Don't know

22b. To what extent do you use the information from your students' test scores...?

a. To group students into different instructional groups by achievement or ability?

1 Not at all
2 A little
3 Somewhat
4 Often
5 A great extent

b. To evaluate your own success as a teacher?

1 Not at all
2 A little
3 Somewhat
4 Often
5 A great extent

c. To assess areas where you need to strengthen your content knowledge or pedagogy ?

1 Not at all
2 A little
3 Somewhat
4 Often
5 A great extent

d. To adjust your curriculum in problem areas where your students encountered problems?

1 Not at all
2 A little
3 Somewhat
4 Often
5 A great extent

e. To inform parents of students' achievement test results?

1 Not at all
2 A little
3 Somewhat
4 Often
5 A great extent

23. In your main teaching assignment field, that is the subject in which you teach the most classes, do students in your classes use computers during class time?

1 Yes

2 No

24. At this school, how much actual influence do you think teachers have over school policy in each of the following areas? *(Use the scale of 0–5 where 0 means "No influence" and 5 means "A great deal of influence.")*

	No Influence					A Great Deal of Influence
a. Setting discipline policy	0	1	2	3	4	5
b. Determining the content of in-service professional development programs	0	1	2	3	4	5
c. Hiring new full-time teachers	0	1	2	3	4	5
d. Deciding how the school budget will be spent	0	1	2	3	4	5
e. Evaluating teachers	0	1	2	3	4	5
f. Establishing curriculum	0	1	2	3	4	5

25. At this school, how much control do you feel you have IN YOUR CLASSROOM over each of the following areas of your planning and teaching? *(Use the scale of 0–5 where 0 means "No control" and 5 means "Complete control.")*

	No Control					Complete Control
a. Selecting textbooks and other instructional materials	0	1	2	3	4	5
b. Selecting content, topics, and skills to be taught	0	1	2	3	4	5
c. Selecting teaching techniques	0	1	2	3	4	5
d. Evaluating and grading students	0	1	2	3	4	5
e. Disciplining students	0	1	2	3	4	5
f. Determining the amount of homework to be assigned	0	1	2	3	4	5

26. Do you agree or disagree with each of the following statements?

	Completely Disagree	Somewhat Disagree	Somewhat Agree	Completely Agree
a. The principal lets staff members know what is expected of them.	1	2	3	4
b. The school administration's behavior toward the staff is supportive and encouraging.	1	2	3	4
c. I am satisfied with my teaching salary.	1	2	3	4
d. The level of student misbehavior in this school (such as noise, horseplay, or fighting in the halls, cafeteria, or student lounge) interferes with my teaching.	1	2	3	4
e. I receive a great deal of support from parents for the work I do.	1	2	3	4
f. Necessary materials such as textbooks, supplies, and copy machines are available as needed by the staff.	1	2	3	4
g. Routine duties and paperwork interfere with my job of teaching.	1	2	3	4
h. My principal enforces school rules for student conduct and backs me up when I need it.	1	2	3	4
i. The principal talks with me frequently about my instructional practices.	1	2	3	4
j. Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their classes.	1	2	3	4
k. Most of my colleagues share my beliefs and values about what the central mission of the school should be.	1	2	3	4
l. The principal knows what kind of school he/she wants and has communicated it to the staff.	1	2	3	4
m. There is a great deal of cooperative effort among the staff members.	1	2	3	4
n. In this school, staff members are recognized for a job well done.	1	2	3	4
o. I worry about the security of my job because of the performance of my students on state or local tests	1	2	3	4
p. I am given the support I need to teach students with special needs.	1	2	3	4

	Completely Disagree	Somewhat Disagree	Somewhat Agree	Completely Agree
q. I am satisfied with my class sizes.	1	2	3	4
r. I make a conscientious effort to coordinate the contents of my courses with that of other teachers.	1	2	3	4
s. The amount of student tardiness and class cutting in this school interferes with my teaching.	1	2	3	4
t. I sometimes feel it is a waste of time to try to do my best as a teacher.	1	2	3	4
u. I plan with the library media specialist/librarian for the integration of library/media services into my teaching.	1	2	3	4
v. Library/media materials are adequate to support my instructional objectives.	1	2	3	4

27. To what extent is each of the following matters a problem in this school? Indicate whether it is a serious problem, a moderate problem, a minor problem, or not a problem in this school.

