RELATIONSHIPS AND ENGAGEMENT ACROSS ELEMENTARY SCHOOL:
MEDIATING AND INTERACTIVE ASSOCIATIONS
WITH PARENTS & TEACHERS

by

Melissa H. Castle

Bachelor of Arts, Cornell University, 2005

Masters of Science, University of Pittsburgh, 2011

Submitted to the Graduate Faculty of

The Dietrich School of Arts & Sciences in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

University of Pittsburgh
2015

UNIVERSITY OF PITTSBURGH

THE DIETRICH SCHOOL OF ARTS & SCIENCES

This dissertation was presented

by

Melissa Heatly Castle

It was defended on

December 12th, 2014

and approved by

Susan B. Campbell, Ph.D., Professor, Department of Psychology

Daniel S. Shaw, Ph.D., Professor, Department of Psychology

Heather J. Bachman, PhD, Associate Professor, Department of Psychology in Education

Kathryn Monahan, Ph.D., Assistant Professor, Department of Psychology

Ming Te-Wang, PhD, Assistant Professor, Department of Psychology in Education

Dissertation Advisor: Elizabeth Votruba-Drzal, PhD, Associate Professor, Department of

Psychology

**RELATIONSHIPS AND ENGAGEMENT ACROSS ELEMENTARY SCHOOL:
MEDIATING AND INTERACTIVE ASSOCIATIONS
WITH PARENTS & TEACHERS**

Melissa Heatly Castle, Ph.D.

University of Pittsburgh, 2015

There is growing recognition that affective relationships are associated with children's engagement and motivation. Yet despite continued calls to consider interconnections between home and school contexts, the extent to which relationships with both parents and teachers are collectively associated with engagement and motivation in elementary school remains relatively unexplored. In addition, few investigations address how children elicit these relational responses from parents or teachers. Accordingly, this project uses the NICHD Study of Early Child Care and Youth Development (NICHD-SECCYD) (n=1364) to investigate the direct, indirect, transactional, and interactive processes by which parent- and teacher-child relationships are associated with engagement and motivation in elementary school. Three studies conducted across three key developmental periods consider these associations. The first considers how relationships with parents and teachers prepare children for engagement during the transition to elementary school. The second study examines how relationships are associated with engagement as children progress from 1st through 5th grade. Finally, the third examines how concurrent and longitudinal relationships promote both engagement and motivational patterns in 5th grade, just prior to the transition to middle-school. Results across studies showed four consistent patterns. First, conflictual relationships with teachers were a more potent and consistent predictor of young children's engagement and motivation than were exposures to positive supports from parents or teachers. Second, warm and sensitive parent-child relationships were supportive of children's engagement, but only when youth were faced with conflictual teacher-child relationships, and only in the first few years of elementary school. Third, findings indicate that children elicit relational responses from both parents and teachers, and partially drive relational patterns with engagement. Finally, results suggest that engagement is largely context-dependent, and that children's engagement is most strongly related to the relationships

that are most temporally proximal to the child. Findings across the three developmental periods also demonstrate notable patterns, which are discussed in the context of prior literature. Implications for understanding how relationships are collectively associated with engagement and motivation across elementary school and implications for intervention and future research are also discussed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

PREFACE

To my mentor, Elizabeth Votruba-Drzal. Elizabeth, you have been an invaluable supporter, mentor, teacher, and guide throughout the past seven years. Thank you for bringing me to such an incredible city, for working with me through the most challenging parts of a doctoral degree, and for helping me grow as a scholar and a person. Without you, this would

To my committee members, who made this project possible. I have been so lucky to work with Heather Bachman for the past 7 years, who really showed me the way through educational research. I am also blessed to have learned from Sue Campbell, who taught me how to think carefully, critically, and developmentally; and was always a delight to run into (sometimes literally) in Frick Park. Kate Monahan provided priceless guidance on structural equation models and the ins- and outs- of analyzing the NICHD dataset; Ming Te-Wang stoked my intellectual fire for understanding what (and who!) gets kids excited and enthused about learning in class. Lastly but importantly, Danny Shaw asked me the toughest and most probing questions – and throughout that process, made this project so much more interesting and worthwhile. Thank you, all.

To my parents, Rick and Kathy Castle. Mom and Dad, you are wonderful parents and amazing friends. Dad, you've somehow mentored two Castle women through doctoral degrees (and survived!), which probably certifies you as a pretty die-hard feminist. Mom, you've inspired and counseled me through the best and hardest part of this process. Thank you for being such an amazing role model; I am beyond amazed that you did this while raising 3 kids.

To Leah Hyland, Allison Higginbotham, Judy Mayka, Darcy Mandell, Carrie Gibson, Kat Belendiuck, and my Pittsburgh **"Friend Family".** You have all provided so much love and support, reebs and firefly adventures, slope-side and pool-front writing desks, cheers and encouragements, and countless hours of free therapy. I am so thankful, I hope you know.

To Tucker, for sleeping at my feet while I typed away, and for taking me for walks when I needed them most.

And finally,

To Jessie Heatly, my beautiful, smart, hilarious, and amazingly patient wife. Jessie, you've always known exactly what to say to keep me going, even when I wanted to stop. Thank you for encouraging me, pushing me, adventuring and moving with me, and letting me teach you how to ski when I desperately needed a break. I couldn't have picked a better person to spend my life with. WE LOVE EACH OTHER!

"Life is what you make of it – Make yours awesome."

1.0   INTRODUCTION

Young children typically enter school brimming with enthusiasm and eagerness to learn (Nicholls, 1979, Stipek, 1999). Such children are more likely to direct their attention, interest, investment, and effort towards academic tasks, and are frequently engaged (Marks, 2000). Engagement is conceptualized as the behavioral expression of achievement motivation, and encompasses the energized action that students direct towards learning. This manifests as attentiveness to instruction, participation in the classroom, focused and on-task behavior, and persistence through difficult tasks (Appleton, Christenson, & Furlong, 2008; Marks, 2000). A number of motivational theories suggest that engagement is malleable and context dependent, and propose that high-quality relationships at home and school support engaged classroom behavior (Connell & Wellborn, 1991; Pianta, Hamre, & Allen, 2012; Ryan & Deci, 2000). Two of the most important relationships children have are with their parents and teachers. Correspondingly, understanding how these relationships shape engagement during children's early years of schooling represents an important challenge for those interested in promoting positive school outcomes (Fredericks, Blumenfeld, & Paris, 2004).

There is growing recognition that affective relationships with parents and teachers are associated with children's engagement in elementary school (Wentzel & Wigfield, 2009). For example, provisions of warmth, support, and sensitivity from parents and teachers are consistently associated with measures of school liking, participation, and interest (see Furrer &

Skinner, 2004 and Roorda, Koomen, Spilit, & Oort, 2011, for review). In contrast, coldness, conflict, and a lack of sensitivity from parents and teachers are linked to measures of behavioral inhibition, disinterest, and disengagement (Nishina, Juvonen, & Witkow, 2005). An ecological perspective of child development (Bronfenbrenner, 1979, 1986) suggests that experiences in multiple contexts, such as those at both home and school, are important for shaping children's behavior. Yet the majority of the literature considers parent-child and teacher-child relationships separately. Thus, the extent to which *both* relationships are collectively associated with engagement in elementary school remains unexplored. Correspondingly, a primary goal of this investigation is to strengthen understanding of how relationships with parents and teachers are associated with engagement and motivation across elementary school.

Relationships are dyadic systems that emerge from a history of interactions and exchanges between individuals over time (Hinde, 1987). Children's relationships therefore depend not only on affective displays within a relationship (e.g., closeness, warmth, hostility, or conflict), but also the child's own behavioral skills, capabilities, and previous experiences with caregivers. Children who enter school with a history of conflictual relationships, or who are more difficult to manage because of cognitive, self-regulatory, or behavioral difficulties may be less likely to elicit close, warm, or sensitive relationships with others (Keegan, 2001). However, the literature on relationships and engagement infrequently considers the processes by which previous experiences with caregivers are associated with subsequent relationships, or the extent to which children elicit relational responses from parents and teachers. Thus, this project also aims to understand how children elicit closeness, sensitivity, or conflict from parents and teachers, and how these relationships are both concurrently and longitudinally associated with engagement.

Early engagement patterns set the stage for short- and long-term academic behaviors and progress (Buhs & Ladd, 2001; Ladd, Birch, & Buhs, 1999; Ladd, Buhs, & Seid, 2000), and low engagement in elementary school can give rise to dysfunctional school behavior, underachievement, truancy, and attrition in the high school years (Finn & Rock, 1997; Marks, 2000). Yet much of the research on student engagement has been conducted with middle- and high-school students, and the way in which affective relationships with parents and teachers promote engagement in elementary school has been less fully addressed (Ryan, Stiller, & Lynch, 1994). There are several reasons to think that relationships with parents and teachers may be particularly important for engagement in elementary school. For instance, young children spend more time with and are more interested in adults than are older children, who tend to have more distant relationships with adults and are increasingly oriented toward their peers (Davis, 2003; Eccles et al., 1993). Positive relationships with adults may be more salient for younger rather than older children's engagement. In addition, a primary task of elementary school is in socializing children into student roles, expectations, and behaviors (Eccles et al., 1984). By the time they reach middle school, children have acquired relatively decisive beliefs about school, teachers, and their capabilities to succeed (Baker, 1999). Children may therefore be more susceptible to relational input during elementary- rather than middle- or high-school. Given these differences, it is during elementary school that parents and teachers may have the most opportunity to shape engagement patterns and trajectories. This investigation thus considers associations between relationships and engagement at the entry to elementary school (Study 1), as children move from 1st through 5th grade (Study 2), and as children are preparing for the middle-school transition during 5th grade (Study 3).

Using data from the National Institute of Child Development Study of Early Childcare and Youth Development (NICHD-SECCYD, 1993), this project will advance knowledge concerning how affective relationships with parents and teachers are associated with children's academic engagement. Each study considers four broad linkages (see Figure 1). First, each considers the extent to which children's relationships with parents and teachers are additively associated with concurrent and longitudinal engagement. Second, the three investigations each examine how prior relationships with parents and teachers are indirectly associated with longitudinal engagement outcomes via subsequent relationships with these adults. Third, each study considers how children's early cognitive, self-regulatory, and behavioral skills and competencies elicit relational responses from parents and teachers. Fourth, the extent to which warmth or sensitivity within one relationship (e.g., teachers) buffers children's engagement against conflict within another relationship (e.g., parents) is considered. Disentangling how children's relationships with parents *and* teachers collectively support engagement is an important direction for enriching our understanding of engagement in elementary school.

1

Teacher-Child Relationships

Parent-Child Relationships

Engagement & Motivation

2

Parent-Child Relationships

Teacher-Child Relationships

Engagement & Motivation

3

Child Skills & Competencies

Teacher-Child Relationships

Parent-Child Relationships

Engagement & Motivation

4

Closeness with Parents/Teachers

Conflict with Parents/Teachers

Engagement & Motivation
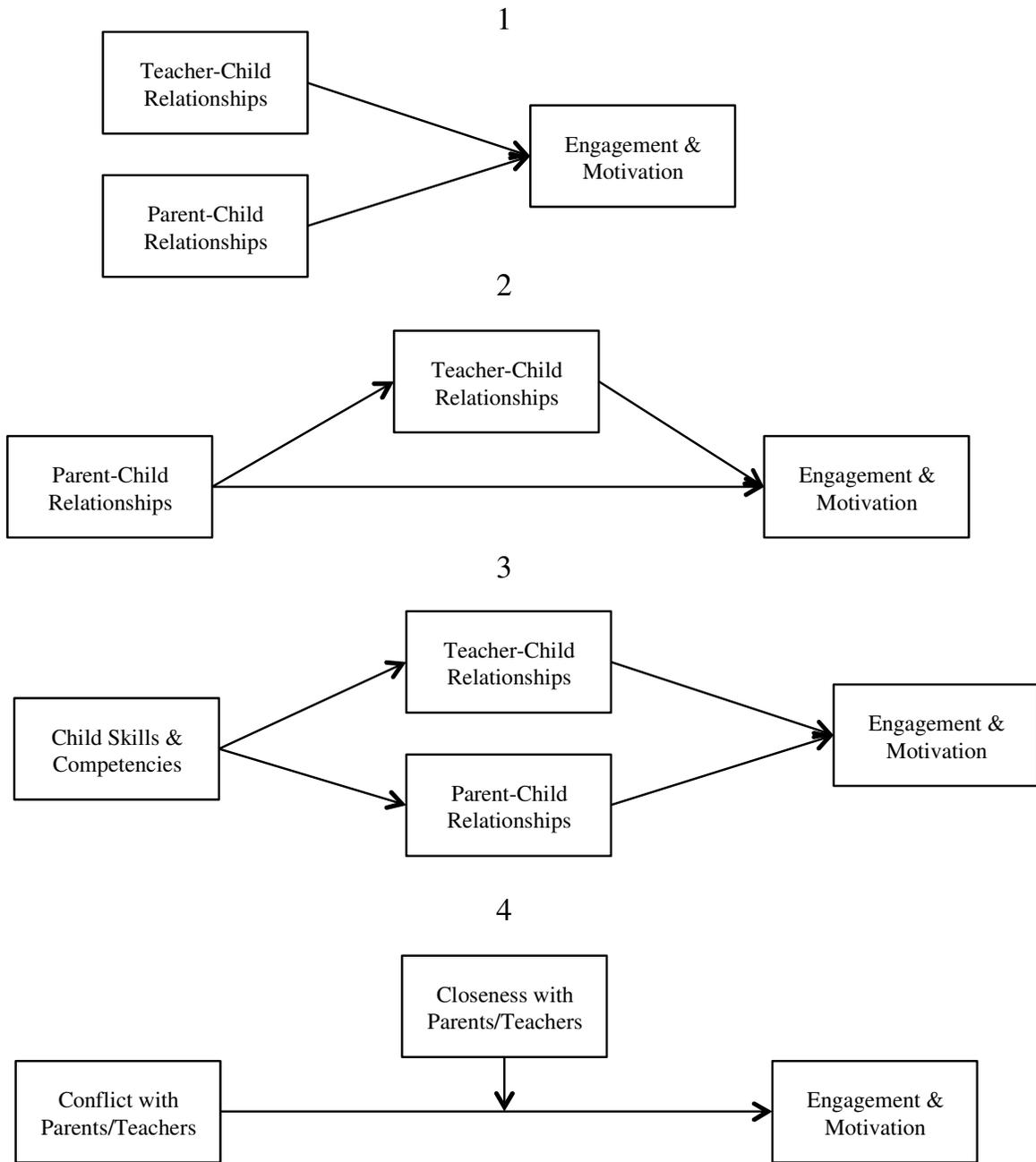
Figure 1: Broad linkages considering how relationships with parents and teachers are directly, indirectly, transactionally, and interactively associated with engagement and motivation in elementary school.

1.1   THEORETICAL PERSPECTIVES

Engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, and is conceptualized as the manifestation of complex motivational processes. Both self-determination (Connell & Wellborn, 1991; Ryan & Deci, 2000) and expectancy-value (Wigfield & Eccles, 2002) theories note that these processes include (but are not limited to) achievement motivation, perceived competence, and perceptions of relatedness to others. For example, children who perceive themselves to be more competent believe that they are more skilled at, effective in, and able to accomplish the tasks in which they are engaged (see Losier & Vallerand, 2001, for review). Achievement motivation also supports children's engagement by providing the energy for alertness, arousal, and effort necessary for learning (Skinner, Kindermann, Connell, & Wellborn, 2009). In addition, self-determination, expectancy-value, and attachment theories (Ainsworth, 1979; Bowlby, 1969; 1973) posit that feeling close to and supported by key social partners is important for children's ability to engage with their environment (Connell & Wellborn, 1991; Furrer & Skinner, 2003; Martin & Dowson, 2009). The resulting sense of relatedness encourages children to internalize and act upon the achievement-related goals and values held by others (Wentzel, 1999), and can buffer against stress (Sandler, Miller, Short, & Wolchik, 1989). When children are less motivated, perceive themselves to be less competent, or are unable to meet their needs for relatedness, their engagement is likely to suffer.

This investigation also draws upon bioecological models of child development, which posit that children are shaped by proximal interactions with multiple socializers as well as the independent and combined influences of home and school contexts (Bronfenbrenner & Ceci, 1994; Sameroff, 1994). Important in all perspectives is how relationships with parents and

6

teachers support students' engagement in school. Close relationships with important adults likely provide children with the safety and security needed to explore and engage in novel learning opportunities, and the self-assurance needed to persevere through challenging tasks (Grolnick, Friendly, & Bellas, 2009). Close and sensitive relationships with parents may instill value and confidence in academic endeavors (Wigfield & Eccles, 2002), and can shape the learning goals and orientations that children bring to their home- and classwork (Dweck & Elliott, 1983). When extended into the classroom, close relationships with teachers can serve as a secure base from which children can behaviorally explore and engage in learning activities (Birch & Ladd, 1997; Pianta, 1999; Pianta, Nimetz, & Bennett, 1997). Closeness with parents and teachers is also theorized to be a resource that children draw upon to motivate or sustain engagement when faced with academic or social challenges (Cohen & Wills, 1985; Sarason, Pierce, & Sarason, 1990). Conflict may promote insecurity within the relationship, and interfere with children's confidence, eagerness, and willingness to engage in educational opportunities or cope with demands in school (Roorda et al., 2011).

1.1.1 Mediating associations

Prior relationships with parents and teachers are likely associated with engagement in part because they promote similar relationships over time and across contexts. Multiple perspectives, including attachment (Ainsworth, 1979; Bowlby, 1969), social relations (Laursen & Collins, 1994), and socialization (Waters & Sroufe, 1983) theories propose that children's relationships are enduring systems that remain relatively stable across development. Thus early conflict may beget conflict in later years – while children with warm relationships early on sustain these relationships over time. These perspectives also propose that relationships with the most

7

proximal and consistent caregivers (i.e., parents) are predictive of the quality of all other relationships (Parke & Ladd, 1992). Children whose mothers are more sensitive and warm may carry feelings and expectations of security, support, and well-being into the relationships they develop in other contexts. Such children may be better prepared to develop close relationships with their grade-school teachers, while those who experienced conflict with parents may also experience more conflictual relationships with teachers (Ainsworth, 1979). In this way, concurrent relationships with parents or teachers may mediate associations between prior relationships and subsequent engagement patterns.

1.1.2 Transactional patterns

Children's relationships are also bidirectional in nature, with parents and teachers shaping as well as being shaped by children's characteristics (Pettit & Arsiwalla, 2008). This corresponds with a transactional theory of child development (Sameroff, 1975), which posits that children are active participants in their relationships with others (Lollis & Kuczynski, 1997). From this perspective, children have a set of skills and competencies that they bring to and utilize in both home and school contexts. In turn, these skills and competencies elicit emotional and behavioral responses from others. Children who are more difficult to teach, who have difficulty regulating their behavior, or who are challenging to interact with may elicit negative exchanges from parents or teachers. Such children may experience greater conflict within the caregiving relationship, and may be less engaged as a result. In contrast, children who are well-behaved, intelligent, or sociable may elicit positive emotional responses and closer relationships with parents and teachers. This could prompt greater warmth and sensitivity on behalf of caregivers, and may have positive ramifications for children's engagement.

These transactional processes may result in a snowball of effects across contexts and time (Masten & Cicchetti, 2010; Sameroff, 1975). Deficits in important skills and competencies may elicit increased conflict with parents or teachers, resulting in lower levels of engagement. In turn, this may instigate a cycle of continued conflict with both parents and teachers that threatens engagement. In contrast, strengths in early skills may elicit warm or sensitive relationships with mothers that promote closer relationships at both home and school -- which could have positive implications for children's engagement across development. Consequently, early relationship patterns may have long-term implications for children's development of relationships across home and school, as well as engagement in subsequent years.

1.1.3   Interactive associations across contexts

Social support perspectives posit that having alliances with trusted others can serve as a resource in times of trouble (Sandler, Miller, Short, & Wolchik, 1989). Thus, maintaining a positive or supportive relationship with at least one important adult may buffer children from the stress and anxiety they experience when confronted with the challenges associated with less positive relationships (Cohen & Wills, 1985; Sarason *et al.,* 1990). Close and sensitive relationships with parents or teachers may therefore be protective against relational stressors so that children can display more tenacity, vigor, and perseverance in the face of conflict (Furrer & Skinner, 2003). In this way, positive relationships within one context may moderate associations between conflict and children's engagement.

2.0   LITERATURE REVIEW

A large and growing body of literature has demonstrated positive associations between behavioral engagement and achievement-related outcomes for elementary-school children. Children who are more engaged tend to receive higher grades and score better on standardized tests, learn more material, and retain greater amounts of knowledge than those who are less engaged (e.g., Connell, Halpern-Fisher, Clifford, Crichlow, & Usinger, 1995; Skinner, Wellborn, & Connell, 1990). Early engagement and motivational patterns continue to matter years later: Children who are more behaviorally engaged at 1st grade have greater achievement test score gains and higher grades in 5th grade, and are less likely to drop out of high-school than those who demonstrate higher levels of engagement (Alexander, Entwisle, & Dauber, 1993; Alexander, Entwisle, & Horsey, 1997). Despite its' importance for predicting future outcomes, both engagement and motivation generally diminish as children progress through school – with significant drops in engagement seen during the transition from Kindergarten to 1st grade (Eccles et al., 1984), and in both engagement and motivation from 5th grade into middle school (Roeser, Eccles, & Sameroff, 1998). Early disengagement is increasingly seen as a risk-factor for later maladaptation (Finn & Zimmer, 2012) and is linked to underachievement, truancy, and drop-out in middle- and high-school (Connell et al., 1994; Janosz, Archambault, Morizot, & Pagani, 2008; Skinner et al., 1990).

2.1 RELATIONSHIPS & ENGAGEMENT

2.1.1 Parent-child relationships

A small body of research links parent-child relationships and engagement in elementary school. Children who share a close, warm, or caring relationship with their parents are more likely to participate in classroom activities, report more enjoyment of learning, and are more behaviorally engaged than those who have less positive relationships (Furrer & Skinner, 2003; Purdue, 2009). Although no investigations have explicitly examined links between maternal sensitivity and engagement, children whose parents are more sensitive have greater self-regulatory and inhibitory skills (Campbell, 2002; Early et al., 2002) and tend to be more securely attached than those whose parents are less sensitive (DeWolff & van Ijzendoorn, 1997). In turn, behavioral inhibition, self-regulation, and secure attachment are positively associated with engagement (Coleman, 2003; Moss & St. Laurent, 2001). In contrast, fourth and fifth graders who have conflictual relationships with their parents express less enjoyment in school and participate less frequently than those who have closer relationships (Furrer & Skinner, 2003). Children from families with harsh parenting styles also show less persistence, motivation, and satisfaction with their schoolwork than do children from warmer and more supportive families (Grolnick et al., 1991). In turn, parents who minimize the use of control and conflict over time have children who enjoy learning more than those who exert greater control or conflict in the parent-child relationship (Joussmet, Koestner, Lekes, & Landry, 2005). These patterns suggest that parenting may be important to consider when examining children's behavioral engagement in elementary school.

2.1.2 Teacher-child relationships

A large literature links affective qualities of teacher-child relationships to children's engagement and motivation in elementary school (See Roorda et al., 2011, for review). Children who have positive and close relationships with their teachers are more likely to participate in classroom activities, enjoy being in school, and express fewer desires to miss school (Hughes & Kwok, 2006; 2007; Hughes, Zhang, & Hill, 2006; Skinner & Belmont, 1993; Skinner, Wellborn, & Connell, 1990). Such children also report being happier and more enthusiastic in class, feel more comfortable, secure, and connected to their schools, and believe themselves to be more competent than those with more distant relationships (Murray, Murray, & Waas, 2008; Roorda et al., 2011; Skinner & Belmont, 1993). Alternatively, children who frequently argue, clash with, or are overly dependent upon their teachers are less likely to be behaviorally or emotionally engaged (Murray, Murray, & Waas, 2008; Roorda et al., 2011; Stipek & Miles, 2008) and are more prone to school avoidance or exclusion from academic activities (Hamre & Pianta, 2001). While improvement within the teacher-child relationship is associated with positive changes in both engagement and motivation (Roeser, Eccles, & Sameroff, 1998; Skinner, Zimmer-Gembeck, & Connell, 1998). Results from a recent meta-analysis suggests that both closeness and conflict may be equally important predictors of children's engagement (Roorda et al., 2011).