	Serious Problem	Moderate Problem	Minor Problem	Not a Problem
a. Student tardiness	1	2	3	4
b. Student absenteeism	1	2	3	4
c. Teacher absenteeism	1	2	3	4
d. Students cutting class	1	2	3	4
e. Physical conflicts among students	1	2	3	4
f. Robbery or theft	1	2	3	4
g. Vandalism of school property	1	2	3	4
h. Student pregnancy	1	2	3	4
i. Student use of alcohol.	1	2	3	4
j. Students' drug abuse	1	2	3	4
k. Students' possession of weapons	1	2	3	4
l. Verbal abuse of teacher	1	2	3	4
m. Student disrespect for teachers	1	2	3	4
n. Students dropping out.	1	2	3	4
o. Students' apathy	1	2	3	4
p. Lack of parental involvement	1	2	3	4
q. Poverty.	1	2	3	4
r. Students come to school unprepared to learn	1	2	3	4
s. Poor student health	1	2	3	4

28. Are you male or female?

   1 Male

   2 Female

29. What is your ethnicity?

   1 Hispanic or Latino

   2 Not Hispanic or Latino

30. What is your race?

   1 American Indian or Alaska Native

   2 Asian

   3 Black or African American

   4 Native Hawaiian or Other Pacific Islander

   5 White

31. What is your year of birth?

19_____

32. Is this a charter school?

   1 Yes

   2 No

33. How much of a problem are the factors below in preparing your children to succeed academically? *(Circle one for each factor.)*

	Not a Problem	Minor Problem	Moderate Problem	Serious Problem
a. Home/family life	1	2	3	4
b. Parent cooperation/support	1	2	3	4
c. Child health	1	2	3	4
d. Inadequate nutrition	1	2	3	4
e. Low intelligence	1	2	3	4
f. Cultural differences	1	2	3	4

	Not a Problem	Minor Problem	Moderate Problem	Serious Problem
g. English proficiency	1	2	3	4
h. Non-standard English	1	2	3	4
i. Special learning problems	1	2	3	4
j. Behavioral problems (disruptive)	1	2	3	4
k. Inadequate supplies	1	2	3	4
l. Student/teacher ratio	1	2	3	4
m. Student mobility	1	2	3	4
n. Students not ready socially	1	2	3	4
o. Students not ready academically	1	2	3	4
p. Students have attention problems	1	2	3	4
q. Student tardiness/absenteeism	1	2	3	4
r. Other *(Please specify.)*	1	2	3	4

_____

34. How much do you stress each of the following literacy skills and/or objectives in your instructional program? *(Circle one for each.)*

	Not at All	Somewhat	A Fair Amount	A Lot
a. Recognizing letters/letter-sound relationships	1	2	3	4
b. Learning sight words	1	2	3	4

	Not at All	Somewhat	A Fair Amount	A Lot
c. Recalling facts from story	1	2	3	4
d. Comprehension/ inferential thinking	1	2	3	4
e. Connecting ideas in text to personal life	1	2	3	4
f. Tracing over writing	1	2	3	4
g. Writing letters	1	2	3	4
h. Copying from the board	1	2	3	4
i. Dictating stories	1	2	3	4
j. Using invented spelling	1	2	3	4
k. Reading stories from basals	1	2	3	4
l. Reading books by themselves	1	2	3	4
m. Listening to taped stories	1	2	3	4
n. Listening to stories read by you or your aide	1	2	3	4

35. How much do you stress each of the following mathematics objectives and/or skills in your instructional program? *(Circle one for each.)*