2.1.3 Cross-contextual associations

A key component of understanding how relationships with parents or teachers promote engagement involves determining the unique and relative contributions of each. Yet despite continued calls to consider connections between home and school contexts (Anderman &

Anderman, 2000; Bronfenbrenner & Crouter, 1983; Marchant, Paulson, & Rothlisberg, 2001; Wentzel, 2012), only one investigation considers both parents and teachers in the same model (Furrer & Skinner, 2003). Results from this study suggest that parent- and teacher-child relationships are each uniquely associated with children's engagement in elementary school. Here, those who began with low relatedness to either parents *or* teachers demonstrated low motivation and engagement at school entry and became less engaged and motivated as the year progressed. In contrast, those who had positive relationships with both parents and teachers at the beginning of the school year demonstrated engagement trajectories that improved more over time than those with lower relatedness to either parents or teachers. This suggests that close relationships with both parents and teachers may provide the best support for children's engagement.

Positive or supportive relationships in one environment may also be protective for children faced with conflict in another context (Bronfenbrenner & Ceci, 1994; Cicchetti & Toth, 2009; Sarason *et al.,* 1990). For instance, children with positive teacher-child relationships were engaged even when they had poor relationships with parents and peers. Yet engagement suffered when children experienced poor relationships with their teachers, regardless of the strength of peer and parent-child relationships. However, it is important to note that this study computed relatedness profiles for each child and compared mean differences, rather than analyzing variables and their interactions for the entire sample. As a consequence, it remains unclear whether a close teacher-child relationship can buffer children's engagement against parental conflict, or whether parental closeness or sensitivity can protect children against conflict within the teacher-child relationship.

2.1.4 Child skills and transactional associations

Children enter school with a variety of skills and abilities that are important for engagement and learning. Three areas that are important to consider include children's self-regulatory abilities, cognitive skills, and behavioral difficulties. Learning to regulate one's own behavior is a key component of engagement – and those who have difficulty remaining seated, waiting to be called upon, maintaining focus, and staying on-task are frequently less engaged than those with better self-regulatory skills (Wolters & Taylor, 2012). Children's cognitive skills are also important, as those who experience academic success and believe themselves to be more competent tend to be more engaged in the classroom (Bandura, 1997; Eccles-Parsons, 1983; Lau & Roeser, 2002). Children's behavioral skills are also predictive of engagement. For instance, those who display increases in externalizing behaviors over time display decreases in adaptive learning-related skills and behavior (Castle & Votruba-Drzal, 2011). In contrast, children with high amounts of internalizing behaviors such as shyness, reticence, or anxiety are more likely to withdraw from academic opportunities, have difficulty attending school, and are less likely to participate in classroom activities (Kearney & Bensaheb, 2006; Wang & Peck, 2012).

Those who enter school less ready to learn or engage are also less likely to elicit the teacher or parental support needed to enhance classroom engagement (Eamon, 2001). Parents who view their children as more difficult or less intelligent display more controlling attitudes and practices (Pomerantz & Eaton, 2001), and may in turn develop harsher relationships with their children. Teachers also cite a preference for students who are intelligent, conscientious, interested in learning, and self-regulated (Ladd et al., 1999; Skinner & Belmont, 1993), and are more likely to develop close relationships with children who display those qualities. In turn,

14

children's early skills and competencies may be indirectly associated with engagement through differences in relationships with parents and teachers.

2.2 ENGAGEMENT ACROSS ELEMENTARY SCHOOL

The elementary school years are critical because they involve two key transitions in children's early learning. At one end, the entrance into kindergarten and 1st grade introduces sustained time away from home, structured instruction and grading by teachers, small group-work, and increased exposure to peers (Eccles *et al.,* 1984). At the other end, 5th grade students are increasingly changing classes, are often transitioning to a new school, and are beginning the physical, neurobehavioral, and social changes associated with adolescence (Gross, Shaw, & Moilanen, 2008; Steinberg & Morris, 2001). Significant drops in engagement can be found at each of these transitions (Eccles et al., 1984; Skinner, Furrer, Marchand, & Kindermann, 2008), with a steady decline in engagement occurring in between (Eccles et al., 1984; Mahatmya et al., 2012). Both stage-environment fit and expectancy-value theorists (Eccles et al., 1993; Roeser, Eccles, & Sameroff, 1998) argue that this is in part because schools fail to meet the psychological needs of children as they approach adolescence. At the same time, parent- and teacher-child relationships become more distant, conflictual, formalized, evaluative, and negative as children approach adolescence (Harter, 1996; Izzo, Weissberg, Kasprow, & Fendrich, 1999; Lynch & Cicchetti, 1997; O'Connor & McCartney, 2007). Considering these patterns at each of these developmental periods will help clarify the processes by which children's relationships are associated with the development of long-term engagement outcomes.

2.2.1 Relationships & engagement at school entry

Early experiences with caregivers may be particularly important for engagement at school entry (Thompson & Goodman, 2009). For instance, attachment to parents during preschool is related with mastery motivation at entry to elementary school (Moss & St-Laurent, 2002) less behavioral inhibition (Early et al., 2002), and greater self-regulatory skills in kindergarten (Colman, Hardy, Albert, Raffaelli, & Crockett, 2006). Conversely, preschoolers who experience conflict with parents show less frustration tolerance, poorer work habits, and greater off-task behavior during elementary school than those with less conflictual relationships prior to school entry (Rothbaum & Weisz, 1994; Pianta et al., 1997). In turn, each of these skills are associated with engagement in kindergarten and 1st grade (Howse, Lange, Farran, & Boyles, 2003; Normandeau & Guay, 1998; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). Close and secure relationships with parents are also associated with closer ties with kindergarten teachers (Eisenhower, Baker, & Blacher, 2007; Howes, Phillipsen, & Peisner-Feinberg, 2000; Pianta & Nimetz, 1991; Pianta, Nimetz, & Bennett, 1997; Pianta & Stuhlman, 2004), while conflictual parent-child relationships are linked to dependent, conflictual, and insecure relationships with teachers at school entry (Pianta et al., 1997). In turn, teacher-child relationships in kindergarten and 1st grade are associated with classroom participation, school liking, and interest in learning -- with small to moderate effect sizes (McCombs, Daniels, & Perry, 2008; Murray et al., 2008a; Ladd et al., 1996; Ladd & Burgess, 2001).

2.2.2 Mediating associations across elementary school

Although relationships with parents and teachers in elementary school have been associated with

children's engagement and motivation months and even years down the line (Furrer & Skinner, 2003; Gottfried, Fleming, & Gottfried, 1994; 1998; Ladd & Price, 1987), longitudinal associations tend to be small and progressively diminish with passing time (e.g., Birch & Ladd, 1997; Freiland, 2011; Gest, Welsh, & Domitrovich, 2005; Ginsburg & Bronstein, 1993; Izzo et al., 1999; Ladd, 1990; Murray et al., 2008). Yet, evidence across several investigations suggests that early relationships may be important for children's longitudinal engagement through subsequent relationship and engagement patterns. For example, children who have relational problems in early elementary school are more likely to develop problematic teacher-child relationships (Eisenhower et al., 2007; Howes et al., 2000; Pianta et al., 1997), and are more likely to disengage in later years (Ladd et al., 2008). Lower levels of engagement are in turn associated with conflictual relationships in subsequent years (Hymel, Comfort, Schonert-Reichl, & McDougall, 2002; Kindermann, 1993), and may prompt future problems in both relationships and subsequent engagement patterns. Early conflict with parents and teachers may therefore instigate a cycle of low engagement that prompts continued or worsening conflict and disengagement throughout elementary school, while close relationships may promote positive relational and engagement processes across elementary school (Ladd *et al.,* 1999; Skinner & Belmont, 1993).

2.2.3   Relationships, motivation, & engagement before the middle-school transition

Children are less engaged in 5th grade than at any other time in elementary school, and significant developmental drops in engagement and motivation are seen as children transition into 6th grade (Eccles et al., 1984). For instance, teacher- and parent-child relationships become less positive more conflictual as children move through elementary school (Izzo et al., 1999;

17

O'Connor & McCartney, 2007), and 5th graders become increasingly focused on their peers rather than their parents or teachers. Despite this, some evidence suggests that adult relationships are more important for children's 5th grade engagement and motivation than in earlier grades (Furrer & Skinner, 2003; Wu et al., 2010). For instance, Furrer & Skinner (2003) find that relatedness to teachers is a more salient predictor of engagement for children transitioning to middle-school than for 3rd graders, even though the older children reported expected developmental drops in relatedness. In addition, a number of investigations find stronger associations with 5th grade engagement and motivation when considering within- rather than across-grade patterns. Indeed, longitudinal associations between teacher-child relationships, behavioral engagement, and motivation are often quite small (e.g., Birch & Ladd, 1997; Froiland, 2011; Gest, Welsh, & Domitrovich, 2005; Ginsburg & Bronstein, 1993; Izzo et al., 1999; Ladd, 1990; Murray et al., 2008). Clarifying additive and longitudinal linkages with engagement and motivation may be important for preventing disengagement during the transition to middle-school.

2.3   GAPS IN PREVIOUS RESEARCH

While a growing body of literature suggests that relationships with both parents and teachers are important for children's engagement, four major limitations leave important questions unanswered. First, a majority of the extant literature has considered how relationships are associated with child engagement in middle- and high-school contexts. The literature that *has* considered these associations in elementary school is frequently characterized by cross-sectional research or samples that are limited to a single grade. Because children's relationships and their

engagement in school both change over development, it is unclear whether the existing research can be generalized to children in early, middle, or later elementary-school. Second, only one investigation has simultaneously considered how students' relationships with parents and teachers promote engagement in the same model (Furrer & Skinner, 2003). As a consequence, none have examined the mediating and interactive ways in which these relationships are collectively associated with engagement across elementary school. Similarly, little is known about mediating and reciprocating processes across contexts and time, with children's relationships both affecting and being affected by engagement across development. If parent-child relationships play a significant role in the development of children's engagement, then not accounting for these associations or processes could lead us to overestimate the importance of student-teacher relationships and bypass important opportunities for intervention. Third, the literature on relationships and engagement infrequently addresses whether children's skill and competencies elicit close or conflictual relationships with parents and teachers. Thus it remains unclear whether children's self-regulatory, behavioral, and cognitive capabilities drive relational processes and engagement outcomes, or whether parents' and teachers' independent relational input is important for engagement in elementary school. Fourth, the majority of the extant literature on engagement and relationships in elementary school has utilized teacher or child report to assess engagement (e.g., Decker, Dona, & Christenson, 2007; Thijs & Koomen, 2008; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009), which may be biased by the teacher's or child's perspective of their relationships. Observational report of child engagement allows for triangulation of method across reporters, and produces estimates of relationships and engagement that are less biased than self- or teacher-report measures.

3.0   AIMS & HYPOTHESIES

The overarching aim of this dissertation is to strengthen understanding of how children, their parents, and their teachers are associated with engagement and motivation across elementary school. To address this aim and the aforementioned limitations, this project utilizes a large, longitudinal dataset, the National Institute of Child Health and Development Study of Early Childcare and Youth Development (NICHD-SECCYD) to test four hypotheses across three developmental periods and studies. The first study explores the extent to which relationships with parents and teachers prepare children for engagement during the transition to elementary school. The second examines how relationships are associated with engagement as children move across elementary school. Finally, the third considers how children's relationships are additively and longitudinally associated with both engagement and motivation at the end of elementary school. Each study considers four specific hypotheses, which are outlined below.

3.1   SPECIFIC HYPOTHESIES

3.1.1 Hypothesis 1: Direct associations between relationships & engagement

It is expected that children who experience closer, more sensitive, and less conflictual parent-child relationships before and during elementary school will be more engaged than those who

experience more conflictual, less sensitive, and more distant relationships with parents. Closeness with teachers is also hypothesized to be positively associated with engagement, while conflict is expected to be negatively associated with engagement throughout elementary school. Both additive and longitudinal associations are expected across each developmental period. In addition, it is anticipated that children with close or sensitive relationships with parents or teachers both prior to and during 5th grade will report greater relatedness, self-competence, and motivation in 5th grade than those with poorer relationships. In contrast, conflict is expected to be problematic for 5th grade motivational processes.

3.1.2   Hypothesis 2: Indirect associations across home and school contexts

It is also hypothesized that children who have warm and sensitive relationships with parents prior to school entry and throughout elementary school will develop closer and less conflictual relationships with their teachers in subsequent years than those who experience less sensitive or more distant relationships with parents. Similarly, conflictual relationships with parents are expected to be associated with conflictual teacher-child relationships in subsequent years. In turn, it is anticipated that concurrent teacher-child relationships will mediate associations between prior parent-child relationships and engagement outcomes through elementary school, and motivational outcomes in 5th grade.

3.1.3   Hypothesis 3: Child elicitation

It is anticipated that children with fewer self-regulatory, behavioral, and cognitive skills at school entry will elicit more distant and conflictual relationships with parents and teachers than those

with more adaptive competencies and skills prior to school entry. Such children are also expected to be less engaged throughout elementary school and show less adaptive motivational processes in 5th grade than those with stronger skills prior to school entry. However, it is also expected that parent- and teacher-child relationships will continue to be additively associated with engagement even after accounting for initial skills.

3.1.4 Hypothesis 4: Interactive associations across contexts

Finally, it is expected that associations between concurrent teacher-child relationships and engagement outcomes will be moderated by parent-child relationships at that time-point. Specifically, high amounts of teacher conflict are hypothesized to be less detrimental for children who have high amounts of closeness or sensitivity in the parent-child relationship, rather than low amounts of closeness or sensitivity with parents. In contrast, it is anticipated that high amounts of teacher closeness will be less beneficial for children who have high rather than low amounts of conflict in the parent-child relationship.

4.0   METHOD

The NICHD-SECCYD (2007) is a prospective longitudinal study of a large geographically, ethnically, and socioeconomically diverse sample of children born in 1991 and their families. The data includes multiple measures of children's physical, psychological, and behavioral development, family, child-care, and school contexts.

Mothers were recruited during the first 11 months of 1991 from one of 24 hospitals located in or near Little Rock, Arkansas; Irvine, California; Lawrence and Topeka, Kansas; Boston, Massachusetts; Philadelphia, Pennsylvania; Pittsburgh, Pennsylvania; Charlottesville, Virginia; Morganton and Hickory, North Carolina; Seattle, Washington; and Madison, Wisconsin. Participants were intentionally excluded if their mothers were under 18 years of age or could not speak English, if the child was a twin, had a known disability or stayed 7 or more days in the hospital after birth, or if the family planned to move in three years (Vandell, Belsky, Burchinal, Vandergrift, Steinberg, & NICHD-ECCRN, 2010). Among the 8,986 eligible families, 56% of eligible participants (3,015) were conditionally randomly selected based on additional eligibility criteria, and a total sample of 1,364 children were then randomly selected with approximately equal numbers of families at each site. Data collection was broken up into four phases: Phase I (birth to 3 years), Phase II (54 months to 1st grade), Phase III (2nd to 6th grade), and Phase IV (7th grade to age 15 years). Investigators contacted mothers by telephone every 3 – 5 months to keep in touch with participating families, and to update information.

At the time of recruitment, nearly half (48%) of infants were female, 76% were non-Hispanic Caucasian, 13% were African American, 6% were Hispanic, and 5% were other races (e.g., Asian, Multiracial). Over 12% of mothers were under the age of 21, 10% had not completed high school, and 14% of mothers were single. The mean income when the child was 6 months old was $48,720 per year. Retention rates have generally been high at each of the time points from 6 months to 12 years of age, although there was selective attrition. Ethnic minority families with lower educational levels were less likely to remain in the study over time and 137 children were lost within the first phase (1-36 months) (NICHD ECCRN & Duncan, 2003). An additional 126 children were lost during the second phase, and by 5th grade an additional 49 children had withdrawn from the study (full n=1052). Of this sample, an additional 28% of children were missing parent-reported data, 31% were missing teacher-reported data, and 37% were missing observational data. Statistical comparisons of children who were missing data and children who had complete data at all time-points revealed that the latter were less disadvantaged. Specifically, children with missing data were less likely to be African American and more likely to come from homes with higher incomes at baseline. Their mothers tended to be older when their first child was born, and they were more educated, and more likely to be married or partnered. These children also tended to have less sensitive mother-child relationships, and more conflict with teachers throughout elementary school.

4.1   MEASURES

4.1.1   Child engagement and motivation

The outcomes in this study include observer ratings of children's behavioral engagement in the classroom, which are available at 1st, 3rd, and 5th grade. Children's reports of their own achievement motivation, perceived competence, and relatedness to the school were also used as outcomes in 5th grade. These measures are each described in detail below.

First grade engagement. Engagement in 1st grade was assessed via observer report of the time-sampling portion of the Classroom Observation System, which was conducted in the spring of first grade (COS-1; NICHD ECCRN, 2002; NICHD SECCYD, 2007). The focus of the three-hour observation was the classroom as well as of the study-child and his or her experiences in the classroom. All observations occurred during the morning and began with the official start of the school day. Two cycles of time-sampled observations were conducted by trained examiners in the classroom, each involving three 10-minute periods of 30-second "observe" and 30-second "record" intervals. Observations were summed across cycles to form a total time for instruction that ranged from 0 to 60 minutes. For each of these 60 minutes, observers coded the activity, content, teacher behavior, child behavior toward the teacher, child behavior with peers, and child engagement.

Observers coded children as being actively engaged, passively engaged, or off-task (either unoccupied or engaged in an inappropriate activity). Active engagement was defined as time the study child spent dynamically involved in a teacher-approved activity, including reading aloud, or raising a hand to ask a question. Passive engagement referred to inactive involvement in a teacher approved activity, such as paying attention to the teacher while receiving directions

for a task or listening to other students' responses to questions. Off-task behaviors were recorded if the study child was not paying attention (e.g., daydreaming) or was involved in activities that were not approved by the teacher. Inter-rater reliability for each of these measures was acceptable (κ_{active} = .95; $\kappa_{passive}$ = .94 ; $\kappa_{off\text{-}task}$ = .89).

Since the amount of observed engagement likely depends on the amount of instruction provided to children, the total amount of instructional time was summed in 1st grade. Instructional time was captured during the time-sampling portion of the COS-1 using the same coding procedures described above. Minutes of time in instructional content (literacy/language arts κ=.97, mathematics κ=.99, science κ=.86, or social studies instruction κ=.95) were summed, and subsequently divided based on whether observers coded active or passive engagement for each minute of instruction. For the current investigations, the proportion of time actively or passively engaged was combined and used to assess overall engagement in classroom instruction (r = .41). As engagement and disengagement were highly correlated (r=.99), disengagement was not utilized in this investigation.

Middle childhood engagement. Engagement in 3rd and 5th grade was assessed from the time-sampling portion of the COS-3 (NICHD ECCRN, 2005; NICHD-SECCYD, 2007) and COS-5 (Pianta et al., 2008). The COS-3 and COS-5 are an upward extension and revision of the COS-1. As such, timing of the observations and coding differed slightly from the COS-1. While the observation took approximately 3 hours for the COS-1, the COS-3 and COS-5 was conducted over the course of 6 hours. Observations were performed for eight, ten-minute cycles during which observers observed for 30 seconds and recorded their observations for 30 seconds. At least one of the ten-minute cycles was required to take place during literacy or language arts instruction and at least one other cycle was required to take place during math instruction. For

each of these 80 minutes, observers coded the setting, content, teacher behavior, child academic behavior, and child social behavior. For the purposes of standardization, 80 minutes of observational coding were scaled back to 60 minutes across all observations (NICHD ECCRN, 2005; Pianta et al., 2008).

In the section on child academic behaviors in the COS-3 and COS-5, children were coded in four mutually exclusive engagement categories: engaged, highly engaged, unproductive, or off-task. 'Engaged' behavior was coded when the child displayed or passive involvement in teacher-approved academic activities (i.e., "on-task" behaviors), such as listening attentively or reading aloud or silently ($\kappa_{eng3}{}^{rd} = .96$; $\kappa_{eng5}{}^{th} = .75$). 'Highly engaged' codes were recorded when children displayed an intensity or urgency in classroom involvement depicted by extraordinary levels of excitement and enthusiasm in the classroom (e.g., vigorous hand-raising, or straining forward in chair) ($\kappa_{high3}{}^{rd} = .89$; $\kappa_{high5}{}^{th} = unobserved$). 'Unproductive/off-task' behaviors were identified in the same way as the noted in the COS-1 ($\kappa_{diseng3}{}^{rd} = .97$; $\kappa_{diseng5}{}^{th} = .82$).

To assess the proportion of instructional time children are engaged in 3rd and 5th grade, the total amount of instructional time was also summed during each of these times. Instructional time was captured during the time-sampling portion of the COS-3 and -5, and minutes of time in instructional content (literacy/language arts $\kappa_{3rd} = .98$; $\kappa_{5th} = .98$; mathematics $\kappa_{3rd} = .98$; $\kappa_{5th} = .97$, science $\kappa_{3rd} = .97$; $\kappa_{5th} = .95$, or social studies instruction $\kappa_{3rd} = .97$; $\kappa_{5th} = .97$) were summed. This time was subsequently divided based on whether observers coded children as 'engaged', 'highly engaged', or 'unproductive/off-task'. Previous investigations suggest that the proportion of time spent 'highly engaged' is inconsistently associated with engagement indices, both in significance and direction of association (Bachman, Castle, & Votruba-Drzal, *in review*). This rating of academic enthusiasm may actually reflect some self-regulatory issues and is therefore omitted

from analyses. In addition, the proportions of time children are off-task or unproductive was highly correlated with measures of engagement at 3rd & 5th grade (rs = .88 & .89, respectively). Thus, only the proportion of instructional time spent 'engaged' was utilized in this study.

COS Training & Reliability. Coders from all 10 of the NICHD-SECCYD sites first trained on practice videotapes by using a detailed, standardized manual, attending a centralized training workshop, and passing a videotaped reliability test involving six cases. After the central training workshop, coders returned to their sites, conducted pilot observations, and trained on two more videotaped cases. Following this training regimen, all observers passed a videotaped reliability test involving six cycles of time-sampled coding and qualitative ratings. Criteria for passing was at least a 60% match with a master-coder on time-sampled codes. All coders passed at these levels on a reliability test before being certified to conduct observations in the field (NICHD ECCRN, 2002). Average exact agreement with the master-coded videotape test for the time-sampled codes was estimated by correlation with master-coders' scores, and was .85.

As an additional check on reliability, observers conducted a minimum of two paired visits that were scheduled randomly during the data collection window for the purposes of estimating live reliability. Past research with the COS has reported average exact-agreement for live reliabilities exceeding correlations of .70 across observers (NICHD ECCRN, 2002). As a final check of reliability of observational data, test-retest reliability was obtained from a small sample of classrooms (n_1^{st} = 63; n_3^{rd} = 52; n_5^{th} = 54) in which there was more than one study child and were therefore observed more than once. The average cross-day correlation for time-sampled codes in the COS-1, COS-3, and COS-5 was high (κ_1^{st} = .79; κ_3^{rd} = .87; κ_5^{th} = .88). This suggests that the 1-day observations were reflective of aspects of the classroom setting that remained stable across days and children.

Child Motivational Processes. Children's motivational processes in the 5th grade were assessed via child report. At that timepoint, children completed the What I Think about School (School Commitment) Questionnaire (Eccles, 1993; Simons, Johnson, Conger, & Elder, 1998) to assess their perceptions about their ability to do well in school, motivation for learning, and their relationships at school. These items are well established and have been widely administered to children and youth (Eccles, Lord, Roeser, Barber, & Hernandez Jozefowicz, 1997; Feldlaufer, Midgley, & Eccles, 1988; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). The questionnaire contains 20 items, which were divided into three subscales. Children's perceived competence was assessed with the 9-item Perceived Competence subscale, and includes items about organizing and planning schoolwork, knowing how to study, and paying attention in class (α = .77; "I do well in school, even in hard subjects"). Relatedness to the school was assessed with the 5-item Social Aspects subscale (α = .59; "I don't feel I really belong at school" (*reversed*)). Finally, child motivation was assessed by the 6-item Motivation subscale (α = .68; "I try hard at school" and "Grades are very important to me"). Responses ranged from 1 (*Not at all true*) to 4 (*Very true*), and higher scores on each indicated higher levels of perceived competence, relatedness, or motivation. The three subscales are moderately correlated (rs = .50 - .54; p < .001).