	Not at All	Somewhat	A Fair Amount	A Lot
a. Identifying numbers	1	2	3	4
b. Counting objects	1	2	3	4
c. Addition and subtraction	1	2	3	4
d. Distinguishing and naming geometric shapes	1	2	3	4
e. Comparing quantities (least, most, less, more)	1	2	3	4
f. Reading simple graphs	1	2	3	4
g. Recognizing the value of coins and currency	1	2	3	4

	Not at All	Somewhat	A Fair Amount	A Lot
h. Measuring (length, weight, volume)	1	2	3	4
i. Ordinal numbers (first, second, third)	1	2	3	4
j. Sorting	1	2	3	4
k. Telling time	1	2	3	4
l. Recognizing patterns	1	2	3	4
m. Estimating quantities	1	2	3	4
n. Knowing math facts, rules, and steps	1	2	3	4
o. Becoming interested in and valuing math	1	2	3	4
p. Being able to explain and justify reasoning	1	2	3	4
q. Performing computations with speed and accuracy	1	2	3	4
r. Being confident in math ability	1	2	3	4
s. Understanding math concepts	1	2	3	4

36. Do you ask your students' parents to engage in any of the activities below? *(Circle all that apply.)*

a Read with the child

b Listen to or discuss a story the child has written

c Play math games (e.g., counting buttons or silverware for setting the table)

d. Check to see that homework is complete

e. Check to see that homework is done correctly

f. Do flash cards or worksheets

g. Review school work with the child

h. Work on projects with the child

i. Engage in enrichment activities (e.g., visit the library, museums)

j. Watch specific television shows with their child
(_____)

k. Other:_____

TEACHER SELF-EFFICACY SCALE

This questionnaire is designed to help us gain a better understanding of things that create difficulties for teachers in their school activities. Please indicate your opinions about each of the statements below by circling the appropriate number.

	Nothing	Very Little	Some Influence	Quite A Bit	A Great Deal

Efficacy to Influence Decision Making

1. How much can you influence the decisions that are made in the school? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

2. How much can you express your views freely on important school matters? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

Efficacy to Influence School Resources

3. How much can you do to get the instructional materials and equipment you need? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

Instructional Self- Efficacy

4. How much can you do to influence the class sizes in your school? . . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

5. How much can you do to get through to the most difficult students? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

6. How much can you do to promote learning where there is lack of support from the home? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

7. How much can you do to keep students on task on difficult assignments? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

8. How much can you do to increase students' memory of what they have been taught on previous lessons? . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

9. How much can you do to motivate students who show low interest in schoolwork? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

10. How much can you do to get students to work together? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

11. How much can you do to overcome the influence of adverse community conditions on students' learning? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

12. How much can you do to get children to do their homework? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

	Nothing	Very Little	Some Influence	Quite A Bit	A Great Deal

Disciplinary Self-Efficacy

13. How much can you do to get
children to follow classroom rules? . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

14. How much can you do to control
disruptive behavior in the
classroom? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

15. How much can you do to
prevent problem behavior on the
school grounds? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

Efficacy to Create A Positive School Climate

16. How much can you do to make
the school a safe place? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

17. How much can you do to make
students enjoy coming to school? . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

18. How much can you do to get
students to trust teachers? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

19. How much can you do to help
other teachers with their
teaching skills? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

20. How much can you do to
enhance the collaboration
between teachers and the
administration to make the school
run effectively? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

21. How much can you do to get
students to believe they can do
well in school work? . . . . .1 . .2 . . .3 . .4 . .5 . .6 . .7 . .8 . .9

HOW I DO IN SCHOOL

These questions are about how well you do in school and your plans for how much school you would like to complete.