4.1.2   Independent variables

Teacher-child relationships. The STRS is a short 15-item instrument that was completed by all teachers once a year from kindergarten through 5th grade using a 5-point scale ranging (1 = *definitely does not apply*; 5 = *definitely applies*). Teachers rated the amount of closeness and conflict they perceived with the study-child (1 = *definitely does not apply*; 5 = *definitely applies*)

in terms of positive affect, warmth, and open communication. This was assessed with 8 items in 1st, 3rd, and 5th grades (e.g., "If upset, this child will seek comfort from me" and "I share an affectionate, warm relationship with this child"). Conflict within the relationship is characterized by negativity and low amounts of communication, and was assessed with 7 items in 1st, 3rd, and 5th grades (e.g., "This child is uncomfortable with physical affection or touch from me" and "This child easily becomes angry with me"). Items within each subscale were summed, with higher scores on each dimension corresponding to greater amounts of closeness or conflict. These instruments have been widely used in studies of student-teacher relationships, show adequate test-retest reliability over a 4-week period, and have demonstrated good internal consistency. Cronbach's alphas for closeness ($\alpha_1=.85$, $\alpha_3=.85$, $\alpha_5=.85$) and conflict ($\alpha_1=.88$, $\alpha_3=.91$, $\alpha_5=90.$) were adequate.

Parent-child relationships. The quality of interactions between the primary caregiver and the child was assessed using the Adult-Child Relationship Scale (ACRS), a variation of the STRS which rephrases items to better reflect the relationship between parent and child. Mothers completed a 30-item version of this scale when children were 54 months, and a 15-item measure at 1st, 3rd, and 5th grades. Mothers rated the amount of closeness and conflict they perceived with their child (1 = *definitely does not apply*; 5 = *definitely applies*) to capture each dimension at 54 months, kindergarten, first, third, and fifth grades. Mothers' closeness with the study-child reflects shared positive affect, warmth, and open communication (e.g., "I share an affectionate/warm relationship with my child" and "My child openly shares his or her feelings and experiences with me"), and included 11 items at 54 months and 8 at 1st, 3rd, and 5th grades. Conflict reflects negativity and struggle (e.g., "My child & I are always struggling with each other" and "Dealing with my child drains my energy"), and included 12 items at 54 months and 7

at 1st, 3rd, and 5th grades. Items were summed, with higher scores on each dimension corresponding to greater closeness or greater conflict. Cronbach's alphas for closeness (α_{54}=.69, α_1=.64 α_3=.65 α_5=.86) and conflict (α_{54}=.84, α_1=.84 α_3=.84 α_5=.89) were adequate.

Maternal Sensitivity. During the 54 month, 1st, 3rd, and 5th grade home visits, 15-minute semi-structured mother-child interactions were videotaped and coded for maternal sensitivity. These tasks were designed to be challenging for the child and thus required parental assistance and/or teaching. Different age-appropriate activities were selected at each time-point. At 54 months the tasks included playing together with six hand puppets, using building-blocks to build a set of towers, and completing a maze using an Etch-a-Sketch. During the first grade interaction, mothers and children were asked to use the same Etch-a-Sketch to collaboratively draw a house and a tree, play a card game, and create patterns with blocks of different shapes and colors. Interactions in 3rd and 5th grade utilized a discussion task and planning activity. Videotaped mother-child interactions were sent to a central location for coding. Coders received extensive training and supervision, were blind to any information about the study families, and were randomly assigned videotapes for coding (NICHD ECCRN, 2003).

Mothers' behaviors during the interaction at each assessment were rated on respect for autonomy, supportive presence, and hostility (reversed) on a 7-point global rating scale (1 (not at all characteristic) to 7 (highly characteristic)). Respect for the child's autonomy was shown when the mother acknowledged and displayed respect for the child's intentions and individuality (κ_{54}^{mos} =.78 ; κ_1^{st} = .81; κ_3^{rd} = .62; κ_5^{th} = .75). High scores on supportive presence were indicative of emotional support, encouragement, and positive emotional regard (κ_{54}^{mos} = .87 κ_1^{st} = .89; κ_3^{rd} = .73; κ_5^{th} = .78). Finally, hostility indicated discounting the child, rejection, or expressions of anger (κ_{54}^{mos} =.78; κ_1^{st} = .88; κ_3^{rd} =.78; κ_5^{th} = .76). At each age, the 7-point ratings

for each scale were aggregated to form a composite score of maternal sensitivity. Maternal sensitivity composites have good inter-rater reliability ($\kappa_{54}^{mos} = .88$; $\kappa_1^{st} = .91$; $\kappa_3^{rd} = .83$; $\kappa_5^{th} = .84$), and are moderately correlated over time (rs = .27 to .37).

Self-regulation. At 36 months, early-childhood self-regulatory capabilities were measured using a self-control task that assesses the child's ability to delay and/or inhibit play with an attractive toy when asked by an experimenter to do so (Schneider-Rosen & Wenz-Gros, 1990). This task was conducted in the laboratory with the mother present. An attractive stimulus task was developed for the study to measure the children's self-control in a standard laboratory task. Self-control is measured as the length of time the child refrains from touching the toy following initial instructions from the experimenter, and displayed adequate inter-rater reliability ($\kappa_{36}^{mos} = .83$). Such tasks have been used for this purpose in several studies of young children's compliance and self-control (e.g. Schneider-Rosen & Wenz- Gross, 1990; Vaughn, Kopp, & Krakow, 1984; Vaughn, Kopp, Krakow, Johnson, & Schwartz, 1986).

During preschool, children's self-regulation was assessed in a laboratory setting using a delay of gratification task developed by Mischel and Ebbesen (1970). Children were placed in a room with two plates of a desired snack: one with a smaller quantity and one with a larger quantity. After the children acknowledged that they would prefer the larger quantity, the examiner explained the rules of the game. Children were told if they waited until the examiner returned they would receive the larger quantity of food. However, if they couldn't wait the full amount of time (seven minutes), they could ring a bell to summon the examiner and they would receive the smaller portion. Children were then left alone in the room and were observed during the task through a two-way mirror. Scores were recorded as pass or fail with children passing if they waited the full seven minutes without summoning the researcher or eating the snack. Failed

scores were given if the child rang the bell, started eating the snack, summoned the caregiver or the examiner, went to the door, or become distressed during the trial. Unfortunately, reliability estimates are unavailable for this measure.

Child behavior. Children's internalizing and externalizing behaviors were assessed using scores on the Preschool Child Behavior Checklist 1 ½ - 5 (CBCL; Achenbach, 1991) at 36 months, and the Child Behavior Checklist 4-18 (CBCL; Achenbach, 1991) at 54 months. The CBCL 1 ½ - 5 contains 100 items, while the CBCL 4 – 18 contains 118 items. Mothers report on behavior problems over the past six months, and present items rated on a 3-point scale ranging from – 1 (*not true*) to 2 (*very true* or *often true*). Standardized T-scores from the CBCL Internalizing and Externalizing problem subscales are utilized for this study. The internalizing scale contains 32 items from the anxious/depressed, withdrawn/depressed, and somatic complaints subscales, while the externalizing scale contains 33 items from the delinquent and aggressive behavior subscales. Though the NICHD-SECCYD did not calculate explicit reliability statistics for internalizing or externalizing problems at either timepoint, a large body of psychometric literature suggests that both internalizing and externalizing T-Scores are highly reliable and internally consistent (Achenbach, 1991). Higher scores represent higher levels of internalizing and externalizing problems, respectively.

Cognitive skills. Standardized assessments of children's cognitive capabilities were obtained by independent raters at both 36 and 54 months. At 36 months, children's cognitive skills were assessed using the Bracken School Readiness Composite (BSRC) (Bracken, 1984; Naglieri & Bardos, 1989). The BSRC assesses knowledge of basic concepts that are indicative of school-readiness. The five administered subtests consisted of a 10-item Colors test, a 10-item Letter Identification test, a 14-item Numbers/Counting test, a 7-item Comparisons test, and a 20-

item Shapes test. Each item was scored either 1 or 0 for pass or fail. Scores on the five subtests were summed to create the BBCS School Readiness Composite (α=.93). This investigation utilizes the standard score based on the BBCS standardization data. Previous studies considering predictive validity of the BSRC differentiated between average and at-risk preschoolers (Stebbins & McIntosh, 1996), predicted performance on the Weschler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler, 1989; Laughlin, 1995), and correlated highly with the Stanford-Binet-IV (Thorndike, Hagen, & Sattler, 1986). Higher scores indicate greater school readiness.

At 54-months, children's cognitive skills were assessed using the Early Development Scale of the Woodcock-Johnson Psycho-educational Battery – Revised Cognitive Battery (WJ-R COG; Woodcock & Johnson, 1989). The WJ-R COG is a set of individually administered assessments that measure children's cognitive abilities, and the Early Development Scale included the Memory for Sentences, Incomplete Words, and Picture Vocabulary subscales. Memory for Sentences is a measure of short-term memory, and assesses the ability to remember and repeat simple words, phrases, and sentences presented orally. The Incomplete Words subscale assesses auditory processing, and asks children to name a completed word that has one or more phonemes missing. Finally, the Picture Vocabulary subscale measures the ability to recognize or name pictures, and assesses verbal comprehension and crystallized intelligence. Raw scores were converted into W scores, which are a special transformation of the Rasch ability scale that eases interpretation. Each subscale was standardized, and a standardized composite was created that represents the Early Development Scale. Higher values indicate better cognitive abilities (α=.70).

4.1.3   Control variables

Family & child characteristics. Family and child demographics obtained from parent questionnaires are included as covariates in the analyses. Mothers reported their child's gender *(0 = female; 1 = male)* and whether a child is Caucasian (*reference group*), Latino/a, Black, or Other, at 1 month of age. Mothers also reported on the number of children in the household, maternal labor force participation (0 = *not employed*, 1 = *employed*), and marital status (0 = *married*; 1 = *unmarried*) at 36 and 54 months, 1st, 3rd, and 5th grades. Socioeconomic status was assessed at the same time points, and is represented by household income and maternal education. Mothers were asked to report the number of years of education they had completed before the birth of the study child, and were asked to report their household income during each wave of data collection. To ease interpretation of the regression coefficients, income was divided by $10,000. Time-varying factors, such as maternal education, employment, marital status, and monthly household income were also assessed at 36 and 54 months, 1st, 3rd, and 5th grades, and were entered as covariates in the models.

    Classroom and teacher characteristics. In the fall of each school year, first, third and fifth grade teachers reported on their years of teaching experience, highest educational degree attained *(0 = Bachelors (reference)* or *1 = Advanced degree)*, and class size. Qualitative assessments of classroom instructional quality were also obtained in the spring of 1st, 3rd, and 5th grades by independent raters during the qualitative section of the COS-1, COS-3, and COS-5. In 1st grade, the quality of literacy instruction was assessed on a 7-point scale (*1 & 2 = low; 3 – 5 =*

moderate; 5 & 7 = high), with higher ratings indicating higher quality literacy instruction. Qualitative ratings changed in 3rd and 5th grade to reflect grade-related changes in instruction. In 3rd and 5th grade, the richness of teachers' overall instructional methods was assessed on a 7-point scale (*1 & 2 = low quality; 3 – 5 = moderate; 5 & 7 = high quality*), with higher ratings indicating that teachers utilize a rich variety of teaching strategies that encourage higher quality thinking skills, and provide opportunities for student involvement through inquiry, experimentation, problem-solving, and discussion. Inter-rater reliability was acceptable at each timepoint (κ_1^{st} = .93; κ_3^{rd} = .83; κ_5^{th} = .78). Adequate predictive validity has also been established for the COS measures with a host of NICHD SECCYD studies reporting COS-assessed classroom effects on changes in children's academic and social functioning (Hamre & Pianta, 2005; NICHD ECCRN, 2003, 2005; Pianta, Belsky, Houts, Morrison, & NICHD-ECCRN, 2007).

5.0   ANALYTIC FRAMEWORK

5.1   IMPUTATION OF MISSING DATA

A challenge with the use of longitudinal data is the problem of missing data. Approaches such as listwise deletion and mean imputation have been criticized for biasing estimates, misrepresenting statistical power, and leading to invalid conclusions (Acock, 2005; Rubin, 1987; Widaman, 2006). In contrast, Multiple Imputation (MI) allows for the maximization of sample size, allows for variability in sampling error and model uncertainty, and guards against bias in the analytic sample by filling in missing data with predicted values on the basis of existing data (Jeličić, Phelps, & Lerner, 2009; McCartney, Burchinal, & Bub, 2006). Missing data were therefore imputed using multiple imputations by chained equations (ICE), which was conducted in Stata 10 (Royston, 2005; StataCorp, 2007). Imputations were performed on both the independent and dependent variables (Schafer & Graham, 2002). Data were imputed to the full NICHD sample (n=1,364) because this method of imputation has been shown to result in more accurate estimates (i.e. means and covariates) than does imputing for only a subset of cases (Little & Rubin, 2002). Consistent with Graham, Olchowski, & Gilreath's (2007) recommendation, forty imputed datasets were created for each analytic aim.

5.2   STRUCTURAL EQUATION MODELS

Following imputation, the forty datasets were imported into *MPlus* 7. Analyses were conducted

on each of these imputed data sets, and results were pooled within the program to provide model

estimates, parameters, and standard errors (Rubin, 1987). SEM utilizes a path analysis that

examines covariance structures, otherwise known as a causal analysis (Keith, 2006). Pathways

were specified for each analytic question on the basis of the foregoing hypotheses and rationales,

and are specified below. Each model evaluated mediational associations using the process

recommended by Baron and Kenny (1986), and the size of indirect associations were calculated

using the product of coefficients method (e.g., MacKinnon & Dwyer, 1993). As the Sobel test is

recommended for large sample sizes (Dearing & Hamilton, 2006), significance of indirect

pathways was assessed with delta method standard errors (Sobel, 1982).

5.3   EVALUATING MODEL FIT

For all models, a robust estimation method (MLR) was used to take into account of the potential

non-normality of relational measures. While many SEM models utilize the χ^2 statistic as a

measure of model fit, it is highly sensitive to sample-size and can lead to rejection of the model

even though differences between observed and predicted covariances are slight (Bentler, 1990;

Byrne, 2001; Fan, Thompson, & Wang, 1999). In addition, it is not clear how to meaningfully

combine χ^2 values using imputed data (Muthén & Muthén, 2012). Thus, model fit is assessed

using the comparative fit index (CFI; >.90 = acceptable fit, >.95 = good fit), the root mean

square error of approximation (RMSEA; .08 - .10 = mediocre; .05 - .08 = acceptable; <.05 =

good fit (Dudgeon, 2004; McDonald & Ho, 2002), and the SRMR, which represents the overall difference between the observed and predicted correlations within the model (values >.10 indicate an acceptable fit). Each model was initially evaluated using the standards noted above after entering all stated covariates. SEM can be an iterative process by which modifications are indicated in the initial results, and parameter constraints are altered to improve the fit of the model (Schreiber, Stage, King, Nora, & Barlow, 2006). Thus, pathways that were not significant were incrementally trimmed to improve model fit; all pathways utilized to consider interactive associations were retained regardless of significance. Specific analytic considerations for each aim are further detailed below.

5.4 DESCRIPTIVE STATISTICS

Table 1 presents descriptive statistics for key variables of interest across aims; Table 1.2 presents descriptives for all covariates used to consider each of the three aims. Table 2 presents correlations among relationships, engagement, and children's skills and competencies at each timepoint. As noted below, slightly different combinations of variables are utilized to address study 1, 2, and 3; Descriptive tables identify these differences with subscripts.

5.4.1 Measurement invariance

Examining children's relationships over time raises the question of whether similar constructs are measured in the same way at different ages. Assessments of metric invariance tests whether each composite measures similar constructs across 1st, 3rd, and 5th grade, while scalar invariance

examines the extent to which each composite is measured on similar scales over time (Koomen, Verschueren, van Schooten, Jak & Pianta, 2012). Both metric and scalar invariance of all relational items over time were assessed using item-level confirmatory factor analysis (CFA) in MPlus7 (Cheung & Rensvold, 2002; Meredith & Teresi, 2006; Muthen & Muthen, 2010). Results of the CFA suggest that each assessment of parent- and teacher-child relationships measure similar constructs at each time period (e.g., assessments of teacher conflict in 1st grade tap the same underlying 'conflict' construct in 3rd and 5th grades). In addition, results indicate that maternal and teacher conflict are measured on a similar scale across time-points (e.g., maternal conflict is measured similarly at 54 months, 1st, 3rd and 5th grades). However, findings concerning maternal sensitivity, maternal closeness, and teacher closeness indicate that intercepts were slightly different over time. This suggests that these items may be scaled slightly differently across development, which may be important when comparing differences in closeness and sensitivity as children progress through elementary school. It is also important to note that differences in measurement between 1st grade engagement and engagement at 3rd and 5th grade also precludes developmental comparisons over time.

Table 1: Descriptive statistics for key variables of interest.

	Mean	S.D.	Min	Max
Child Skills & Competencies				
36 Months°				
Cognitive Skills	9.02	2.88	1.00	17
Self Control	91.52	65.52	0.00	151.00
Internalizing Behaviors	51.21	9.50	30.00	91.00
Externalizing Behaviors	51.13	8.49	30.00	80.00
54 months$^{\infty\Xi}$				
Cognitive Skills	459.84	13.40	370.00	493.67
Self Regulation	0.53	0.49	0.00	1.00
Internalizing Behaviors	47.29	8.87	33.00	74.00
Externalizing Behaviors	51.69	9.39	30.00	82.00
Mother-Child Relationships				
54 Months°				
Closeness	50.04	3.67	33.00	55.00
Conflict	27.34	7.63	12.00	53.00
Sensitivity	16.94	2.90	4.00	21.00
1st Grade$^{°\infty}$				
Closeness	37.98	2.50	22.00	40.00
Conflict	15.21	5.87	7.00	33.00
Sensitivity	16.88	3.03	5.00	21.00
3rd Grade$^{\infty}$				
Closeness	37.19	2.82	19.00	40.00
Conflict	16.13	6.05	7.00	32.00
Sensitivity	16.34	2.49	4.00	21.00
5th Grade$^{\infty\Xi}$				
Closeness	36.56	3.25	20.00	40.00
Conflict	16.37	5.99	7.00	35.00
Sensitivity	16.50	2.42	7.00	21.00
Av. 1st & 3rd Grade$^{\Xi}$				
Closeness	36.56	3.25	20.00	40.00
Conflict	16.37	5.99	7.00	35.00
Sensitivity	16.50	2.42	7.00	21.00

Variables used in: ° Study 1; ∞ Study 2; Ξ Study 3

Table 1 (Continued)

	Mean	**S.D.**	**Min**	**Max**
Teacher-Child Relationships				
1st Grade[°∞]				
Closeness	33.96	5.04	12.00	40.00
Conflict	10.92	5.17	7.00	35.00
3rd Grade[∞]				
Closeness	33.08	5.15	15.00	40.00
Conflict	11.62	6.03	7.00	34.00
5th Grade[∞Ξ]				
Closeness	31.85	5.37	14.00	40.00
Conflict	11.44	5.74	7.00	35.00
Av. 1st & 3rd Grade[Ξ]				
Closeness	33.56	4.15	17.50	40.00
Conflict	11.20	4.76	7.00	28.50
Proportion of Instruction Engaged				
1st Grade Engagement[°∞]	0.93	0.08	0.41	1.00
3rd Grade Engagement[∞]	0.25	0.05	0.06	0.39
5th Grade Engagement[∞Ξ]	0.24	0.05	0.10	0.44
Av. 1st & 3rd Engagement[°∞Ξ]	0.59	0.07	0.24	0.70
5th Grade Motivation[Ξ]				
Perceived Competence	3.49	0.39	1.56	4.00
Motivation	3.36	0.48	1.33	4.00
Relatedness	3.61	0.43	1.40	4.00

Variables used in ° Aim 1 ∞ Aim 2 Ξ Aim 3

Table 2: Descriptive statistics for family, teacher, and school covariates.

	Mean	S.D.	Min	Max
Child Characteristics°∞Ξ				
Boy	0.52	0.50	0.00	1.00
Hispanic	0.06	0.24	0.00	1.00
Black	0.13	0.33	0.00	1.00
Other	0.05	0.21	0.00	1.00
Parent Characteristics				
Time Invariant°∞Ξ				
Maternal Education	14.23	2.51	7.00	21.00
Maternal Age	28.11	5.64	18.00	46.00
Birthweight	0.02	0.16	0.00	1.00
Av. 36 - 54 months°				
Kids in household	2.20	0.99	1.00	8.00
Maternal Employment	0.76	0.40	0.00	1.57
Marital Status	1.74	1.31	1.00	6.40
Income	1.65	0.79	0.00	3.73
1st Grade°∞				
Kids in household	2.40	0.95	1.00	7.00
Maternal Employment	0.75	0.43	0.00	1.00
Marital Status	0.76	0.43	0.00	1.00
Income	6.64	5.09	0.25	30.00
3rd Grade∞				
Kids in household	2.40	0.98	1.00	7.00
Maternal Employment	0.76	0.43	0.00	1.00
Marital Status	0.76	0.43	0.00	1.00
Income	7.70	6.83	0.25	50.00
5th Grade∞Ξ				
Kids in household	2.48	1.04	1.00	7.00
Maternal Employment	0.76	0.43	0.00	1.00
Marital Status	0.76	0.43	0.00	1.00
Income	8.49	7.70	0.25	50.00
*Av. 1st & 3rd Grade*Ξ				
Kids in household	2.40	0.97	1.00	7.00
Maternal Employment	0.76	0.38	0.00	1.00
Marital Status	0.76	0.40	0.00	1.00
Income	7.20	5.63	0.25	40.00

Variables used in ° Aim 1 ∞ Aim 2 Ξ Aim 3

Table 2 (Continued)

	Mean	**S.D.**	**Min**	**Max**
Teacher & Classroom Characteristics				
1st Grade[°∞]				
Class Size	21.25	5.17	2.00	73.00
Years of Experience	14.52	9.48	0.30	41.00
Teacher Education	0.39	0.49	0.00	1.00
Instructional Quality	17.97	2.61	6.33	21.00
3rd Grade[∞]				
Class Size	21.60	4.55	6.00	51.00
Years of Experience	13.93	10.29	0.00	52.00
Teacher Education	0.41	0.49	0.00	1.00
Instructional Quality	2.09	0.77	1.00	5.50
5th Grade[∞Ξ]				
Class Size	23.42	5.41	4.00	62.00
Years of Experience	14.53	10.46	0.00	45.00
Teacher Education	0.47	0.50	0.00	1.00
Instructional Quality	3.59	1.06	1.00	6.50
Av. 1st & 3rd Grade[Ξ]				
Class Size	21.60	4.55	6.00	51.00
Years of Experience	13.99	10.44	0.00	70.00
Teacher Education	0.41	0.49	0.00	1.00
Instructional Quality	2.09	0.77	1.00	5.50

Variables used in ° Aim 1 ∞ Aim 2 Ξ Aim 3

Table 3: Correlations between engagement, motivation, parent-child relationships, teacher-child relationships, and child skill &

competencies.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1 Engagement - 1st	1																															
2 Engagement - 3rd	.026	1																														
3 Engagement - 5th	.067	.116**	1																													
4 Perceived Competence	.119**	-.008	-.001	1																												
5 Motivation	.052	-.049	-.041	.502**	1																											
6 Relatedness	.092**	.003	.024	.531**	.541**	1																										
7 M. Conflict - 54m	-.076*	.002	-.002	-.080*	-.102**	-.128**	1																									
8 M. Cloeness - 54m	.056	-.058	-.096**	.100**	.086*	.153**	-.318**	1																								
9 M. Sensitivity - 54m	.057	-.025	-.001	.080*	-.015	.128**	-.150**	.180**	1																							
10 M. Conflict - 1st	-.087*	.002	-.002	-.094**	-.098*	-.117**	.607**	-.191**	-.103**	1																						
11 M. Closeness - 1st	.107**	-.042	-.047	.038	.119**	.132**	-.305**	.429**	.120**	-.346**	1																					
12 M. Sensitivity - 1st	.104**	-.041	-.026	-.012	-.033	.092**	-.139**	.226**	.493**	-.071*	.137**	1																				
13 T. Conflict - 1st	-.153**	-.041	-.009	-.157**	-.123**	-.246**	.161**	-.116**	-.138**	.179**	-.168**	-.116**	1																			
14 T. Close - 1st	.074*	.050	-.019	.091**	.119**	.141**	-.039	.097**	.080*	-.074*	.186**	.014	-.277**	1																		
15 M. Conflict - 3rd	-.033	-.063	-.015	-.107**	-.110**	-.106**	.543**	-.181**	-.083*	.657**	-.226**	-.057	.156**	-.057	1																	
16 M. Closeness - 3rd	.034	.027	-.039	.066*	.097**	.122**	-.333**	.355**	.136**	-.260**	.475**	.101**	-.138**	.131**	-.328**	1																
17 M. Sensitivity - 3rd	.141**	.001	-.011	.132**	.075*	.169**	-.198**	.196**	.392**	-.130**	.137**	.458**	-.214**	.124**	-.188**	.173**	1															
18 T. Conflict - 3rd	-.140**	-.024	-.037	-.157**	-.119**	-.275**	.151**	-.131**	-.226**	.162**	-.164**	-.184**	.474**	-.125**	.197**	-.165**	-.261**	1														
19 T. Closeness - 3rd	.098**	.074*	.027	.125**	.151**	.224**	-.029	.146**	.055	-.068	.134**	.065	-.165**	.333**	-.084*	.110**	.154**	-.382**	1													
20 M. Conflict - 5th	-.039	.011	-.002	-.142**	-.162**	-.149**	.508**	-.161**	-.102**	.630**	-.212**	-.072*	.162**	-.020	.677**	-.274**	-.159**	.148**	-.099**	1												
21 M. Closeness - 5th	.049	.005	.001	.075*	.132**	.115**	-.258**	.340**	.097**	-.265**	.459**	.093**	-.110**	.123**	-.250**	.588**	.144**	-.123**	.118**	-.353**	1											
22 M. Sensitivity - 5th	.079*	-.022	.014	.154**	.060	.163**	-.202**	.223**	.375**	-.138**	.151**	.426**	-.222**	.072*	-.155**	.154**	.468**	-.218**	.085*	-.185**	.175**	1										
23 T. Conflict - 5th	-.169**	-.040	-.065	-.180**	-.175**	-.295**	.150**	-.135**	-.181**	.114**	-.099**	-.208**	.436**	-.145**	.150**	-.121**	-.230**	.461**	-.169**	.160**	-.130**	-.273**	1									
24 T. Closeness - 5th	.013	.014	.006	.105**	.157**	.232**	-.027	.109**	.058	-.009	.084*	.060	-.088*	.268**	-.001	.096**	.078*	-.130**	.332**	-.009	.138**	.059	-.347**	1								
25 Cognitive Skills - 54m	.049	-.051	-.019	.237**	.017	.168**	-.107**	.181**	.296**	-.047	.110**	.331**	-.149**	.117**	-.091**	.136**	.266**	-.186**	.090*	-.108**	.087*	.312**	-.161**	.117**	1							
26 Self Regulation - 54m	.058	-.065	-.025	.109**	.071	.090*	.029	.040	.032	.041	.048	.021	-.095*	-.030	.054	.006	.064	-.061	.067	.019	.056	.010	-.053	.013	.042	1						
27 Internalizing - 54m	-.026	.062	-.009	-.034	-.019	-.075*	.369**	-.175**	-.108**	.331**	-.177**	-.110**	.047	-.052	.261**	-.160**	-.095**	.059	-.029	.226**	-.108**	-.083*	.029	-.047	-.100**	.031	1					
28 Externalizing - 54m	-.036	.012	.009	-.072*	-.062	-.107**	.576**	-.190**	-.142**	.523**	-.193**	-.148**	.191**	-.007	.446**	-.183**	-.160**	.166**	-.001	.406**	-.136**	-.152**	.137**	-.016	-.132**	.021	.590**	1				
29 Cognitive Skills - 36m	.083*	-.029	-.010	.167**	.066*	.205**	-.090**	.145**	.307**	-.006	.041	.347**	-.165**	.075*	-.033	.049	.286**	-.239**	.144**	-.052	.028	.302**	-.233**	.087*	.482**	.071*	-.036	-.115**	1			
30 Self Regulation - 36m	.108**	.006	.009	.080*	.055	.142**	-.053	.098**	.238**	-.062	.079*	.196**	-.238**	.060	-.052	.061	.179**	-.200**	.049	-.049	.035	.217**	-.214**	.036	.236**	.107**	-.050	-.119**	.276**	1		
31 Internalizing - 36m	-.062	.053	.014	-.062	-.059	-.087*	.436**	-.231**	-.234**	.389**	-.223**	-.184**	.099**	-.070	.321**	-.181**	-.186**	.116**	-.027	.286**	-.164**	-.154**	.079*	-.029	-.208**	.004	.546**	.481**	-.154**	-.090*	1	
32 Externalizing - 36m	-.091**	.017	.008	-.131**	-.123**	-.169**	.509**	-.185**	-.186**	.475**	-.200**	-.168**	.174**	-.048	.429**	-.173**	-.223**	.206**	-.063	.373**	-.158**	-.192**	.150**	-.011	-.204**	.005	.431**	.655**	-.193**	-.166**	.690**	1

6.0 STUDY 1: EXPLORE THE EXTENT TO WHICH RELATIONSHIPS WITH PARENTS AND TEACHERS PREPARE CHILDREN FOR ENGAGEMENT DURING THE TRANSITION TO ELEMENTARY SCHOOL

The first study considers the extent to which relationships with parents and teachers prepare children for engagement during the transition to elementary school. The conceptual model for this aim is presented in Figure 2; Specific hypotheses are outlined in Chapter 3.

6.1 ANALYTIC PLAN

The initial model tested hypotheses 1.1 through 1.3. Hypothesis 1.1 considered direct associations between children's relationships in preschool and 1st grade, and 1st grade behavioral engagement outcomes. Thus, an initial model was estimated to include 6 direct paths from maternal closeness, conflict, and sensitivity at both 54-months and 1st grade to children's engagement in 1st grade. This model also included 3 direct paths from 1st grade teacher-child relationships to 1st grade engagement. To examine whether 1st grade teacher-child relationships mediated associations between previous relationships with parents and engagement (Hypothesis 1.2), the initial model also included nine paths from parental closeness, conflict, and sensitivity in preschool regressed on closeness and conflict with 1st grade teachers. Stability within the parent-child relationship was modeled over time, and included 9 paths linking parental closeness, conflict, and sensitivity in

46

preschool with each of these measures in 1st grade. Indirect associations were assessed utilizing the aforementioned strategies (MacKinnon & Dwyer, 1993; Sobel, 1982). Hypothesis 1.3 evaluated whether a particular relational association was at least partially attributable to children's cognitive skills, self-regulation, or internalizing/externalizing behaviors. Therefore, the initial model also included paths from child cognitive skills, self-regulation, internalizing, and externalizing symptoms at 36 months to children's relationships at each timepoint, as well as 1st grade child engagement outcomes. The presence of significant indirect associations was again evaluated using the methods noted above (MacKinnon & Dwyer, 1993; Sobel, 1982).

Given that aspects of children's relationships taken at the same timepoint are also likely to be highly correlated, all indicators of concurrent relationships were allowed to co-vary. Assessments of children's skills and competencies at 36 months were also allowed to co-vary. All time-invariant child, home, and family covariates were entered as predictors of children's relationships at 54-months and 1st grade, and engagement in 1st grade. Time-varying child, home, and family controls were aggregated across 36 and 54 months, and entered as predictors of both relationships and engagement. Finally, 1st grade teacher- and classroom covariates were entered as predictors of teacher-child relationships and engagement at that timepoint. Model fit was evaluated using the process described above; pathways that were not significant (p<.15) were incrementally trimmed to improve model fit.

After evaluating and refining the model detailed above, three centered interaction terms were stepped into the model described above as predictors of 1st grade engagement. These interaction terms considered whether associations between 1st grade parent-child relationships and engagement outcomes were moderated by teacher-child relationships (Hypothesis 1.4). Correspondingly, interactions included 1st grade maternal closeness x teacher conflict, maternal

sensitivity x teacher conflict, and maternal conflict x teacher closeness. Error terms among

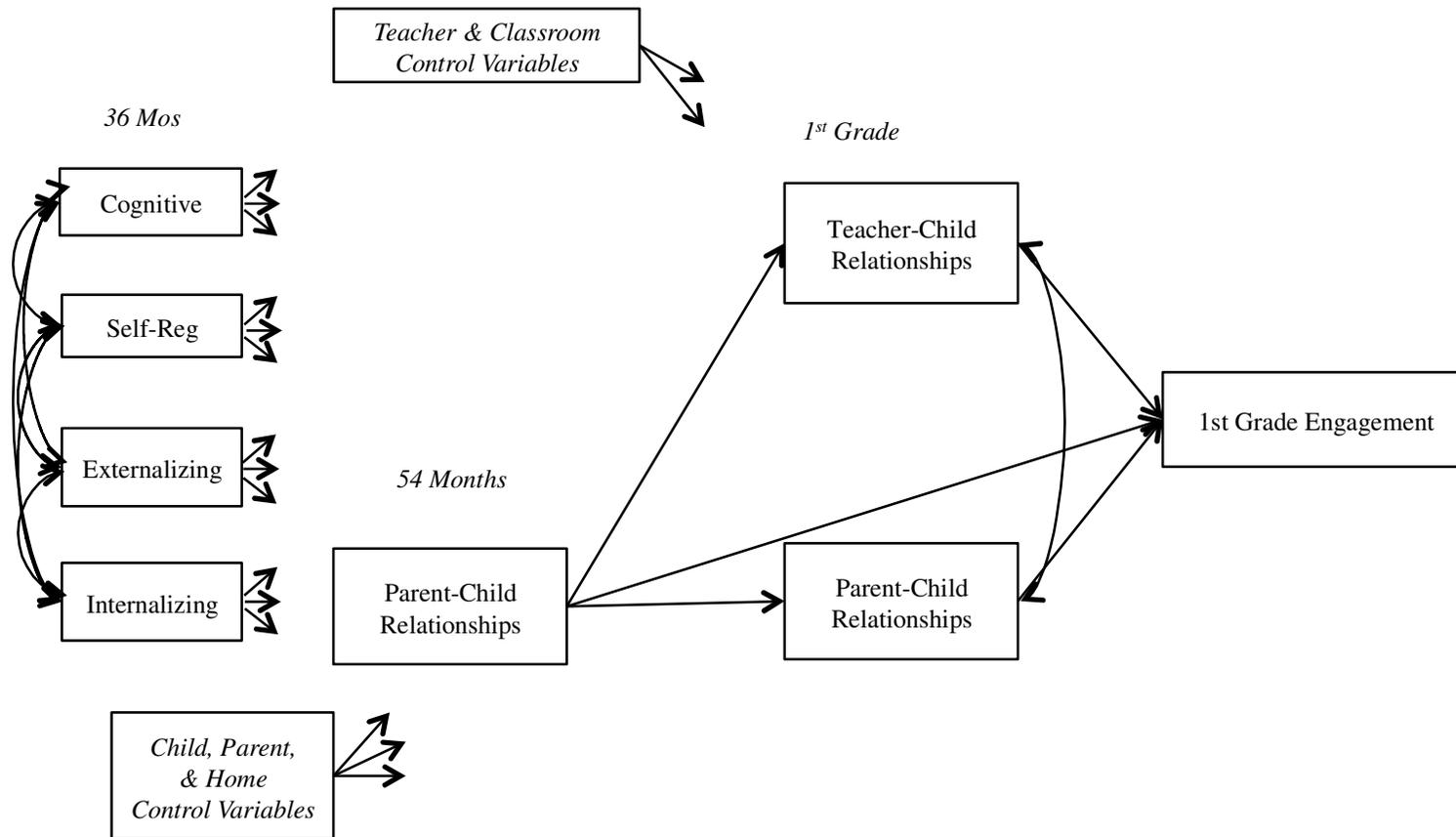interactions were allowed to co-vary; Model fit was again evaluated using the indices noted above.

Figure 2. Conceptual model of the relations among child skills & competencies at 36 months, mother-child relationships at 54-months and 1st grade, teacher-child relationships at 1st grade, and observed engagement in 1st grade.

6.2   RESULTS

The conceptual model presented in Figure 2 was modeled using the processes described in the

analytic section and the results are found in Figure 3. This model provided a good fit to the data,

with CFI = .94 (*SD* = .007), RMSEA = .037 (*SD* = .002), and SRMR = .021 (*SD* = .001) (*note*

that standard deviations reflect the variance around the chi-square and fit statistics across the

40 imputed data sets). For parsimony, only significant pathways are reported; all coefficients are

standardized. Error terms, covariances, and covariates have also been omitted for simplicity.

6.2.1   Hypothesis 1.1: Direct associations between relationships & engagement in early
elementary school

The first aim of this investigation is to examine direct associations between parent-child

relationships at 54-months and engagement at 1st grade, while controlling for 1st grade parent-

child relationships. Contrary to hypotheses, neither 54-month nor 1st grade measures of maternal

conflict, closeness, and sensitivity were directly associated with engagement in 1st grade. Results

considering teacher-child relationships can be found on the upper right-hand side of Figure 3. As

can be seen, conflict within the student-teacher relationship was associated with lower levels of

engagement at that timepoint (β = -.10). However, no significant associations were detected for

teacher closeness and engagement. Results therefore provided no support for direct links

between parent-child relationships and engagement throughout elementary school, but partially

supported hypotheses regarding teacher-child relationships.

6.2.2 Hypothesis 1.2: Indirect associations across home and school contexts

The second hypothesis considers whether early parent-child relationships are indirectly associated with engagement through 1st grade teacher-child relationships (see Figure 2). Consistent with expectations, measures of parental conflict and sensitivity at 54-months were significantly associated with 1st grade teacher conflict. Specifically, a SD more maternal conflict was associated with .11 of a SD greater conflict within the student-teacher relationship. In contrast, a SD greater maternal sensitivity was linked to .07 of a SD less conflict with teachers at school entry. Maternal closeness prior to school entry was also linked to closeness within the teacher-child relationship, though this was only significant at trend-level (p=.06). In turn, results suggest that maternal conflict was indirectly associated with 1st grade engagement through teacher conflict (indirect β=-.01, p=.05). No other significant direct or indirect associations were found. Results thus provided limited support for hypothesized mediational associations through teacher-child relationships.

6.2.3 Hypothesis 1.3: Child elicitation

The third hypothesis considers the extent to which children's cognitive, self-regulatory, and behavioral capabilities give rise to differences in relationships with parents and teachers. As can be seen, children's early competencies were associated with more positive relational responses from both parents and teachers. When compared to children with fewer cognitive skills, children with a SD greater cognitive skills at 36 months elicited .10 of a SD more closeness and .07 of a SD more sensitivity from parents at 54 months. Children with better self-regulatory skills at 36 months were also more likely to have more sensitive parent-child relationships at 54 months

(β=.16). Similar associations were found for the teacher-child relationship. Here, early cognitive skills were linked to greater amounts of closeness from teachers in 1st grade (β = .11), while self-regulatory skills were associated with lower amounts of conflict with teachers (β=-.19). In turn, Sobel tests indicate that children's self-regulation was associated with slightly greater amounts of classroom engagement through lower levels of teacher conflict (indirect β=.02, p=.01). No other significant indirect associations through parent- or teacher-child relationships were detected.

In contrast, children's behavioral difficulties elicited less adaptive relationships with both parents and teachers. Here, children's externalizing behaviors were associated with significantly more conflict with parents during preschool (βs = .40) and with teachers in 1st grade (β=-.19). Internalizing difficulties were also problematic. Specifically, children with internalizing behaviors elicited less closeness and sensitivity (β=-.16 & -.16)) and greater conflict (β=.16) with parents during preschool. Yet children's internalizing behaviors were associated with slightly less conflict from teachers in 1st grade (β=-.07). Sobel tests yielded no significant indirect pathways for children's behavioral difficulties and engagement through parent- or teacher-child relationships. Correspondingly, patterns of direct associations provided fairly consistent support for hypothesized elicitation pathways; but little support for the possibility that child skills and behaviors drive engagement through these elicited relationships.

6.2.4   Hypothesis 1.4: Interactive associations across contexts

The fourth and final hypothesis considers whether close or sensitive relationships in one context (e.g., home) moderate links between conflict and engagement within another context (e.g., school). Correspondingly, three two-way interactions were stepped into the model: T. Conflict x

M. Closeness; T. Conflict x M. Sensitivity; and M. Conflict x T. Closeness. All interaction terms were constructed using measures in 1st grade. The new model was an adequate fit to the data, RMSEA = .04 (*SD* = .002); CFI = .90 (*SD* = .01); SRMR = .025 (.001).

Table 5 presents results considering interactive associations. Two significant interactions were detected: Maternal closeness x teacher conflict, and maternal sensitivity x teacher conflict. Figure 4 represents the interaction between teacher conflict and maternal closeness, and figure 5 presents the interaction between teacher conflict and maternal sensitivity. As can be seen, children with high conflict with their teachers benefitted more from maternal closeness and sensitivity than those with less conflict. Specifically, children with high teacher conflict and parental sensitivity were engaged for 5% of a SD more instructional time than those who had conflictual teacher-child relationships and insensitive parents. Children with low amounts of teacher conflict were also engaged for 3% of a SD more instructional time when they had sensitive parent-child relationships. Teacher conflict was similarly moderated by high levels of maternal closeness. However, the interaction representing parental conflict x teacher closeness was not significant. This suggests that parent-child relationships may buffer children against disengagement when exposed to conflictual teacher-child relationships; but provides little support for buffering effects of teachers against parental conflict or insensitivity.

6.2.5   Preschool subsample

Children who attend preschool have likely developed relationships with nonparental caregivers. Thus, an important question is whether results are consistent for children who did and did not attend preschool. Within the NICHD-SECCYD sample, 772 children attended preschool while 592 did not. Two multi-group post-hoc analyses were therefore conducted to determine whether

results apply similarly for children who did and did not attend preschool. Although both models fit the data, the test of the difference between the models with unconstrained and constrained path coefficients were not significant. This suggests that the aforementioned patterns pertain to children within the NICHD sample regardless of whether or not they attended preschool.
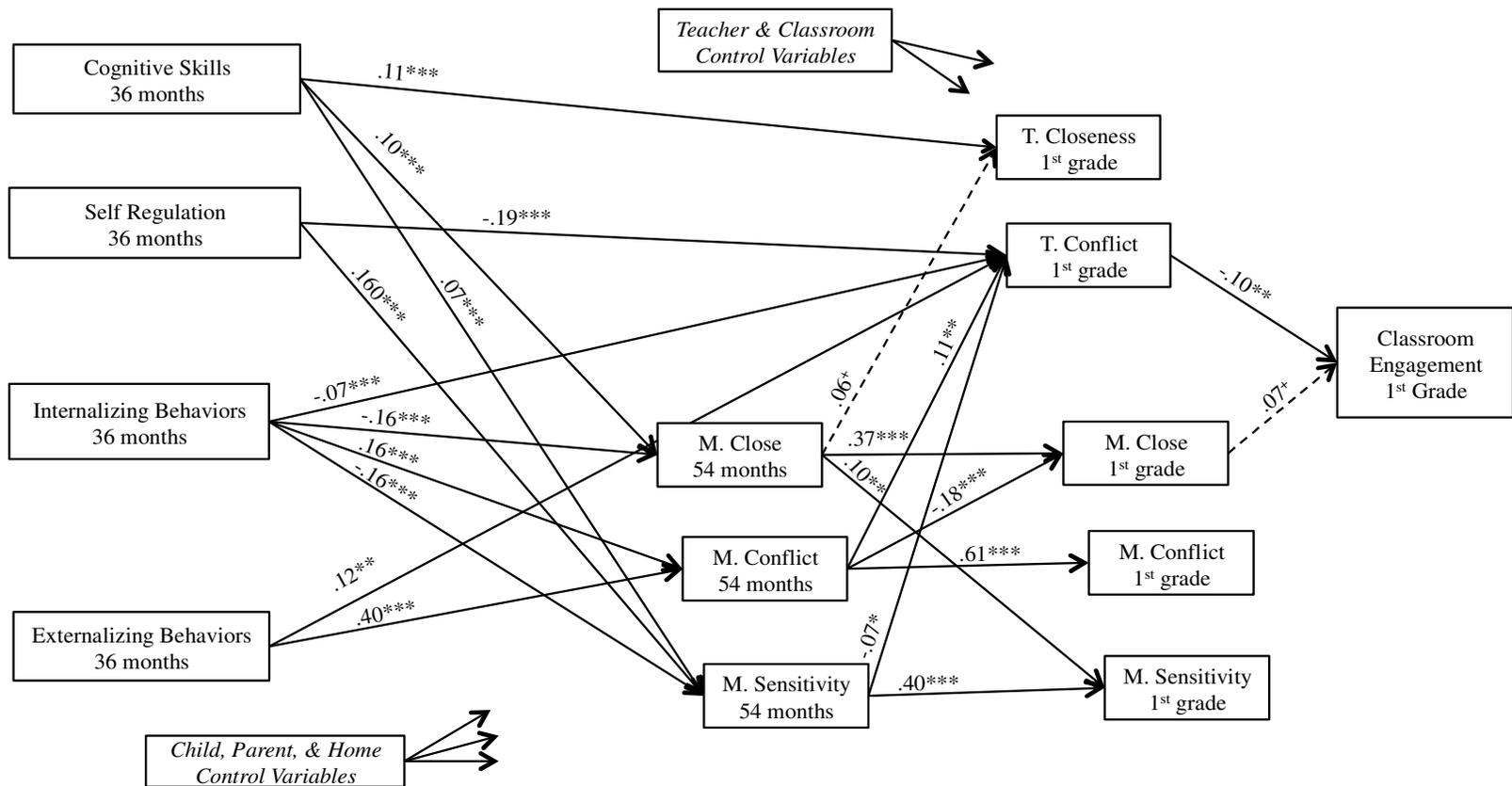
Figure 3. Relations among child skills & competencies at 36 months, mother-child relationships at 54-months and 1st grade, teacher-child relationships at 1st grade, and observed engagement in 1st grade[i].

Table 4: Interactive associations across contexts.

	Engagement	SE
Parent- & teacher-child relationships		
Maternal closeness	0.05	0.04
Maternal conflict	-0.03	0.05
Maternal sensitivity	0.04	0.04
Teacher closeness	0.02	0.03
Teacher conflict	-0.07+	0.04
Interactive Associations		
Maternal closeness x teacher conflict	0.09*	0.04
Maternal sensitivity x teacher conflict	0.08*	0.03
Teacher closeness x maternal conflict	-0.05	0.02

+p<0.1; * p<.05; ** p<.01; ***p<.001

56

Figure 4. Two-way interaction between 1st grade maternal closeness and 1st grade teacher conflict, predicting 1st grade engagement.