How sure are you that you will…?	Not at all sure	Not really sure	Somewhat sure	Mostly sure	Very sure
1. Finish high school?	1	2	3	4	5
2. Go to college?	1	2	3	4	5
3. Finish college?	1	2	3	4	5

You can choose any number between 1 and 7 with (read responses as: 1 Not at all good, 4 OK, 7 Very good)

MATH

4. How <u>good</u> at **math** are you?

Not at all good			OK			Very good
1	2	3	4	5	6	7

5. How well do you <u>expect</u> to do in **math** this year?

Not at all well			OK			Very well
1	2	3	4	5	6	7

6. How <u>good</u> would you be at <u>learning something new</u> in **math**?

Not at all good			OK			Very good
1	2	3	4	5	6	7

7. In general, how <u>useful</u> is what you learn in **math**?

Not at all useful						Very useful
1	2	3	4	5	6	7

8. For me, <u>being good</u> at **math** is

Not at all important						Very important
1	2	3	4	5	6	7

ENGLISH

9. How <u>good</u> at **reading** are you?

Not at all good			OK			Very good
1	2	3	4	5	6	7

10. How well do you <u>expect</u> to do in **English class** this year?

Not at all well			OK			Very well
1	2	3	4	5	6	7

11. How <u>good</u> would you be at <u>learning something new</u> in **English class**?

Not at all good			OK			Very good
1	2	3	4	5	6	7

12. In general, how <u>useful</u> is what you learn in **English class**?

Not at all useful						Very useful
1	2	3	4	5	6	7

13. For me, <u>being good</u> at **reading** is

Not at all important						Very important
1	2	3	4	5	6	7

SPORTS

14. How <u>good</u> at **sports** are you?

Not at all good   OK   Very good
   1   2   3   4   5   6   7

15. How well do you <u>expect</u> to do in **your favorite sport** this year?

Not at all well   OK   Very well
   1   2   3   4   5   6   7

16. How <u>good</u> would you be at <u>learning something new</u> in **sports**?

Not at all good   OK   Very good
   1   2   3   4   5   6   7

17. In general, how <u>useful</u> is what you learn in **sports**?

Not at all
useful   Very useful
   1   2   3   4   5   6   7

18. For me, <u>being good</u> at **sports** is

Not at all
important   Very important
   1   2   3   4   5   6   7

19. Which is more important to you—school work or sports?

School work is more important   They are equally important to me   Sports are more important
         1   2   3

Here are some questions about your family's education and individual and total family income levels and sources and home ownership. Please answer them as accurately as you can.

A. EDUCATION:

1. How much school have you completed? Circle one number
1. Less than high school   Number of years: _____
2. High school grad or GED
3. Some college but no degree
4. AA degree or vocational school beyond high school
5. Bachelor's degree from college or university
6. Some graduate work
7. Master's degree
8. Law degree
9. More than one Master's degree
10. Doctoral degree (M.D., Ph.D., Ed.D.)

2. Please give us the same information about your husband/partner's education. If you do not have a husband or partner living in the home, please circle "not applicable".

1. Less than high school   Number of years: _____
2. High school grad or GED
3. Some college but no degree
4. AA degree or vocational school beyond high school
5. Bachelor's degree from college or university
6. Some graduate work
7. Master's degree
8. Law degree
9. More than one Master's degree
10. Doctoral degree (M.D., Ph.D., Ed.D.)
11. Not applicable

3. How sure are you that your child will…?

	Not at all sure	Not really sure	Somewhat sure	Mostly sure	Very sure
a. Finish high school?	1	2	3	4	5
b. Go to college?	1	2	3	4	5
c. Finish college?	1	2	3	4	5

B. EMPLOYMENT:

4. Do you receive income from your own paid employment?
    0 No → Go to Question 5.
    1 Yes

If YES, during the most recent month, how much in total were you paid BEFORE taxes and other deductions were removed from your pay-check(s) from ALL jobs combined?
You may choose to answer in any of the following ways, whichever is easier for you:

    Hourly total amount $ _____   Hours worked per week _____
    Weekly total amount $ _____
    Monthly total amount $ _____
    OR
    Annual total amount $ _____

5 . Please now tell us the same information about your husband/partner's job situation. If you do not have a husband or partner living in the home, please circle "not applicable" and skip to Question 6.
Does your household receive income from your husband or partner's paid employment?
    0 No → Go to Question 6.
    1 Yes
    2 Not applicable

If YES, during the most recent month, how much in total was he paid BEFORE taxes and other deductions were removed from his pay-check(s) from ALL jobs combined?