Figure 5. Two-way interaction between 1st grade maternal sensitivity and 1st grade teacher conflict, predicting 1st grade engagement.
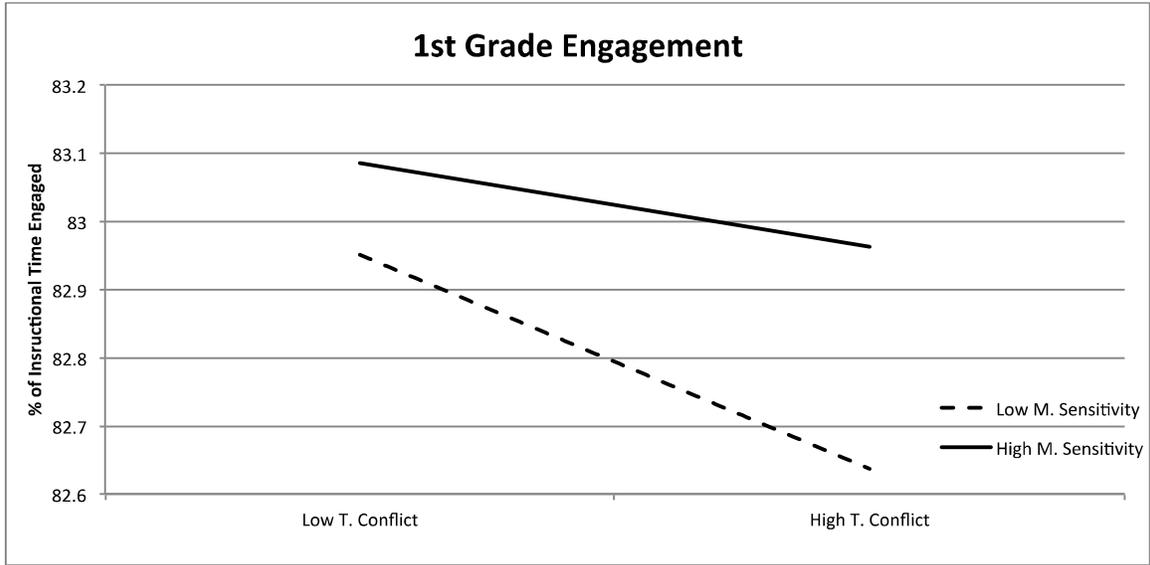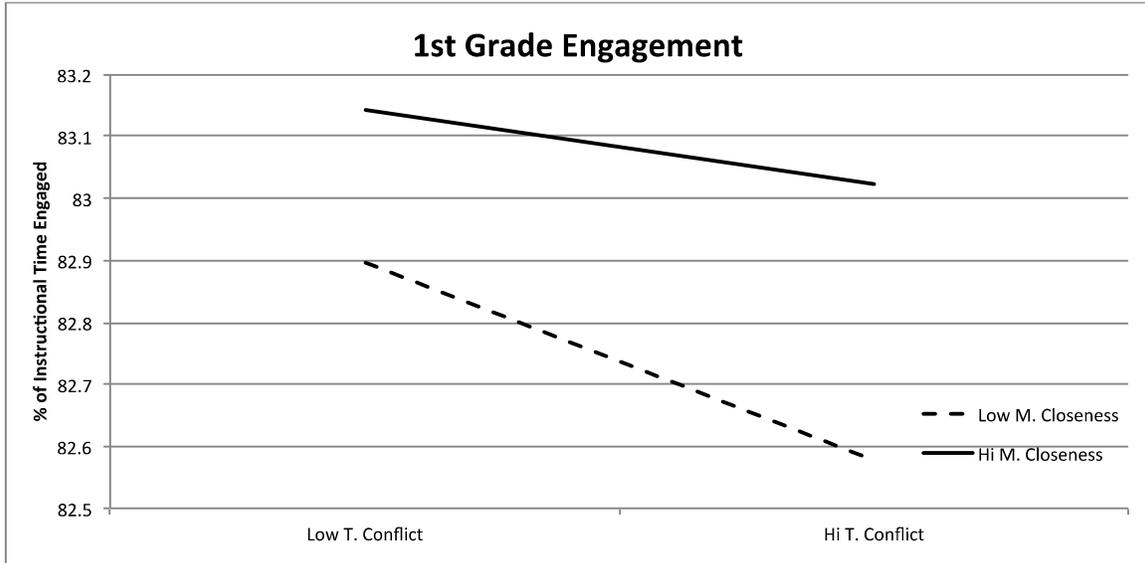
7.0   STUDY 2: CONSIDER HOW RELATIONSHIPS ARE ASSOCIATED WITH ENGAGEMENT AS CHILDREN MOVE ACROSS ELEMENTARY SCHOOL

The second aim of this investigation is to examine the processes by which children's relationships with parents and teachers are directly, indirectly, and interactively associated with children's engagement outcomes from 1st through 5th grade – and the extent to which child skills and competencies drive these processes. This conceptual model is presented in Figure 6; specific hypotheses are presented in Chapter 3.

7.1   ANALYTIC PLAN

The first model considered hypotheses 2.1 through 2.3. Hypothesis 2.1 examined direct associations between contemporaneous parent- and teacher-child relationships and engagement throughout elementary school. Correspondingly, this model included nine pathways linking measures of parental closeness, conflict, and sensitivity in 1st, 3rd, and 5th grade with children's engagement at each of these respective timepoints. This model also included six pathways linking teacher closeness and conflict with engagement at 1st, 3rd, and 5th grades. Hypothesis 2.2 evaluated whether previous parent-child relationships are indirectly associated with current engagement via concurrent teacher-child relationships. This model included 12 pathways predicting 3rd and 5th grade teacher-child relationships with those same relationships in 1st and 3rd

grade (respectively). Indirect associations were assessed utilizing the aforementioned strategies (MacKinnon & Dwyer, 1993; Sobel, 1982). To examine whether relational responses from parents and teachers are elicited by children's skills and competencies (Hypothesis 2.3), relationships and engagement at each timepoint were predicted by children's cognitive skills, self-regulatory capabilities, and internalizing/externalizing behaviors at 54 months. Paths from engagement in 1st and 3rd grade on subsequent relationships in 3rd and 5th grades evaluated associations between prior engagement and subsequent relational responses. The presence of significant indirect associations indicated whether a particular relational association was at least partially attributable to children's engaged behavior, cognitive skills, self-regulation, or internalizing/externalizing behaviors.

Additional paths linking within-relationship characteristics across measurement periods (e.g., 1st grade teacher closeness & conflict to 3rd grade teacher closeness and conflict) were included to evaluate stability within relationships. All assessments of parent- and teacher-child relationships at the same time-point were allowed to co-vary, as were assessments of children's skills and competencies at 54 months. Two lagged engagement pathways were included in the initial model to control for prior engagement (1st to 3rd grade engagement; 3rd to 5th grade engagement). All time-invariant covariates were entered as predictors of both relationships and engagement at each timepoint. Time-varying child-, parent-, and home covariates in each grade were entered as predictors of engagement and relationships each of their respective timepoints. Teacher, classroom, and school covariates were also entered as predictors of teacher-child relationships and engagement. Model fit was evaluated using the indices noted above.

To assess whether closeness or sensitivity within one context buffered children's engagement against conflict within another (hypothesis 2.4), nine centered interaction terms were stepped into the model. Only contemporaneous interactions were evaluated. These

60

interaction terms represented maternal closeness x teacher conflict, maternal sensitivity x teacher conflict, and teacher closeness x maternal conflict at 1st, 3rd, and 5th grade; error terms among concurrent interactions were allowed to co-vary. Model fit was again evaluated using the indices noted above.
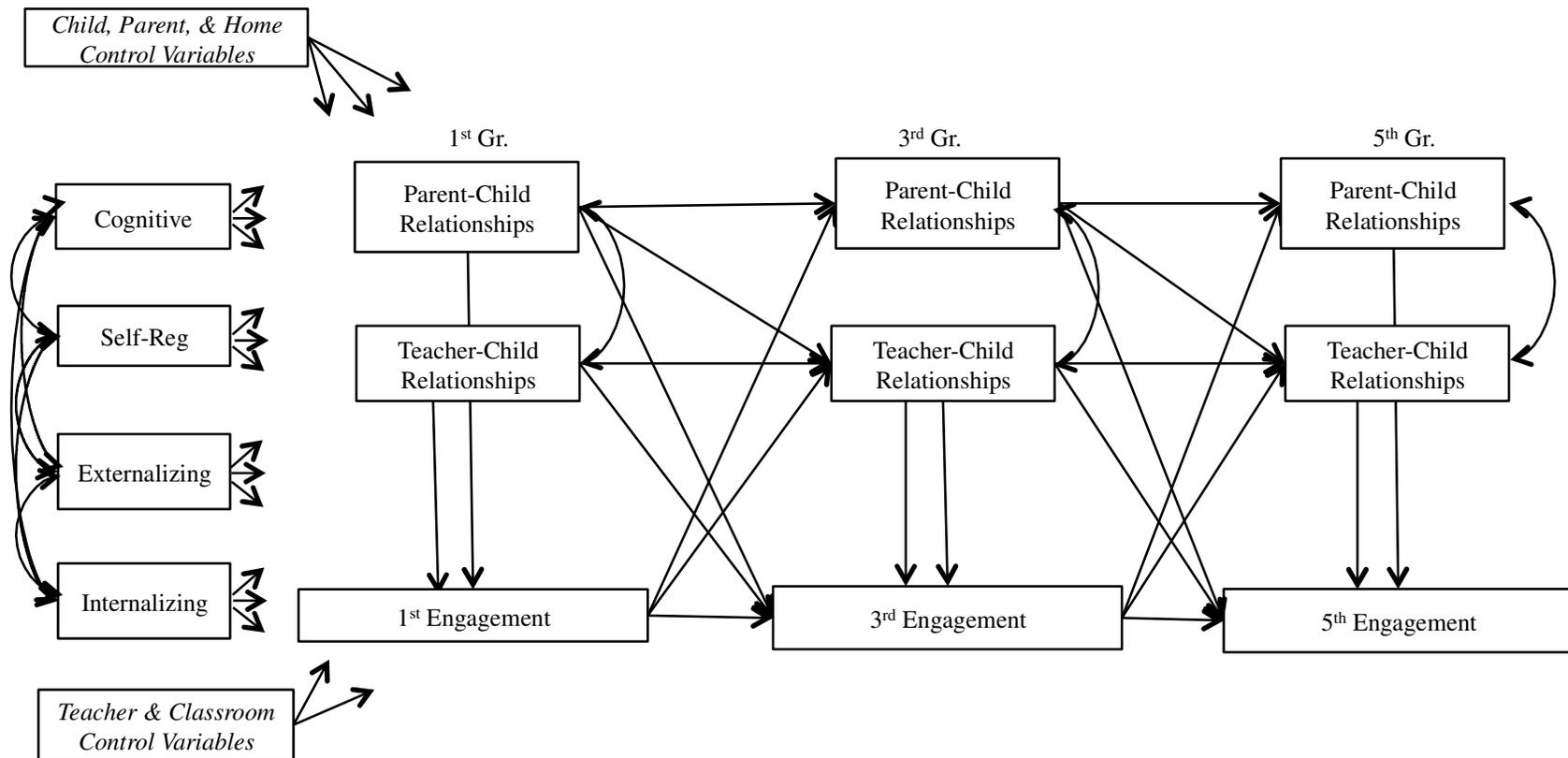
Figure 6. Conceptual model considering how child skills/behaviors, relationships, and engagement are associated through mediating

pathways across contexts and time.

7.2   RESULTS

The model considering associations across elementary school fit the data well, with CFI = .94

(*SD=.01)*, RMSEA = .03 (*SD=.00*), and SRMR = .02 (.00). Results considering relational

associations can be found in figure 7, while table 6 presents associations between child skills and

competencies and children's relationships and engagement outcomes.

7.2.1   Hypothesis 2.1: Direct associations between relationships and engagement

The first hypothesis considers whether concurrent parent- and teacher-child relationships are

associated with children's engagement in 1st, 3rd, and 5th grade. Of nine possible direct

associations between parent-child relationships and engagement, only the link between maternal

sensitivity and engagement at 3rd grade was significant at conventional levels. No other

significant associations were identified, providing little support for direct associations between

parent-child relationships and engagement throughout elementary school.

Though only three of the six direct associations between teacher-child relationships and

engagement were significant, some patterns were identified. For example, greater amounts of

conflict with teachers in 1st, 3rd, and 5th grade was negatively associated with children's

behavioral engagement (β_1=-.11, β_2=-.07, β_3=-.10). Though third-grade associations are only

significant at trend, this suggests that teacher conflict was problematic for children's engagement

throughout elementary school. While children who established closer relationships with their 3rd

grade teachers tended to be more engaged (β=.08), associations were not significant at any other

time point. Results highlight the importance of conflict in predicting engagement throughout elementary school, but only limited support for close teacher-child relationships and engagement.

7.2.2   Hypothesis 2.2: Indirect associations across home and school contexts

The second hypothesis evaluates the extent to which previous parent-child relationships are indirectly associated with subsequent engagement via teacher-child relationships. Here, children who had more sensitive parent-child relationships in 1st grade experienced less conflict with their 3rd grade teachers (β=-.09). However, this was the only significant pathway. Sobel tests indicated that indirect associations with student engagement were non-significant – lending no support for this hypothesis.

Subsequent analyses considered whether previous relationships with parents and teachers are indirectly associated with longitudinal engagement outcomes through subsequent relationships. Children's relationships were remarkably consistent across 1st, 3rd, and 5th grade: all within -construct and -reporter associations (e.g., paths linking 1st and 3rd grade m. closeness; 3rd and 5th grade m. closeness, etc.) were positive throughout elementary school. Parent-child relationships were the most stable constructs across time, with standardized β coefficients ranging from .30 to .59. Teacher-child relationships were also stable over time, ranging from .28 to .43. In turn, results suggest that previous relationships are indirectly associated with engagement through relational stability. For instance, maternal sensitivity in first grade was indirectly associated with third-grade engagement through continued sensitivity at that time (indirect β_{13}=.03, p<.05). Similarly, teacher closeness in 1st grade was indirectly associated with 3rd grade engagement through continued closeness with teachers (β_{13}=.03, p<.05). In contrast,

teacher-conflict in 1st and 3rd grade continued to be problematic for children's engagement in 3rd and 5th grade (respectively) through ongoing conflict with teachers throughout elementary school (indirect β_{13}=-.03, p<.10; β_{35}=-.03, p<.01).

7.2.3 Hypothesis 2.3: Child elicitation of relationships across elementary school

Direct associations for child elicitation items can be found in Table 6. As can be seen, children's early cognitive and self-regulatory skills were associated with adaptive differences in relationships with both mothers and teachers throughout elementary school. For instance, children with comparably greater cognitive skills at 54 months elicited greater amounts of maternal sensitivity throughout elementary school (β_1=.26, β_3=.09, β_5=.21), maternal closeness in 1st and 3rd grade (β_1=.08, β_3=.08), and teacher closeness in 1st and 5th grade (β_1=.11, β_5=.08). Children's cognitive and self-regulatory skills were also associated with less teacher conflict in early elementary school (βs=-.10 & -.08, *respectively*).

When considering early behavioral difficulties, children's externalizing behaviors were more strongly associated with conflict in both parent- and teacher-child relationships than were measures of internalizing problems or self-regulatory difficulties. For instance, children who exhibited elevated levels of externalizing behaviors relative to peers experienced more conflict in the mother-child relationship throughout elementary school (β_1=.49, β_3=.14, β_5=.22) and with teachers at 1st and 5th grade (β_1=.23, β_5=.09). Children with internalizing behaviors at 54 months tended to elicit less closeness from their mothers in 1st grade (β=-.10) than those with fewer internalizing behaviors – but also less conflict from their 1st grade teachers (β=-.10).

Hypothesis 2.3 also considers the extent to which child skill and competencies were associated with engagement. Contrary to expectations, there were few direct paths between children's cognitive, self-regulatory, or behavioral capabilities and engagement. The only exception to this was that children with elevated internalizing behaviors tended to be more engaged than their peers in 3rd grade (β=.12). Yet multiple indirect pathways were detected in early elementary school. For instance, children's cognitive skills, internalizing behaviors, and self-regulatory capabilities at 54 months were each positively associated with children's engagement in 1st grade through lower amounts of teacher conflict at that time (indirect β_{cog} = .01, p=.04; β_{intern} = .01, p=.03; β_{sreg} = .01, p=.08, respectively). In contrast, externalizing behaviors were indirectly problematic for 1st grade engagement through elevated levels of teacher conflict in 1st grade ($\beta_{t.\ conf}$ = -.02, p<.001). Yet only one indirect association was detected when considering increasingly distal links as children aged through elementary school. Here, children's externalizing difficulties continued to be associated with lower levels of engagement in 5th grade through greater amounts of teacher conflict at that time (indirect β=-.01, p=.05). This suggests stronger links between early skills and competencies and engagement through relationships in early rather than later elementary school, providing partial support for the hypotheses.

7.2.4 Hypothesis 2.4: Interactive associations across contexts at 1st, 3rd, and 5th

The fourth and final hypothesis considers whether close or sensitive relationships in one context (e.g., home) moderate links between conflict and engagement or motivation within another context (e.g., school). Correspondingly, three two-way interactions at each grade (maternal closeness x teacher conflict; maternal sensitivity x teacher conflict; maternal conflict x teacher

closeness) were stepped into the model predicting engagement (total of 9 interactions). The model was an adequate fit to the data, with CFI = .84 (*SD*=.01*)*, RMSEA = .04 (*SD*=.00), and SRMR = .03 (.00). Table 7 presents standardized coefficients for interaction terms.

Three significant interactions emerged from the data. Figure 8 represents the interaction between 1st grade maternal closeness and teacher conflict on 1st grade engagement, while figure 9 represents interactions between maternal sensitivity and teacher conflict at both 1st and 3rd grade. High and low amounts of teacher conflict and maternal sensitivity were graphed a SD above and below the mean (respectively) of each item. High amounts of maternal sensitivity and closeness during 1st grade were more beneficial for children with high amounts of teacher conflict at that time, and buffered children's early engagement. For children who experienced high amounts of teacher conflict, those with high maternal closeness were engaged 2% of a SD greater instructional time than children whose closeness was low. Similar patterns were found for measures of maternal sensitivity. Here, children who experienced high amounts of teacher conflict were engaged for 3% of a SD greater instructional time when they experienced high rather than low amounts of maternal sensitivity. In contrast, children who experienced low amounts of teacher conflict were consistently engaged regardless of whether they experienced high or low amounts of maternal sensitivity. This again provides support for the assertion that parent-child relationships may buffer children against disengagement when they are exposed to conflictual teacher-child relationships; but lends no support for buffering effects of teachers against parental conflict or insensitivity.
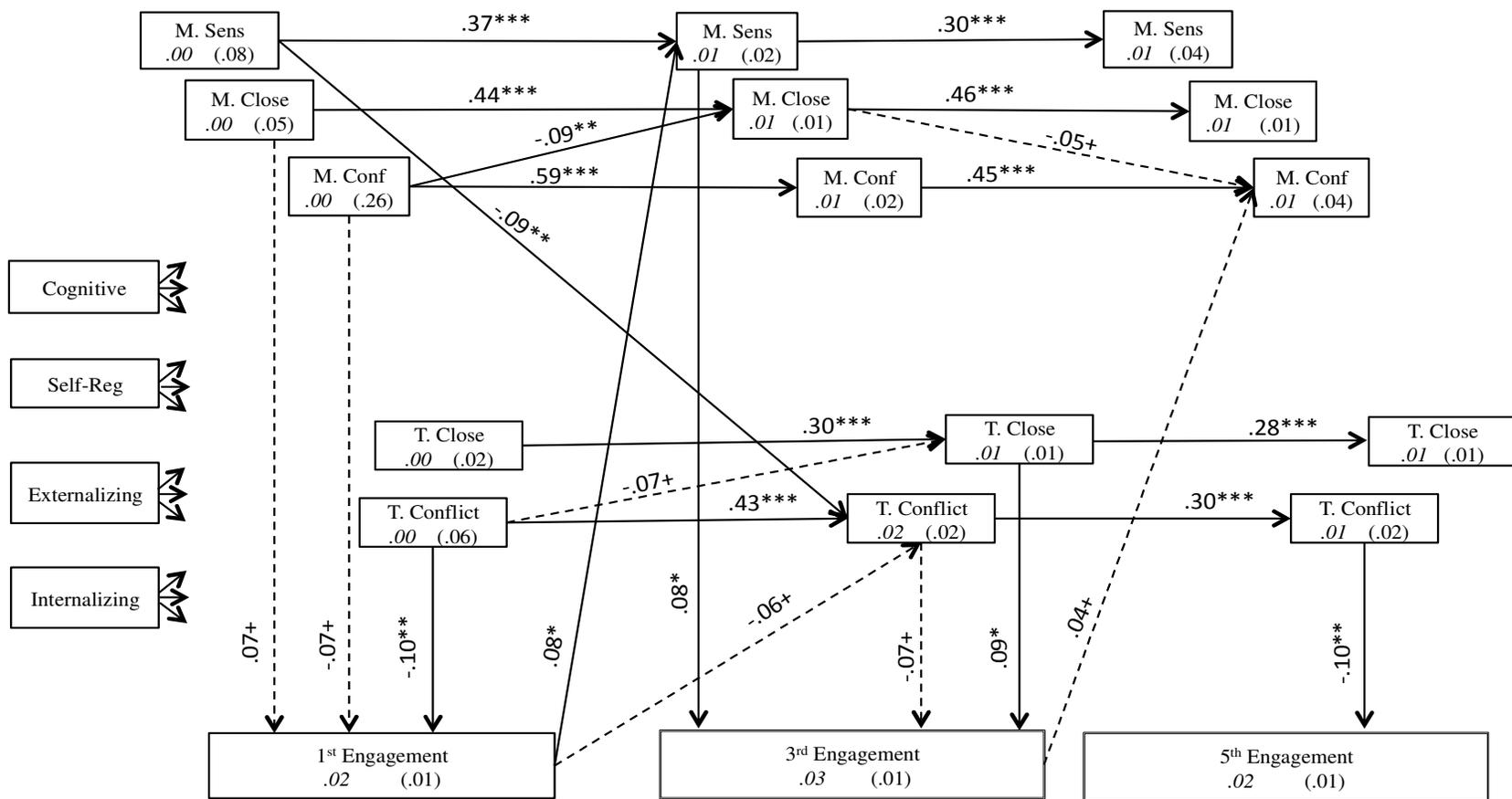
Figure 7. Results of the model considering how child skills/behaviors, relationships, and engagement are associated through

mediating pathways across contexts and time$_i$.

Table 5: Child engagement and relationships with parents and teachers as a function of child skills & competencies.

| | Engagement | | | | | |
| | 1st Grade | | 3rd Grade | | 5th Grade | |
54-month Child Skills & Competencies	β	SE	β	SE	β	SE
Cognitive Skills	0.00	*0.03*	-0.01	*0.03*	0.07+	*0.04*
Self Regulation	0.03	*0.04*	-0.06	*0.03*	0.02	*0.04*
Internalizing Behaviors	-0.02	*0.04*	0.12**	*0.04*	0.01	*0.04*
Externalizing Behaviors	0.07	*0.04*	-0.08+	*0.05*	-0.03	*0.04*

Table 5 (continued)

| | M. Closeness | | | | | | M. Conflict | | | | | | M. Sensitivity | | | | | |
| | 1st Grade | | 3rd Grade | | 5th Grade | | 1st Grade | | 3rd Grade | | 5th Grade | | 1st Grade | | 3rd Grade | | 5th Grade | |
54-month Child Skills & Competencies	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Cognitive Skills	0.08*	*0.03*	0.07*	*0.03*	0.01	*0.03*	0.01	*0.03*	-0.04	*0.03*	-0.03	*0.03*	0.26***	*0.03*	0.07*	*0.03*	0.21***	*0.03*
Self Regulation	*0.03*	*0.04*	*-0.01*	*0.04*	*0.04*	*0.03*	*0.05*	*0.03*	*0.03*	*0.03*	*0.01*	*0.03*	*-0.02*	*0.03*	*0.01*	*0.03*	*0.01*	*0.03*
Internalizing Behaviors	*-0.10**	*0.04*	*-0.03*	*0.04*	*0.01*	*0.04*	*0.04*	*0.03*	*-0.02*	*0.03*	*-0.05*	*0.03*	*-0.01*	*0.04*	*0.01*	*0.04*	*0.02*	*0.04*
Externalizing Behaviors	*-0.13***'*	*0.04*	*-0.02*	*0.04*	*-0.06*	*0.04*	*0.49****	*0.03*	*0.13****	*0.04*	*0.23****	*0.04*	*-0.07*	*0.04*	*-0.03*	*0.04*	*-0.04*	*0.04*

Table 5 (continued)

54-month Child Skills & Competencies	T. Closeness						T. Conflict					
	1st Grade		3rd Grade		5th Grade		1st Grade		3rd Grade		5th Grade	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Cognitive Skills	0.11***	0.03	0.03	0.03	0.08*	0.04	-0.10**	0.03	-0.06+	0.03	-0.06+	0.03
Self Regulation	-0.04	0.04	0.06+	0.04	-0.01	0.03	-0.08*	0.04	-0.02	0.04	-0.02	0.04
Internalizing Behaviors	-0.06	0.04	-0.03	0.04	-0.03	0.04	-0.10*	0.04	-0.02	0.04	-0.068+	0.04
Externalizing Behaviors	0.04	0.04	0.08+	0.05	-0.02	0.04	0.23***	0.04	0.02	0.04	0.09*	0.04

Table 6: Interactions between parent- and teacher child relationships at 1st, 3rd, and 5th grade on concurrent engagement

	Engagement - 1st		Engagement - 3rd		Engagement - 5th	
	β	SE	β	SE	β	SE
Concurrent Associations						
Maternal Conflict	-.06+	0.04	0.00	0.04	0.04	0.04
Maternal Closeness	0.05	0.04	0.02	0.04	0.05	0.04
Maternal Sensitivity	0.02	0.03	.06+	0.04	0.05	0.04
Teacher Conflict	-0.08*	0.04	-0.06	0.04	-0.10**	0.04
Teacher Closeness	0.01	0.03	.09*	0.04	-0.03	0.04
Concurrent Interactions						
M. Conflict x T. Closeness	-.052+	0.03	0.00	0.04	0.03	0.03
M. Closeness x T. Conflict	.054*	0.04	-0.05	0.04	-0.03	0.03
M. Sensitivity x T. Conflict	.052*	0.04	.08*	0.04	-0.02	0.04
Intercept						
Engagement	74.27	6.13	13.66	1.51	6.66	1.22

+ p<.10; * p<.05; ** p<.01; *** p<.001

1st Grade Engagement

Figure 8. Two-way interaction between 1st grade maternal closeness and 1st grade teacher conflict, predicting 1st grade engagement.
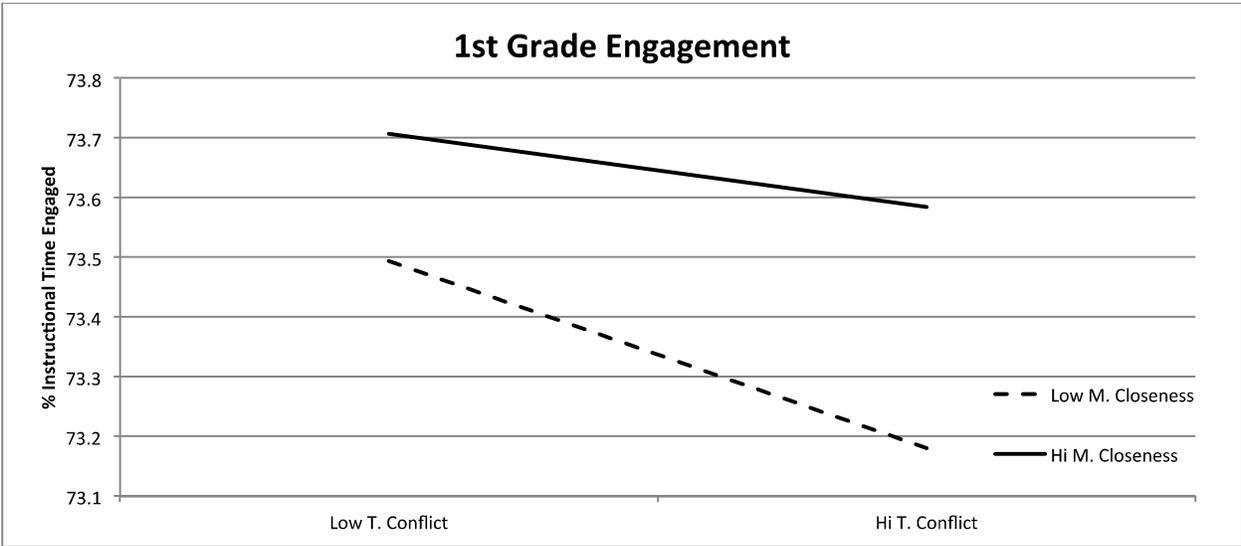
Figure 8. Two-way interaction between 1st grade maternal closeness and 1st grade teacher conflict, predicting 1st grade engagement.
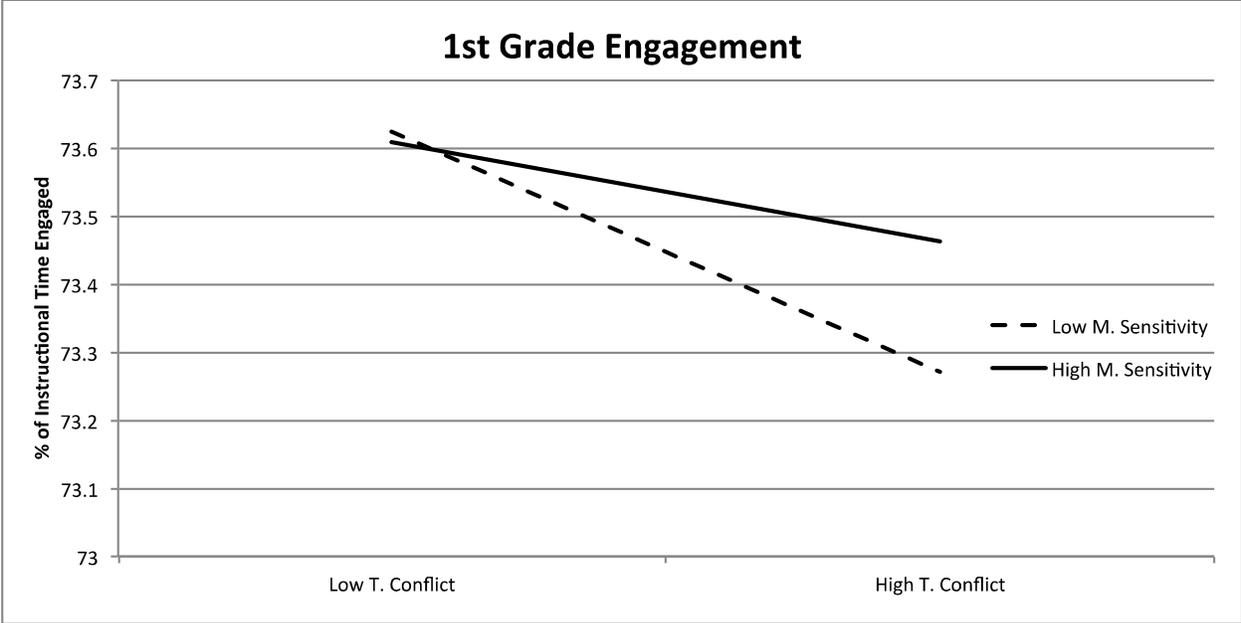
Figure 9. Two-way interaction between maternal sensitivity and teacher conflict at 1st and 3rd grade, predicting 1st grade engagement
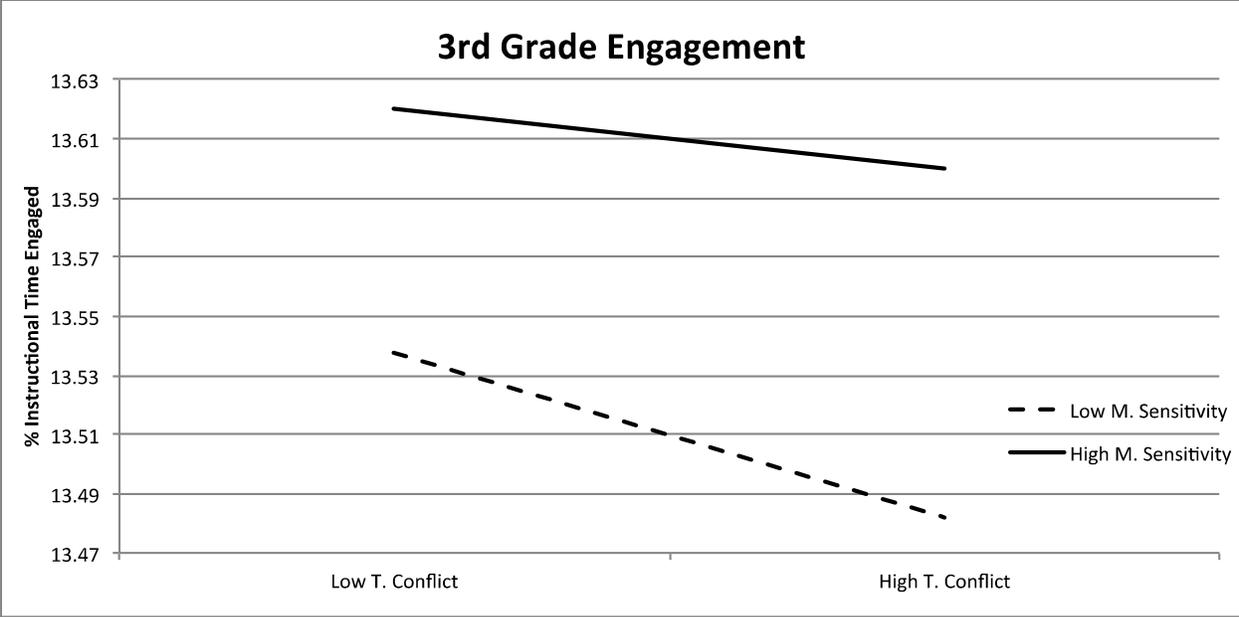
3rd Grade Engagement

Figure 10. Two-way interaction between maternal sensitivity and teacher conflict at 3rd grade, predicting 1st and 3rd grade engagement.

8.0 STUDY 3: EXAMINE THE WAYS CHILDREN'S RELATIONSHIPS ARE ADDITIVELY AND LONGITUDINALLY ASSOCIATED WITH ENGAGEMENT AND MOTIVATION AT THE END OF ELEMENTARY SCHOOL

The third aim of this project is to examine the process by which children's relationships with parents and teachers in early and late elementary school are additively, indirectly, and interactively associated with engagement and motivation outcomes in 5th grade. The conceptual model for this aim is presented in Figure 3.

8.1 ANALYTIC PLAN

The first model considered hypotheses 3.1 through 3.3. Hypothesis 3.1 evaluated whether children's relationships both prior to and during 5th grade are each independently associated with children's 5th grade engagement and motivation outcomes. To determine whether 1st and 3rd grade relationships are differentially associated with 5th grade relationships, motivation, or engagement, a series of preliminary Wald Tests were conducted to assess the equality of parameters (e.g., $\beta(x_1) = \beta(x_2)$) on endogenous variables. The majority (41/45) of these tests were non-significant, indicating that 1st and 3rd grade parameters on 5th grade outcomes were not typically different from each other. Correspondingly, children's relationships were averaged

across 1st and 3rd grades to create "early elementary school" indicators of parent- and teacher-child relationships. Next, direct paths from both parent- and teacher -child relationships in early elementary school and 5th grade were included as predictors of 5th grade behavioral engagement, perceptions of relatedness, motivation, and perceived competence. The second hypothesis (hypothesis 3.2) considers whether relationships in early elementary school are indirectly associated with 5th grade engagement and motivation through 5th grade parent- and teacher-child relationships. To address hypothesized indirect associations, the model included paths from parent & teacher-child relationships in early elementary school to 5th grade teacher-child relationships, and evaluated the significance of indirect pathways. As children's relationships between early and late elementary school were expected to be stable, the final model included paths linking variables that were conceptually consistent across measurement periods (i.e., maternal closeness, conflict, and sensitivity). To examine hypothesized transactional associations (Hypothesis 3.3), the model also included paths from child cognitive skills, self-regulation, internalizing, and externalizing behaviors at 54 months to measures of parent- and teacher-child relationships at each timepoint. All indirect pathways were evaluated the methods noted above (MacKinnon & Dwyer, 1993; Sobel, 1982).

All assessments of parent- and teacher-child relationships at the same time-point were also allowed to co-vary, as were assessments of children's initial skills and competencies at 54 months. A number of time-invariant covariates were also entered as predictors of relationships, engagement, and motivation at each time-point. Covariates representing child, home, and parent characteristics in 1st and 3rd grade were averaged together to create 'early childhood' covariates; 5th grade covariates were also utilized as controls. Each of these respective covariates were entered as predictors of parent- and teacher-child relationships and engagement/motivation at

76

their respective timepoints. Lagged engagement in early elementary school was also entered as a predictor of engagement and relationships in 5th grade. Early-childhood and 5th grade teacher, classroom, and school controls were also entered as predictors of early-elementary and 5th grade teacher-child relationships (respectively) and children's motivation/engagement outcomes. Model fit was evaluated using the process described above; pathways that were not significant ($p < .15$) were subsequently trimmed to improve model fit.

Hypothesis 3.4 examined whether close or sensitive relationships in one context (e.g., home) moderate links between conflict and engagement within another context (e.g., school). After evaluating and refining the model described above, six two-way interactions were stepped into the model, representing both early elementary school and 5th grade: T. Conflict x M. Closeness; T. Conflict x M. Sensitivity; and M. Conflict x T. Closeness. Early elementary school interaction terms were constructed using measures averaged across 1st & 3rd grade, and 5th grade interaction terms were constructed from measures assessed in 5th grade. Model fit was again evaluated using the indices noted above.
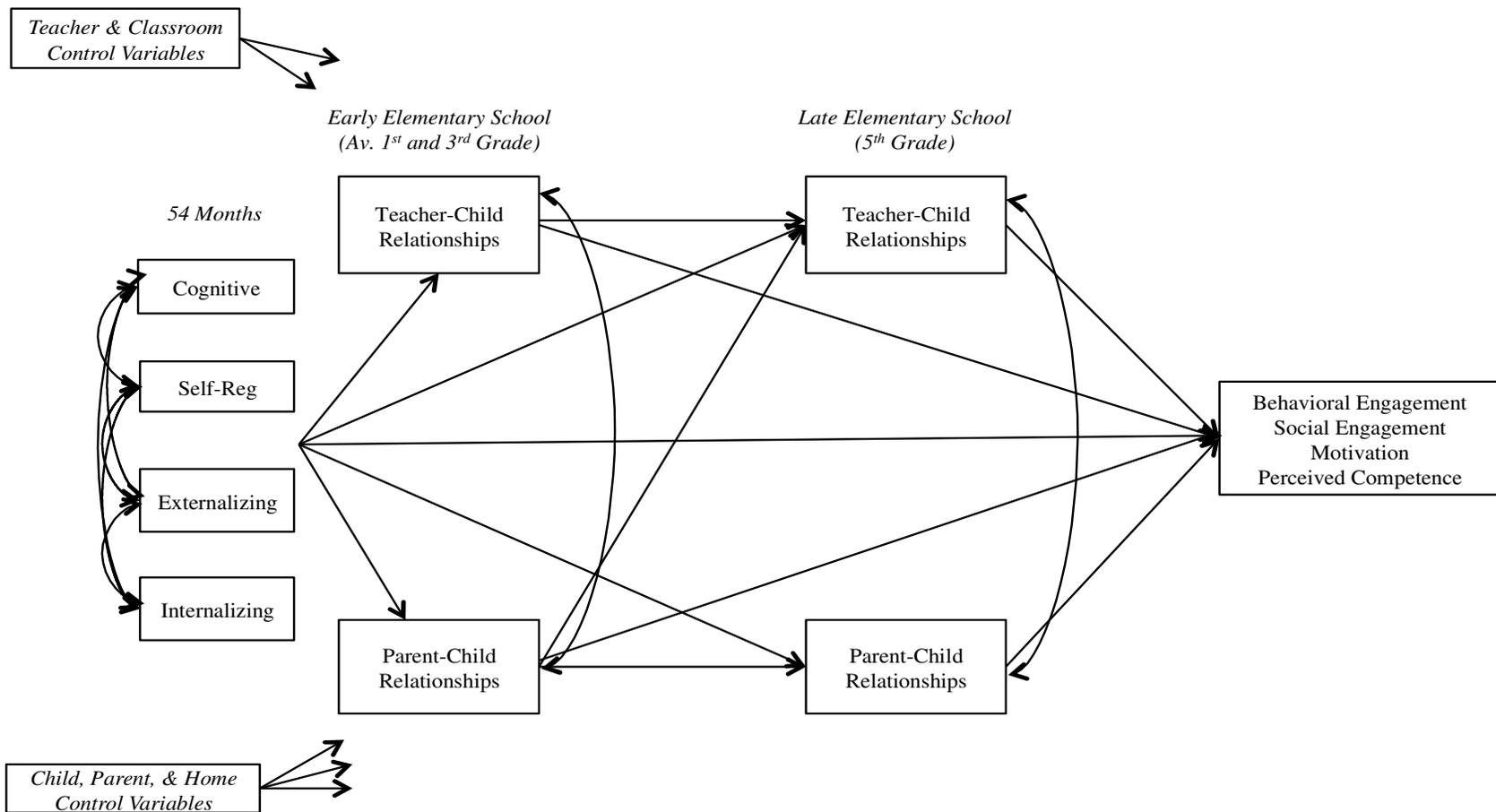
Figure 11. Conceptual model linking child skills and competencies at 54 months, teacher- and parent-child relationships in early- and late elementary school, and child engagement, motivation, perceived competence, and relatedness in 5th grade[i].

8.2   RESULTS

The resulting model provided a good fit to the data, with CFI = .93 (*SD* = .00), RMSEA = .03 (*SD* = .00), and SRMR = .03 (*SD* = .00). Results considering hypothesized direct, indirect, and transactional associations can be found in figure 11, while interactive associations can be found in Table 8.

8.2.1   Hypothesis 3.1: Additive associations between relationships, motivation, & engagement at the end of elementary school

Several direct links between concurrent relationships and engagement at 5th grade were identified. For instance, children who experienced greater amounts of maternal conflict in 5th grade tended to be less motivated to achieve at that time point than those who experienced less conflictual relationships (β=-.14). Concurrent teacher-child relationships were also related to 5th grade engagement and motivation outcomes. Specifically, children who were closer with their 5th grade teachers felt more related to their school environment (β-.14) than those who had more distant relationships. Alternatively, children who had conflictual relationships with their 5th grade teachers were less behaviorally engaged (β=-.09), socially engaged (β=-.11), or motivated to achieve (β=-.09).

Several longitudinal associations were also detected, even after controlling for 5th grade relationships. For instance, children who experienced greater maternal sensitivity in 1st and 3rd grade reported greater perceptions of their own competence (β=.11) than children whose mothers

were less sensitive in early elementary school. Similarly, those with closer teacher-child relationships throughout early elementary school were likely to be more motivated in 5th grade (β=.09) than those with more distant relationships. Alternatively, teacher conflict was associated with lower relatedness in 5th grade (β=-.15). Together, this provides support for hypothesized linkages between both early- and concurrent elementary school relationships and 5th grade engagement and motivational outcomes.

8.2.2 Hypothesis 3.2: Cross-contextual associations in late elementary school

The second hypothesis considers whether relationships in early elementary school (1st & 3rd grade) are indirectly associated with 5th grade engagement via relationships with teachers in 5th grade. However, no cross-contextual associations were found – providing no support for this hypothesized association.

However, indirect pathways were detected between children's relationships in early elementary school and 5th grade engagement through stability within that relationship across years. Specifically, conflict with parents in early elementary school was indirectly associated with 5th grade motivation through continued conflict (β=.68) within the parent-child relationship during that time (indirect β=.08). Similarly, conflict with ones' teacher during 1st and 3rd grade was indirectly associated with motivation, behavioral engagement, and perceptions of relatedness through greater amounts of conflict with their 5th grade teachers (β=.45; indirect βs=-.03, -.03 & -.04, *respectively*). However, indirect associations with motivation were only significant at trend. This provides partial support for hypothesized associations with engagement through relational stability across early- and later- elementary school.

80

8.2.3   Hypothesis 3.3: Child skills and competencies

The third hypothesis considers the extent to which children's cognitive, self-regulatory, and behavioral capabilities are indirectly associated with long-term engagement and motivation outcomes through elicited relational responses from their parents and teachers. Here, children who had greater cognitive skills at 54 months of age were more likely than their peers to believe they were academically competent at the end of elementary school. No other direct pathways were significant.

Results considering hypothesized associations with children's relationships were more consistent. For instance, early competencies were consistently associated with adaptive differences in relationships from both parents and teachers. Specifically, children with greater cognitive skills elicited greater amounts of closeness and sensitivity from their mothers in both early elementary school (β=.10 & .27, *respectively*), as well as in 5th grade (β = .15). Cognitive skills were also associated with greater closeness (β=.11) and less conflict (β=-.13) with teachers in early elementary school. In turn, cognitive skills were indirectly associated with 5th grade motivation through teacher closeness in early elementary school (indirect β = .01, p=.05). Cognitive skills were also indirectly linked to 5th graders' perceptions of relatedness through lower levels of conflict in early teacher-child relationships (indirect β=-.02, p=.008).

In contrast, children's behavioral difficulties prior to school entry were problematic for children's relationships. For instance, externalizing behaviors were associated with greater amounts of conflict (β=.50) and lower levels of closeness and sensitivity from parents at the beginning of elementary school (β=-.12 & -.09, *respectively*). Externalizing problems were also associated with teacher conflict in early elementary school (β=.23). In turn, Sobel tests indicate

that children's externalizing behaviors were indirectly linked to lower levels of relatedness in 5th grade via greater amounts of teacher conflict in early elementary school (indirect β=-.03, p=.003). In contrast, children's internalizing behaviors were associated with less conflict within the teacher-child relationship (β=-.10) and thus indirectly beneficial for 5th graders' perceptions of relatedness (β=.01, p=.04).

8.2.4   Hypothesis 3.4: Interactive associations across contexts

The fourth and final hypothesis considers whether close or sensitive relationships in one context (e.g., home) moderates links between conflict and engagement or motivation within another context (e.g., school). Correspondingly, six interaction terms were stepped into the model predicting each engagement or motivational outcome. Contrary to hypotheses, no interaction terms were significant for measures of motivation, perceptions of relatedness, or perceived competence. In addition, 5th grade interaction terms were not significant for any outcomes. These interaction terms were dropped from the model to improve model fit, and are not shown. Correspondingly, only three interaction terms remained in the final model, and standardized coefficients are presented in Table 8. The model considering these interactive associations was an adequate fit to the data, RMSEA = .04 (*SD* = .001); CFI = .90 (*SD* = .01); SRMR = .029 (*SD* = .01).

Figure 11 represents the interaction between maternal sensitivity and teacher conflict in early elementary school. High and low amounts of teacher conflict and maternal sensitivity were graphed a SD above and below the mean (*respectively*) of each item. Examining the coefficients on the two slope terms, it can be seen that high amounts of maternal sensitivity across 1st and 3rd grade buffered children's engagement against high amounts of teacher conflict. Here, children

who experienced high amounts of conflict and maternal sensitivity were engaged for 30.27% of instructional time, while those with high conflict and low maternal sensitivity were only engaged for 29.9% of instruction. These results provide limited support for the possibility that early parent-child relationships may buffer children against disengagement when they are exposed to conflictual teacher-child relationships.
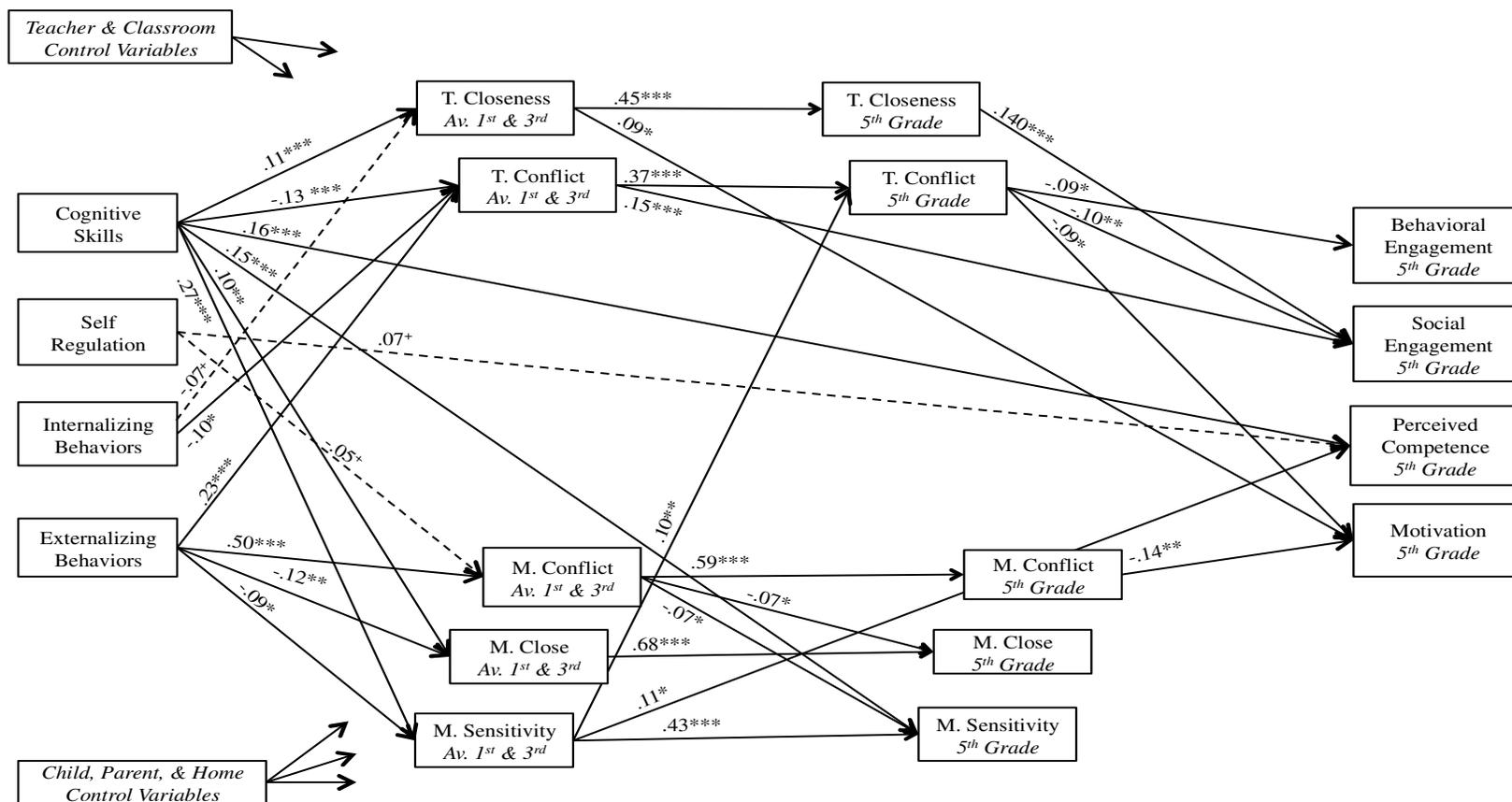
Figure 12. Results of the model linking child skills and competencies at 54 months, teacher- and parent-child relationships in early- and late elementary school, and child engagement, motivation, perceived competence, and relatedness in 5th grade[i].