You may choose to answer in any of the following ways, whichever is easier for you:

    Hourly total amount $ _____   Hours worked per week _____
    Weekly total amount $ _____
    Monthly total amount $ _____
    OR
    Annual total amount $ _____

6. Is there anyone else who lives in your home whose earnings help support your family?
    0 No → Go to Question 7.
    1 Yes

If YES, what is this person's relationship to you? Circle the number for all that apply.
    1 Parent or parent-in-law
    2 Brother or brother-in-law
    3 Sister or sister-in-law
    4 Grandparent or partner's parent
    5 Child or stepchild
    6 Other related person
    7 Non-related person

C. FAMILY INCOME SOURCES AND TOTAL INCOME

7. **Families receive income from many sources. We are interested in knowing about your family's sources of income in the last year. By family we mean you, your husband/partner, and your children if living in your home.**

Circle "1" for Yes or "0" for No beside each source, please.

	Yes	No
a. Child care assistance: (tax credits, cash, or vouchers)	1	0
b. Unemployment insurance	1	0
c. Workers' compensation	1	0
d. Interest/dividends (savings, stocks, bonds)	1	0
e. Income from rental properties	1	0
f. Social Security	1	0
g. Disability benefits or Supplemental Security Income (SSI)	1	0
h. Food Stamps	1	0
i. Temporary Assistance to Needy Families (TANF)	1	0
j. Alimony or child support	1	0
k. Gifts from family or friends out of the household for living expenses	1	0
l. Earned income credit	1	0
m. Any other sources.	1	0

8. **About how much total income, before taxes, did your family receive in the last year? Please include income from all sources listed in the questions above. By family, we mean you, your husband/partner, and your children, if living in your home.**

   Circle the income range that your annual income falls within. For example, if your total family annual income for last year was $22,500, you should circle "5. $20,001 – $25,000."

   Annual Family Total Income Before Taxes

   1 Less than 5,000
   2 $5,000 — $10,000
   3 $10,001 — $15,000
   4 $15,001 — $20,000
   5 $20,001 — $25,000
   6 $25,001 — $30,000
   7 $30,001 — $35,000
   8 $35,001 — $40,000
   9 $40,001 — $45,000
   10 $45,001 — $50,000
   11 $50,001 — $60,000
   12 $60,001 — $70,000
   13 $70,001 — $80,000
   14 $80,001 — $90,000

   15 $90,001 — $100,000
   16 $100,001 — $150,000
   17 $150,001 — $200,000
   18 $200,001 — $250,000
   19 $250,001 — $300,000
   20 $300,001 — $400,000
   21 $400,001 — $500,000
   22 $500,001 — $600,000
   23 $600,001 — $700,000
   24 $700,001 — $800,000
   25 $800,001 — $900,000
   26 $900,001 — $1,000,000
   27 More than $1,000,000

D. YOUR HOME

9. How long have you lived in your present home?
   Since Month_____ Year _____

10. How many rooms (not counting bathrooms) are there in your home? _____

11. Do you or your spouse own your home?
   0 No → you can skip the rest of the questions on this form. Thank you!
   1 Yes

12. About how much do you think your home would bring if you sold it today?

   $_____

13. Do you have a mortgage or loan on this property?
   0 No → you can skip the rest of the questions on this form. Thank you!
   1 Yes

14. About how much is the remaining principal on this loan or mortgage? (Please estimate within $10,000 if possible) $_____

Parental Involvement in Schooling

How much are your mother and father involved in your education?
(If you do not have a mother or father, code as NA (Not Applicable) for that column.)

	a. Mother					b. Father			
	Never	Sometimes	Always	NA		Never	Sometimes	Always	NA
1. Helps with homework when I ask	0	1	2	3		0	1	2	3
2. Knows how I am doing in school	0	1	2	3		0	1	2	3
3. Goes to school programs for parents	0	1	2	3		0	1	2	3
4. Watches me in sports or activities	0	1	2	3		0	1	2	3
5. Helps me in choosing my courses	0	1	2	3		0	1	2	3