Table 7: Interactions between parent- and teacher child relationships in 1st and 3rd grade on engagement in 5th grade (unstandardized b coefficients).

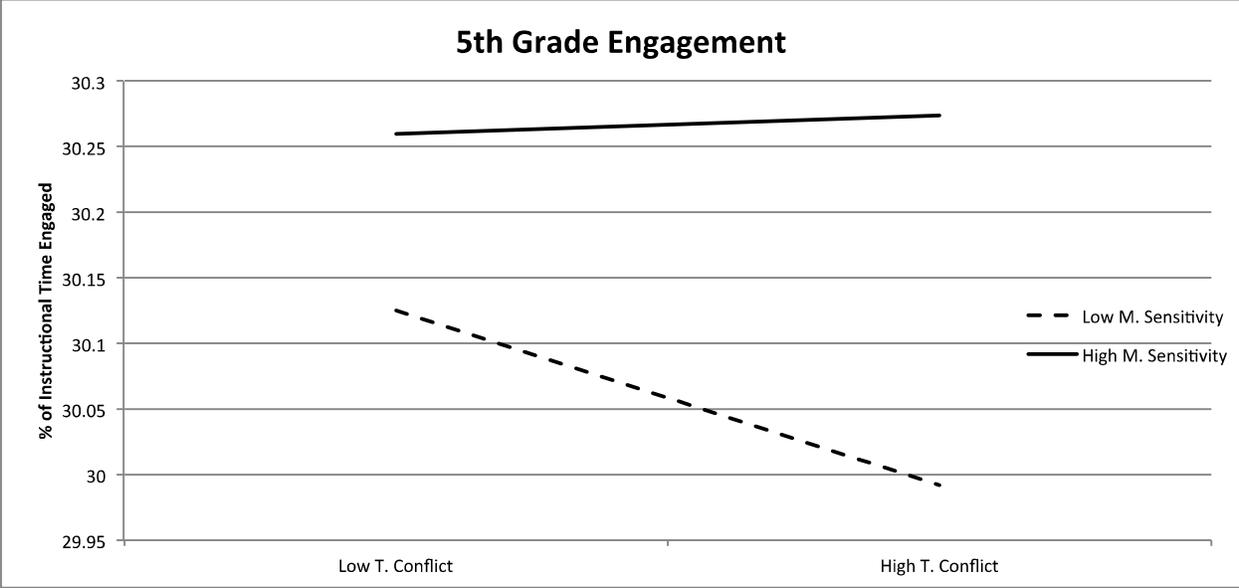|	**Engagement**	*SE*
Child Skills & Competencies		
Cognitive skills	-0.09	0.23
Self-regulation	-0.33	0.42
Externalizing behaviors	-0.04	0.05
Internalizing behaviors	-0.01	0.02
Parent- & teacher-child relationships		
1st & 3rd grade		
Maternal closeness	0.13	0.10
Maternal conflict	0.04	0.05
Maternal sensitivity	0.10	0.09
Teacher closeness	0.01	0.05
Teacher conflict	-0.03	0.05
5th grade		
Maternal closeness	0.05	0.05
Maternal conflict	0.03	0.05
Maternal sensitivity	0.07	0.09
Teacher closeness	-0.03	0.04
Teacher conflict	-0.09*	0.05
Interactive Associations		
1st & 3rd Grade		
M. Conflict x T. Closeness	-0.12	0.01
M. Closeness x T. Conflict	0.00	0.02
M. Sensitivity x T. Conflict	0.04*	0.02
5th Grade		
M. Conflict x T. Closeness	-	-
M. Closeness x T. Conflict	-	-
M. Sensitivity x T. Conflict	-	-
Intercept	30.16	4.34

Figure 13. Two-way interaction between maternal sensitivity and teacher conflict in early

elementary school, predicting 5th grade engagement.

9.0   DISCUSSION

The overarching aim of this project was to strengthen understanding of how children, their parents, and their teachers are associated with engagement and motivation across elementary school. The first study considered the extent to which relationships with both parents and teachers prepare children for engagement during the transition to elementary school. In turn, the second study delineated concurrent and mediating associations of relationships with parents and teachers as children moved across elementary school. The third study examined how concurrent and longitudinal relationships across elementary school promote engagement and motivational patterns prior to the transition to middle-school. In examining these linkages, the three studies respond to growing calls for the bioecological consideration of multiple contextual factors in children's developing engagement and motivational patterns (Anderman & Anderman, 2000; Bronfenbrenner & Crouter, 1983; Marchant, Paulson, & Rothlisberg, 2001; Wentzel, 2012). This investigation is also the first to illustrate the complicated processes by which parent- and teacher-child relationships are uniquely, indirectly, longitudinally, and interactively associated with engagement in elementary school, and how children's own skills and capabilities elicit these relational patterns. Disentangling these associations represents an important direction for enriching understanding of the dynamic interplay between children and their relationships at home *and* school, and how parents and teachers collectively support engagement and motivation as children move from kindergarten through 5th grade.

9.1   DIRECT ASSOCIATIONS BETWEEN RELATIONSHIPS & ENGAGEMENT

Measures of closeness and sensitivity within parent- and teacher-child relationships were expected to be positively associated with engagement, while conflict was conceptualized as problematic. Contrary to expectations, parent-child relationships were never directly associated with engagement at conventional levels of significance. This was surprising, considering that the extant literature highlights the importance of early parenting in shaping the development of children's learning-related skills, beliefs, values, and behaviors at school entry (Eccles et al., 2006; Colman et al., 2006; Moss & St-Laurent, 2002; Pianta et al., 2007). Yet results do align with previous studies considering parent-child relationships and behavioral engagement, which often yield small or non-significant effects (e.g., Moss & St. Laurent, 2002). It may be that children's relationships with parents are simply too removed from the day-to-day happenings of the classroom to account for variation in children's engaged behavior. Engagement may therefore be shaped less by outside experiences, and instead be more dependent on children's immediate experiences and exchanges in the classroom context.

To this end, more consistent patterns were detected for measures of teacher-child relationships and engagement outcomes. Specifically, children who experienced conflictual relationships with their teachers were less likely to participate in learning opportunities, felt less related to their school environment, and were less motivated than those who have less conflict with their teachers. Though effect sizes were small in magnitude (βs from -.07 to -.15), patterns are consistent with a robust body of literature linking teacher conflict with engagement and motivational outcomes at kindergarten (e.g., Birch & Ladd, 1997; Ladd, Birch, & Buhs, 1999; Murray, Waas, & Murray, 2008), over the course of elementary school (Wu *et al.,* 2010), and at 5th grade (e.g., Hughes, 2011; Stipek & Miles, 2008). Notably, teacher closeness was a far less

consistent predictor of children's engagement or motivation. This suggests that stressful or conflictual relationships may be a more potent force in shaping young children's developing engagement and motivation than is exposure to positive support. Findings correspond with both attachment and social support perspectives, which suggest that children who are less secure in or supported by their relationships with important adults are also less likely to explore and engage with their environment (Ainsworth, 1979; Sandler, Miller, Short, & Wolchik, 1989). Conflict with ones' teacher may lead to disengagement from instructional tasks and learning opportunities, and could promote feelings of alienation, loneliness, and negative school attitudes that are persistently problematic across development.

9.2   INDIRECT ASSOCIATIONS ACROSS HOME & SCHOOL CONTEXTS

It was also hypothesized that prior relationships with parents would be indirectly associated with longitudinal engagement outcomes via subsequent relationships with teachers. However, closeness, sensitivity, and conflict with parents were inconsistently predictive of closeness and conflict with teachers in subsequent years. Moreover, very few indirect pathways between parent-child relationships and engagement were identified. This reaffirms the idea that children's engagement is highly context-specific, and that there may not be significant transfer between children's affective relationships at home and relationships or behaviors at school.

Instead, results suggest that previous relationships are indirectly associated with engagement through relational stability, or consistency in the qualities of parent- and teacher-child relationships. Early positive relationships with both parents and teachers promoted engagement through continued closeness or sensitivity in subsequent years – while conflict with

89

teachers prompted continued conflict and disengagement from 1st through 5th grade. These

associations were strongest for measures of teacher conflict. This aligns with a growing body of

literature that finds children who have relational problems early on are more likely to develop

problematic teacher-child relationships (Eisenhower et al., 2007; Howes et al., 2000; Pianta et

al., 1997), and are more likely to disengage in later years (Dodge, Greenberg, Malone, & CPRG,

2008; Ladd, Herald-Brown, & Reiser, 2008). Teachers and classrooms change from year-to-year,

thus it is possible that children who experience conflict early come to expect and therefore elicit

ongoing conflict with teachers in subsequent grades. Such children may also come to view all

teachers as a source of punishment and criticism, which may damper willingness to engage in

teacher-directed activities and tasks both concurrently and longitudinally. In turn, early conflict

with teachers may instigate a cycle of continued or worsening relationships and disengagement,

while close relationships may promote positive relational and engagement processes across

development (Ladd *et al.,* 1999; Matestic, 2008; Maldinado, 2009; Skinner & Belmont, 1993).

9.3   TRANSACTIONAL PATTERNS IN RELATIONSHIPS & ENGAGEMENT

The third broad research question considered whether children's skills and competencies elicited

relational responses from their parents and teachers, and the extent to which these accounted for

associations with engagement or motivation. Somewhat surprisingly, engagement was never

linked to subsequent measures of parent- or teacher-child relationships. This is at odds with a

small but consistent body of literature linking differences in engagement to within-grade changes

in teacher closeness, responsiveness, and support (Furrer & Skinner, 2009; Ladd, Birch, & Buhs,

1999; Skinner & Belmont, 1993). However children develop increasingly sophisticated self-

regulatory strategies as they age, such that engagement in 1st grade may no longer be representative of children's engagement in 3rd or 5th grade (Pintrich & Zusho, 2002). Given this, it may be that this study's two-year (and potentially two-teacher) lag between measurement periods may be too distal for truly transactional associations to emerge. It is also possible that children who are disengaged in early elementary school have the opportunity to essentially 'start over' with a new teacher without the concern that prior classroom engagement will predict later relationships. To more firmly establish these concurrent and longitudinal linkages, future research should consider assessing markers of children's relationships and engagement both within- and across-grades.

Instead, results indicate that children's early skills and competencies were more important predictors of children's relationships with teachers. Specifically, behavioral and self-regulatory difficulties were likely to elicit conflict with teachers, while teacher conflict was problematic for children's behavioral engagement. Findings align with other investigations that link behavioral problems to poorer teacher-child relationships, lower expectations of students, harsher disciplinary tactics, and teacher stress and burnout, all of which have important implications for student engagement (Abel & Sewell, 1999; Konishi, Hymel, Zumbo, & Li, 2010). This finding also illustrates the central role of child skills, behavior, and emotionality in the emergence of relational exchanges that occur between caregivers and youth (Shaw & Bell, 1993; Trentacosta et al, 2011; Sameroff, 1975). Teachers may only engage with disruptive or poorly regulated children while delivering instruction, affording fewer opportunities for positive interactions or exchanges and exacerbating existing negative or coercive interactions (Ladd & Burgess, 2001; Silva et al., 2011). Teachers may also view children with behavioral or self-regulatory difficulties as *intentionally* misbehaving, causing them to react in an overly harsh

91

fashion and engage in increasing amounts of conflict (Portilla, Ballard, Adler, Boyce, & Obradovic, 2014). Further investigation of how teachers interpret and then respond to student behavior may be beneficial.

Child characteristics may also be one source of relational stability, even as teachers and classroom contexts change over time. Indeed, post-hoc analyses suggest that externalizing problems in preschool are associated with 3rd grade teacher-conflict through conflict with 1st grade teachers (indirect β=.10). Children with externalizing and self-regulatory difficulties may therefore be at heightened risk of disengagement – not only because they show increased behavioral difficulties, but also because they are at-risk for developing problematic relationships with their teachers. Though not linked with engagement, children with externalizing and self-regulatory difficulties also elicited conflict within parent-child relationships. Because students with externalizing problems are also at a heightened risk of experiencing a variety of social, emotional, and academic related adjustment difficulties, it may be particularly important to find ways of decreasing the amount of conflict these children experience at home and in school.

Though children's internalizing difficulties and cognitive skills were also expected to be indirectly associated with engagement, this was not the case. However, both consistently elicited relational responses from both parents and teachers. Specifically, children with cognitive skills consistently elicited warm and sensitive relationships at both home and school. Given teachers' preference for students who are conscientious, interested in learning, and self-regulated, these associations were not surprising (Ladd *et al.,* 1999; Skinner & Belmont, 1993). Children who have greater cognitive skills may also be more adept at expressing themselves, which may give rise to closer or more sensitive relationship with adults in both home and school contexts. Interestingly, internalizing symptoms simultaneously elicited less conflict with parents and

92

teachers, as well as less closeness and sensitivity. Children with internalizing difficulties often

'fly under the radar', and their difficulties are less frequently picked up on by parents or teachers.

Such children also tend to be quieter and more anxious about interpersonal relationships (Mash

& Barkley, 1996; Molins & Clopton, 2002), and may be more difficult to 'get to know' than

others. These children may therefore elicit fewer relational responses from parents or teachers in

general.

9.4   INTERACTIVE ASSOCIATIONS ACROSS HOME & SCHOOL CONTEXTS

The fourth broad question posited that warmth or sensitivity in one relationship would buffer

children's engagement against conflict within another. Overall findings partially align with this

hypothesis. Though no interactive associations were detected in 5th grade, close and sensitive

relationships with parents were protective for children who were confronted by high amounts of

teacher conflict during the first few years of elementary school. This contributes to a growing

body of literature indicating that positive parent-child relationships are protective against

external risk factors (Dearing *et al.,* 2004; Egeland, Carlson, & Sroufe, 1993; Gottfried *et al.,*

1998). A warm or sensitive relationship at home may advantage children who experience conflict

with classroom teachers because it fosters the development of adaptive learning-related thoughts,

feelings, and values (Birch & Ladd, 1997; Lynch and Cicchetti, 1992; Pianta, 1999). If children

who have close or sensitive relationships with their parents at home carry these emotions, beliefs,

and cognitions into their activities at school, parents may provide children with a readiness to

engage in academic activities even when faced with conflict. However, it is also important to

note that maternal closeness was not protective against negative associations between teacher

93

conflict and relatedness to the classroom, or children's motivation to achieve. This suggests that parents may be less able to promote positive perceptions of the classroom or sustain motivation when children are faced with particularly conflictual relationships.

In contrast, a close relationship with ones' teacher did not buffer children's engagement against conflict or insensitivity experienced within the parent-child relationship. This was surprising, because several studies find that a close, supportive relationship with a teacher is a key feature distinguishing at-risk children who succeed in school from those who do not (Ladd & Burgess, 2001; Pianta, Steinberg, & Rollins, 1995; Resnick et al., 1997). This study's relatively low-risk sample may not have faced enough parental conflict for teacher effects to be detected. According to Masten and Reed (2002), "The best documented asset of resilient children is a strong bond to a competent and caring adult -- which need not be a parent". Future research may therefore consider utilizing low-SES, disadvantaged, or at-risk samples to illustrate whether teacher-child relationships can provide children with resources to foster positive engagement regardless of children's home life (Walsh & Pianta, 1998).

9.5   DEVELOPMENTAL PATTERNS IN ENGAGEMENT ACROSS ELEMENTARY SCHOOL

This investigation considered associations at three key developmental periods: As children moved from preschool into elementary school, as children progressed from 1st through 5th grade, and as children prepared for the middle-school transition. This is among the first investigations to consider how relationships predict engagement over the timespan of 7 years, or to consider how relationships predict engagement at either end of elementary school. Correspondingly, the

results of these investigations demonstrate notable developmental patterns that are important to consider, and are discussed below.

9.5.1 Engagement may be more sensitive to parent-child relationships during early rather than later elementary school

The transition to first grade introduces several systematic changes in children's social worlds, including grading by teachers, formal grouping, and greater exposure to peers (Eccles *et al.,* 1984). The results from this investigation suggests that close and sensitive relationships with parents may play a particularly important role during this critical period, particularly for those whom are confronted by high amounts of teacher conflict. Specifically, parental warmth and sensitivity in 1st and 3rd grade was protective for children's engagement against conflict experienced during these time-points. Young children may be particularly likely to rely on their warm or sensitive parents as resources during times of stress or transition, which may be enough support outside of school to buffer engagement in the classroom. However, parental sensitivity and closeness was no longer protective for engagement once children reached 5th grade. Older children may lean less on their parents for support when experiencing conflict with their teachers, in part because relationship quality tends to deteriorate as children approach middle-school and because parents are less involved in the classroom during 5th grade (Izzo *et al.*, 1999; O'Conor & McCartney, 2007). Correspondingly, a close or sensitive relationship with parents should be considered an asset for young children who are at risk of disengagement because of conflict with teachers in the first few years of elementary-school.

Findings across each developmental period also suggest that parent-child relationships may be important for promoting teacher-child relationships during the first few years of

elementary school. Specifically, conflict and sensitivity from parents in preschool and 1st grade were indirectly linked to children's engagement through conflict with 1st and 3rd grade teachers. This aligns with other studies that suggest parent-child relationships shape expectations of rapport with new adults (Gurland, Grolnick, & Friendly, 2007; Gurland & Grolnick, 2003, 2008), and are important predictors of children's social and behavioral adjustment to elementary school (e.g., Pianta & Harbers, 1996; Pianta, Nimetz, & Bennett, 1997; Pianta, Smith, & Reeve, 1991). However, these indirect associations faded out as children approached 5th grade. It is possible that parent-child relationships are particularly meaningful for young children because they have fewer experiences with nonparental caregivers, and interact with their teachers in similar ways as with their parents. For instance, children with a history of parental conflict may be less adept at developing non-conflictual relationships with their classroom teachers. Such children may also be more likely to respond negatively or defensively towards adults, which in turn may elicit more conflict from teachers. In contrast, children with more sensitive parents may have more adaptive social skills, and may elicit more positive relationships at school than those with less sensitive parent-child relationships (Landry, Smith, & Swank, 2006; Morrison, Rimm-Kauffman, & Pianta, 2003). Early experiences of maternal conflict and sensitivity may therefore be important indicators for how children will adjust to their classroom relationships, and engage with instructional tasks.

9.5.2 Early conflict begets ongoing conflict & disengagement

Developmental patterns also suggest that early conflict with teachers may instigate a cycle of continued conflict and disengagement across elementary school. Specifically, children with conflictual teacher-child relationships in 1st and 3rd grade were less engaged in 3rd and 5th in part

96

because of ongoing conflictual relationships with teachers at these times. Results align with a transactional model of child development, which suggests that children play an active role in the relationships they develop and that these relationships in turn shape future development and behaviors (Sameroff, 1979). This suggests that conflictual teacher-child relationships at school entry may be an early warning sign for continued conflict and disengagement in later years, and may be an important point of intervention. Associations may be particularly problematic for children who display chronic or clinical-level externalizing problems. For example, Ladd & Burgess (2001) found that chronically aggressive children elicit more disciplinary encounters with teachers than those who also show externalizing difficulties, but are less aggressive. Aggressive children may react more emotionally (e.g., angrily) or physically when teachers attempt to control their behaviors, leading to further confrontations and conflict. This cycle may increase the likelihood of suspension or expulsion (Risi, Gerhardstein, & Kistner, 2003), which may completely remove children from the context in which engagement takes place. Over time, children with externalizing problems and conflictual relationships may experience heightened levels of negative arousal while in the school setting, to the point that their negative moods interfere with behavioral skills and academic engagement regardless of how affectively warm their future teachers are (Moilanen, Shaw, & Maxwell, 2010; Roeser, Eccles, & Sameroff, 2001). This may have important ramifications for school truancy, attrition, and the development of engagement and relationships across childhood (Dodge *et al.,* 2008; Farmer *et al.,* 2003).

9.5.3 There is tremendous instability in engagement, but significant stability when it comes to relationships for children over time

The results of this study lend further support to the idea that engagement is highly context-dependent (Appleton et al., 2006; Jimmerson, Campos, & Grief, 2003). For instance, lagged measures of engagement were never predictive of subsequent engagement outcomes. Though concurrent measures of conflict within the teacher-child relationship were associated with engagement, longitudinal assessments of relationships were also infrequently predictive of engaged behavior. This aligns with other studies that find consistent associations between contemporaneous classroom characteristics and engagement but weaker longitudinal linkages (see Fredericks et al., 2004, for review). As engagement is so sensitive to time and context, it remains a prime target for interventions aimed at improving school outcomes (Appleton et al., 2006; Jimmerson et al., 2003). This is in distinct contrast to how remarkably stable teacher-child relationships are over time, given a two-year lag and changed teachers across years. This suggests that children who have relational problems early on are likely to continue to have difficulties over time (Eisenhower et al., 2007; Howes et al., 2000; Pianta et al., 1997), and aligns with prior studies that find relatively stable trajectories of parent and teacher-child relationships across elementary school (Matestic, 2008; Maldinado, 2009). Yet parent- and teacher-child relationships are far from static – and are also characterized by significant changes in conflict, warmth, and sensitivity as children move through elementary school (Matestic, 2008; Maldinado, 2009). Though conflictual relationships at school entry may be an early warning sign for continued conflict and disengagement in later years, this variability indicates that relationships are indeed changeable and may be an important point of intervention.

9.5.4   Present and prior relationships are important for motivation in 5th grade

This study also considered how relationships are additively and longitudinally associated with children's engagement and motivation in 5th grade, just prior to the transition to middle-school. Longitudinal patterns suggest that both parent- and teacher-child relationships have lasting associations with children's reports of relatedness, competence, and motivation – even after changing grades, classrooms, and teachers. Specifically, a history of warmth and sensitivity from parents and teachers in early elementary school was promotive of motivation and perceived competence in 5th grade – while conflict from teachers in early elementary school was problematic for children's relatedness to their school environment. This aligns with perspectives offered by Self-Determination Theory, which suggests that relationships help children internalize the achievement-related beliefs, values, and perceptions of their caregivers (Grolnick, Gurland, DeCourcey, & Jacob, 2002; Wentzel, 1999). Warmth and support from parents and teachers may provide children with an enduring motivation to achieve, and a sense of competence that is internalized throughout elementary school. Once internalized, these achievement-related beliefs and values have the potential to be transferred and manifested into the middle-school setting (Appleton *et al.,* 2008; Wentzel, 1999). If elementary-school students carry feelings of motivation and perceived competence into their 6th grade classrooms, this may be protective against developmental drops in engagement. In contrast, a history of cold or unsupportive relationships throughout elementary school may undermine children's ability to connect with the school environment (Roorda et al., 2011), which may be particularly problematic for engagement during the middle-school transition.

A number of contemporaneous findings were also detected. As with engagement, conflict with teachers and parents was problematic for 5th graders' achievement motivation and

perceptions of relatedness to the school. This is particularly worrisome because 5th grade

relationships, perceptions of relatedness, and achievement motivation are particularly salient

predictors of disengagement in middle school (Furrer & Skinner, 2003). Low motivation and

relatedness, shaped by years of teacher conflict in elementary school, may in turn heighten 6th

graders' feelings of disconnect during a time in which many children's developmental needs are

poorly addressed (Eccles & Roeser, 2009). If 5th graders carry perceptions of low motivation and

disconnect into middle-school, conflict with parents and teachers may exacerbate existing

developmental dips in engagement and motivation. Further longitudinal research is needed to

clarify these associations during the middle-school transition.

9.6   LIMITATIONS

While the present study has many strengths, several limitations remain. First, previous research

suggests that parent-child relationships are more consistently linked to measures of emotional

(e.g., school liking and enjoyment of learning) and cognitive engagement (e.g., interest and

motivation to invest effort) than to measures behavioral engagement (e.g., participation,

attention) (Fredericks *et al.,* 2004; Froiland, 2011; Grolnick*,* Ryan, & Deci*,* 1991; Joussemet,

Koestner, Lekes, & Landry, 2005; Moss & St. Laurent, 2002). Unfortunately, these measures are

unavailable within the NICHD-SECCYD. As each form of engagement is associated with

adaptive school outcomes (Fredericks et al., 2004), a more thorough consideration of these

associations is an important next step. Second, this study is purely correlational in nature and is

therefore suspect to omitted variable bias. For instance, children may have difficulty engaging in

classrooms that are characterized by significant disruption or aggression (Castle & Votruba-

Drzal, 2011). Misbehavior within classrooms can also contribute to changes in children's own behavior problems, relationships, and engagement outcomes (Castle & Votruba-Drzal, 2011; Dishion & Tipsord, 2011). In addition, teachers in disruptive classrooms are more susceptible to stress, exhaustion, and burnout (Abel & Sewell, 1999; Konishi et al., 2010), and may therefore develop more conflictual relationships with all students within the class. Though an accurate assessment of classroom behavior problems is unavailable within the current dataset, future research should consider the behavioral composition of a classroom as a predictor of both relationships and engagement. Third, while the aforementioned processes may adequately describe a child who is at low-risk for disengagement, the degree to which children's relationships are associated with engagement for children from high-risk family, neighborhood, or educational backgrounds is less clear. Children from low-SES backgrounds are more likely to learn in poorly functioning schools with highly stressed teachers, to live in communities with fewer resources and greater parenting stress, and to have more deviant peers that model disengaged behavior (Duncan & Murnane, 2011). Connections to warm and caring adults at home or school may be particularly important for children's engagement when living or learning in such adverse contexts (Masten, 2002; 2006). Work that takes a more person-centered approach to account for the diversity and heterogeneity of student backgrounds is therefore needed.

9.7   CONCLUSIONS & NEXT STEPS

The present study contributes to a growing literature that suggests that relationships with parents and teachers are important for children's engagement in elementary school. When developing

future investigations or interventions considering disengagement in elementary school, researchers may wish to keep the key findings of this project in mind. For instance, early behavioral difficulties may set children upon relationship pathways that shape long-term engagement and motivational outcomes. Dynamic cascade models may be helpful when considering these associations, as children who have social and academic problems early on are more likely to disengage over time (Dodge, Greenberg, Malone, & CPRG, 2008; Ladd *et al.*, 2008), and to have parents who withdraw from parental supervision and monitoring (Dodge *et al.,* 2008). Group based trajectory analyses of children's engagement and their relationships with parents and teachers may also be important to consider. For example, Ladd & Dinella (2009) find that early-emerging patterns of teacher-reported engagement commonly evolve into distinct orientations that are relatively stable across 1- to 2-year periods (Ladd & Dinella, 2009). Other analyses with the NICHD-SECCYD also identify distinct trajectories of both parent (Matestic, 2008) and teacher-child relationships (Maldinado, 2009). Correspondingly, future research may consider whether similar trajectories of parent- and teacher-child relationships are predictive of children's motivation or engagement trajectories. Delineating these associations would provide more insight into the developmental processes associated with engagement across elementary school.

If teacher-child relationships interfere with classroom engagement through elevated levels of conflict, questions considering how to best intervene are also important to consider. Interventions designed to enhance support and trust in children's relationships have showed promising effects for engagement (Freiland, 2011; Kutnick *et al.*, 2008). For instance, the Check & Connect intervention model successfully promoted elementary-school children's engagement by enhancing relationships developed between program staff and students, families, and teachers

(Anderson, Christenson, Sinclair, & Lehr, 2004). MyTeachingPartner (MTP), a one-on-one coaching program designed to enhance teacher-child interactions, similarly demonstrates empirical success in improving both relationships and engagement in both pre-K and elementary school (Pianta, Belsky, et al., 2008; Mashburn et al., 2008; Allen, Pianta, Gregory, Mikami, & Lun, 2011). Children entering school with externalizing and self-regulatory problems may also benefit from early intervention programming, such as social skills training, as a way to leverage decreased conflict, increased support, and enhance engagement (Ferentino, 1991; US DOE What Works Clearinghouse, 2013; Guglielmo & Tryon, 2001). As early engagement patterns set the stage for achievement, motivation, and even attrition into the high-school years (Buhs & Ladd, 2001; Finn & Rock, 1997; Ladd, Birch, & Buhs, 1999; Ladd, Buhs, & Seid, 2000; Marks, 2000), intervention against disengagement during elementary school may be particularly warranted.

As children's lives become more complex as they move from kindergarten through 5th grade, developing relational models that incorporate this complexity is an important next step. Future research should consider how other socializing agents, such as peers and school social norms, are associated with engagement. Children who report feeling as though they are liked and supported by both friends and classmates display greater levels of overall engagement than those who are less accepted (Ladd, *et al.,* 1996; Ladd *et al.,* 1999; Ladd & Coleman, 1997; Patrick, Ryan, & Kaplan, 2007; Purdue, Manzeske, & Estelle, 2009). In contrast, those who are rejected by peers in early elementary school are 10% less engaged than those rejected in later years (Ladd *et al.,* 2008). Children are even more reliant upon their peers for social support as they age (Lynch & Cicchetti, 1997), and may be increasingly likely reach out to friends in times of trouble as they approach 5th grade. Those who reach out to peers and teachers when occupied with emotional and/or school concerns show more positive school adjustment, self-esteem,

engagement, and achievement than those who do not reach out (Ryan *et al.,* 1994; Wentzel, 1998). However, this may be problematic if friends place little emphasis on academic achievement and active school participation (Hymel, Comfort, Schonert-Reichl, & McDougall, 2002; Kindermann, 1993), or if children are exposed to regular maltreatment by other children (Buhs, 2005; Buhs *et al*., 2006). Models that incorporate children's increasingly intricate social world across development are therefore needed.

In conclusion, the results from this study suggest that relationships with key figures both in and outside of the classroom are important for children's engagement in elementary school. From this perspective, feeling connected and important is not simply a by-product of school engagement; relationships with teachers and parents play an integral role in children's motivational development (Furrer & Skinner, 2003). This reaffirms the idea that the classroom may be considered a "relational zone" (Goldstein, 1999), in which relational quality is a critical component of children's participation in and enjoyment of learning (Birch & Ladd, 1996; 1997; 1998). Yet, the literature examining multiple relationship processes is limited in number and method, and the need for looking across contexts and socializers is clear. As such, improving our understanding of how both home and school relationships uniquely and dynamically contribute to children's engagement throughout elementary school, as well as how children themselves elicit these relational processes, is a complex but undoubtedly important next step.

BIBLIOGRAPHY

Abel, M. H., & Sewell, J. (1999). Stress and burnout in rural and urban secondary school teachers. *The Journal of Educational Research*, *92*(5), 287-293.

Acock, A. C. (2005). Working with missing values. *Journal of Marriage and Family, 67*, 1012–1028.

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

Ainsworth, M. S. (1979). Infant-mother attachment. *American psychologist, 34*(10), 932.

Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools, 45*(5), 369-386.

Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology*, *44*(5), 427-445.

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, 87-107.

Allen, J. P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science*, *333*(6045), 1034-1037.

Anderman, L.H., & Anderman, E.M. (2000). Considering contexts in educational psychology: Introduction to the special issue. *Educational Psychologist, 35,* 67– 68.

Anderson, A. R., Christenson, S. L., Sinclair, M. F., & Lehr, C. A. (2004). Check & Connect: The importance of relationships for promoting engagement with school. *Journal of School Psychology, 42*(2), 95-113.

Bachman, H.J. Castle, M.H., & Votruba-Drzal, E., (*In Review).* Socioeconomic and ethnic disparities in engagement and motivation during elementary school: A cross-contextual analysis.

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

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

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107,* 238–246.

Birch, S. H., & Ladd, G. W. (1997). The teacher-child relationship and children's early school adjustment. *Journal of School Psychology, 35*(1), 61-79.

Birch, S. H., & Ladd, G. W. (1998). Children's interpersonal behaviors and the teacher–child relationship. *Developmental psychology*, *34*(5), 934.

Bowlby, J. (1969). *Attachment and loss* (Vol. 1). New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss* (Vol. 2). New York: Basic Books.

Bracken, B. A. (1984). *Bracken Basic Concept Scales*. San Antonio, TX: Psychological Corporation.

Bronfenbrenner, U. (1979). *Contexts of child rearing: Problems and prospects. American Psychologist, 34*(10), 844.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental psychology*, *22*(6), 723.

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nuture reconceptualized in developmental perspective: A bioecological model. *Psychological Review, 101*(4), 568.

Bronfenbrenner, U., & Crouter, A.C. (1983). The evolution of environmental models in developmental research. In P.H. Mussen (Series Ed.) & W. Kessen (Vol. Ed.)*, Handbook of child psychology: Vol. 1. History, theory, and methods* (4th ed., pp. 357– 414). New York: Wiley.

Buhs, E. S., & Ladd, G. W. (2001). Peer rejection as antecedent of young children's school adjustment: An examination of mediating processes. *Developmental Psychology, 37*(4), 550.

Buhs, E. S. (2005). Peer rejection, negative peer treatment, and school adjustment: Self-concept and classroom engagement as mediating processes. *Journal of School Psychology, 43*(5),

407- 424.

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

Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming.* Mahwah, NJ: Erlbaum.

Campbell, S.B. (2002). *Behavior Problems in Preschool Children: Clinical and Developmental Issues*. New York, New York: Guilford Press.

Castle, M. H. & Votruba-Drzal, E. (2011, April). Classroom and School Behavior Problems as Contexts for Learning During Early Elementary School. In E. Votruba Drzal & M. H. Castle (*chairs*), *Behavior problems and early learning contexts.* Symposium conducted at the biennial meeting of the Society for Research in Child Development, Montreal, QC.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9,* 233–255.

Cicchetti, D., & Toth, S. L. (2009). The past achievements and future promises of developmental psychopathology: The coming of age of a discipline. *Journal of Child Psychology and Psychiatry, 50*, 16-25.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Coleman, P.K. (2003). Perceptions of parent-child attachment, social self-efficacy, and peer relationships in middle childhood. *Infant and Child Development, 12,* 351 – 368.

Colman, R. A., Hardy, S. A., Albert, M., Raffaelli, M., & Crockett, L. (2006). Early predictors of self   regulation in middle childhood. *Infant and Child Development*, *15*(4), 421-437.

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes and development.* (pp. 43-77): Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Dearing, E., McCartney, K., Weiss, H. B., Kreider, H., & Simpkins, S. (2004). The promotive effects of family educational involvement for low-income children's literacy. *Journal of School Psychology, 42*(6), 445-460.

Decker, D. M., Dona, D. P., & Christenson, S. L. (2007). Behaviorally at-risk African American students: The importance of student-teacher relationships for student outcomes. *Journal of School Psychology, 45*(1), 83-109.

Dishion, T. J., & Tipsord, J. M. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology, 62*, 189 – 214.

Dodge, K. A., Greenberg, M. T., Malone, P. S., & Conduct Problems Prevention Research, G. (2008). Testing an idealized dynamic cascade model of the development of serious violence in adolescence. *Child Development, 79*(6), 1907-1927. doi: 10.1111/j.1467-8624.2008.01233.x

Dudgeon, P. (2004). A note on extending Steiger's (1998) multiple sample RMSEA adjustment to other noncentrality parameter- based statistics. *Structural Equation Modeling, 11,* 305–319.

Duncan, G. J., & Murnane, R. J. (Eds.). (2011). *Whither opportunity?: Rising inequality, schools, and children's life chances*. Russell Sage Foundation.

Dweck, C. S., & Elliott, E. S. (1983). Achievement motivation. In PH Mussen (Series Ed.) & EM Hetherington (Vol. Ed.), *Handbook of child psychology, Vol. 4, 643-691.*

Eamon, M. K. (2001). Antecedents and socioemotional consequences of physical punishment on children in two-parent families. *Child Abuse & Neglect*, *25*(6), 787-802.

Early, D. M., Rimm-Kaufman, S. E., Cox, M. J., Saluja, G., Pianta, R. C., Bradley, R. H., & Payne, C. C. (2002). Maternal sensitivity and child wariness in the transition to kindergarten. *Parenting: Science and Practice*, *2*(4), 355-377.

Eccles-Parsons, J. (1983). Michigan Study of Adolescent & Adult Life Transition. http://www.rcgd.isr.umich.edu/msalt/

Eccles, J.S., Lord, S.E., Roeser, R.W., Barber, B.L., & Hernandez Jozefowicz, D.M. (1997). The association of school transitions in early adolescence with developmental trajectories through high school. In J. Schulenberg, J.I. Maggs & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 283-321). New York: Cambridge University Press.

Eccles, J. S., Midgley, C., & Adler, T. (1984). Grade-related changes in the school environment. *The development of achievement motivation*, 283-331.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48*(2), 90.

Eccles, J. S., Roeser, R., Vida, M., Fredricks, J., & Wigfield, A. (2006). Motivational and achievement pathways through middle childhood. *Child psychology: A handbook of contemporary issues*, (2nd), 325-355.

Egeland, B., Carlson, E.A., & Sroufe, L.A. (1993). Resilience as process. Development and Psychopathology, 5, 517–528.

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*(4), 363-383.

Farmer, T. W., Estell, D. B., Leung, M.-C., Trott, H., Bishop, J., & Cairns, B. D. (2003). Individual characteristics, early adolescent peer affiliations, and school dropout: an examination of aggressive and popular group types. *Journal of School Psychology, 41*(3), 217-232.

Feldlaufer, H., Midgley, C. M., & 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.

Ferentino, S. C. (1991). Teaching social skills to preschool children in a special education program. *Dissertation Abstracts International, 52*(08B), 223-4490.

Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology, 82*(2), 221.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59-109.

Froiland, J. M. (2011). Parental autonomy support and student learning goals: A preliminary examination of an intrinsic motivation intervention. *Child and Youth Care Forum, 40*(2), 135-149.

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*(1), 148-162.

Gest, S. D., Welsh, J. A., & Domitrovich, C. E. (2005). Behavioral predictors of changes in social relatedness and liking school in elementary school. *Journal of School Psychology, 43*(4), 281-301.

Ginsburg, G. S., & Bronstein, P. (1993). Family factors related to children's intrinsic/extrinsic motivational orientation and academic performance. *Child Development, 64*(5), 1461-1474.

Goldstein, L. S. (1999). The relational zone: The role of caring relationships in the co-construction of mind. *American Educational Research Journal, 36*(3), 647-673.

Gottfried, A. E., Fleming, J. S., & Gottfried, A. W. (1994). Role of parental motivational practices in children's academic intrinsic motivation and achievement. *Journal of Educational Psychology, 86*(1), 104.

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*(5), 1448-1460.

Graham, J. W., Olchowski, A. E., & Gilreath, T. D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science*, *8*(3), 206-213.

Grolnick, W. S., Friendly, R. W., & Bellas, V. M. (2009). Parenting and children's motivation at school. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school*. New York: Routledge.

Grolnick, W. S., Gurland, S. T., DeCourcey, W., & Jacob, K. (2002). Antecedents and consequences of mothers' autonomy support: An experimental investigation. *Developmental Psychology, 38*(1), 143.

Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*(4), 508.

Gross, H. E., Shaw, D. S., & Moilanen, K. L. (2008). Reciprocal associations between boys' externalizing problems and mothers' depressive symptoms. *Journal of Abnormal Child Psychology, 36*, 693-709.

Guglielmo, H. M., & Tryon, G. S. (2001). Social skill training in an integrated preschool program. *School Psychology Quarterly, 16*(2), 158–175.

Gurland, S. T., & Grolnick, W. S. (2003). Children's expectancies and perceptions of adults: Effects on rapport. *Child Development*, *74*(4), 1212-1224.

Gurland, S. T., & Grolnick, W. S. (2008). Building rapport with children: Effects of adults' expected, actual, and perceived behavior. *Journal of Social and Clinical Psychology*, *27*(3), 226-253.

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*(2), 625-638.

Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first grade classroom make a difference for children at risk of school failure? *Child Development, 76* (5), 949-967.

Harter, S. (1996). Teacher and classmate influences on scholastic motivation, self-esteem, and level of voice in adolescents. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment* (pp. 11–42). New York: Cambridge University Press.

Hinde, R. A. (1987). *Individuals, relationships and culture.* New York: Cambridge University Press.

Hughes, J. N. (2011). Longitudinal effects of teacher and student perceptions of teacher-student relationship qualities on academic adjustment. *The Elementary School Journal, 112*(1), 38.

Hughes, J. N., & Kwok, O. (2006). Classroom engagement mediates the effect of teacher-student support on elementary students' peer acceptance: A prospective analysis. *Journal of School Psychology, 43*(6), 465-480.

Hughes, J. N. & 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(1): 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*(6), 447-463.

Howes, C., Phillipsen, L. C., & Peisner-Feinberg, E. (2000). The consistency of perceived teacher–child relationships between preschool and kindergarten. *Journal of School Psychology*, *38*(2), 113-132.

Howse, R. B., Lange, G., Farran, D. C., & Boyles, C. D. (2003). Motivation and self-regulation as predictors of achievement in economically disadvantaged young children. *The Journal of Experimental Education, 71*(2), 151-174.

Hymel, S., Comfort, C., Schonert-Reichl, K., & McDougall, P. (2002). Academic failure and school dropout: The influence of peers. *Social motivation: Understanding children's school adjustment*, Cambridge University Press, 1996. Cambridge Books Online. http://dx.doi.org/10.1017/CBO9780511571190.015

Izzo, C. V., Weissberg, R. P., Kasprow, W. J., & Fendrich, M. (1999). A longitudinal assessment of teacher perceptions of parent involvement in children's education and school performance. *American Journal of Community Psychology, 27*(6), 817-839.

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 gender one through twelve. *Child Development, 73*, 509-527.

Janosz, M., Archambault, I., Morizot, J., & Pagani, L. S. (2008). School engagement trajectories and their differential predictive relations to dropout. *Journal of Social Issues*, *64*(1), 21-40.

Jeličić, H., Phelps, E., & Lerner, R. M. (2009). Use of missing data methods in longitudinal

studies: The persistence of bad practices in developmental psychology. *Developmental Psychology, 45*(4), 1195-1199. DOI: 10.1037/a0015665

Jimerson, S. R., Campos, E., & Greif, J. L. (2003). Toward an understanding of definitions and measures of school engagement and related terms. *California School Psychologist, 8*, 7–27.

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal autonomy support to children's adjustment and achievement in school. *Journal of Personality, 73*(5), 1215-1236.

Kearney, C. A., & Bensaheb, A. (2006). School Absenteeism and School Refusal Behavior: A Review and Suggestions for School Based Health Professionals. *Journal of School Health*, *76*(1), 3-7.

Keith, T. (2006). *Multiple regression and beyond*. Boston: Pearson Education.

Kindermann, T. A. (1993). Natural Peer Groups as Contexts for Individual Development: The Case of Children's Motivation in School. *Developmental Psychology, 29*(6), 970-977.

Konishi, C., Hymel, S., & Zumbo, B. D. (2010). Do school bullying and student-teacher relationships matter for academic achievement? A multilevel analysis. *Canadian Journal of School Psychology, 25*(1), 19.

Koomen, H.M., Verschueren, K., van Schooten, E., Jak, S., & Pianta, R.C. (2012). Validating the student-teacher relationship scale: Testing factor structure and measurement invariance across child gender and age in a Dutch sample. *Journal of School Psychology*, *50*, 215 – 234.

Kutnick, P., Ota, C., & Berdondini, L. (2008). Improving the effects of group working in classrooms with young school-aged children: Facilitating attainment, interaction and classroom activity. *Learning and Instruction, 18*(1), 83-95.

Ladd, G. W. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classroom: Predictors of children's early school adjustment? *Child Development, 61*(4), 1081-1100.

Ladd, G. W., Birch, S. H., & Buhs, E. S. (1999). Children's social and scholastic lives in kindergarten: Related spheres of influence? *Child Development, 70*(6), 1373-1400. doi: 10.1111/1467-8624.00101

Ladd, G. W., Buhs, E. S., & Seid, M. (2000). Children's initial sentiments about kindergarten: Is school liking an antecedent of early classroom participation and achievement? *Merrill-Palmer Quarterly, 46*, 255–279.

Ladd, G. W., & Burgess, K. B. (2001). Do relational risks and protective factors moderate the

linkages between childhood aggression and early psychological and school adjustment? *Child Development, 72*(5), 1579-1601. doi: 10.1111/1467-8624.00366

Ladd, G. W., & Coleman, C. C. (1997). Children's classroom peer relationships and early school attitudes: Concurrent and longitudinal associations. *Early Education and Development, 8*(1), 51-66.

Ladd, G. W., & Dinella, L. M. (2009). Continuity and change in early school engagement: Predictive of children's achievement trajectories from first to eighth grade? *Journal of Educational Psychology, 101*(1), 190.

Ladd, G. W., Herald-Brown, S. L., & Reiser, M. (2008). Does chronic classroom peer rejection predict the development of children's classroom participation during the grade school years? *Child Development, 79*(4), 1001-1015.

Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Development, 67*(3), 1103-1118.

Lau, S., & Roeser, R. (2002). Cognitive abilities and motivational processes in high school students' situational engagement and achievement in science. Educational Assessment, 8(2), 139–162.

Laughlin, T. (1995). The School Readiness Composite of the Bracken Basic Concept Scale as an intellectual screening instrument. *Journal of Psychoeducational Assessment, 13*, 294 – 302.

Ladd, G. W., & Price, J. M. (1987). Predicting children's social and school adjustment following the transition from preschool to kindergarten. *Child Development*, 1168-1189.

Landry, S. H., Smith, K. E., & Swank, P. R. (2006). Responsive parenting: establishing early foundations for social, communication, and independent problem-solving skills. *Developmental Psychology*, *42*(4), 627.

Little, R. J. A., & Rubin, D. B. (2002). Statistical analysis with missing data, New York: Wiley.

Losier, G.F. & Vallerand, R.J. (2001). The temporal relationship between perceived competence and self-determined motivation. *The Journal of School Psychology, 134*, 793-801.

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*(1), 81-99.

MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review, 17,* 144–158.

Mahatmya, D., Lohman, B. J., Matjasko, J. L., & Farb, A. F. (2012). Engagement across

developmental periods. In *Handbook of research on student engagement* (pp. 45-63). Springer US.

Maldonado, C. (2009). *Teacher-Child Relationship Quality and Children's Behavioral and Academic Trajectories Across Elementary School* (Doctoral dissertation, University of Pittsburgh).

Marchant, G. J., Paulson, S. E., & Rothlisberg, B. A. (2001). Relations of middle school students' perceptions of family and school contexts with academic achievement. *Psychology in the Schools, 38*(6), 505-519.

Marks, H. M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. *American Educational Research Journal, 37*(1), 153.

Martin, A. J., & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and achievement: Yields for theory, current issues, and educational practice. *Review of Educational Research, 79*(1), 327-365.

Mash, E. J., & Barkley, R. A. (1996). *Child psycho- pathology.* New York: Guilford Press.

Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., ... & Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development*, *79*(3), 732-749.

Masten, A. S., & Reed, M. G. J. (2002). Resilience in development. *Handbook of positive psychology*, 74-88.

Masten, A. S. (2006). Promoting resilience in development: A general framework for systems of care. *Promoting resilience in child welfare*, 3-17.

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and psychopathology, 22*(3), 491.

McCombs, B. L., Daniels, D. H., & Perry, K. E. (2008). Children's and teachers' perceptions of learner-centered practices, and student motivation: Implications for early schooling. *The Elementary School Journal*, *109*(1), 16-35.

McDonald, R. P., & Ho, M.-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7,* 64–82.

Matestic, P.A. (2008). *Trajectories of Observed Maternal and Paternal Sensitivity in Early and Middle Childhood: Predicting Children's Social Competence from Sensitive Parenting.* (Doctoral Dissertation, University of Pittsburgh).

McCartney, K., Burchinal, M. R., & Bub, K. L. (2006). Best practices in quantitative methods for developmentalists. Monographs of the Society for Research in Child Development, 71(3, Serial No. 285).

Meredith, W. M., & Teresi, J. A. (2006). An essay on measurement and factorial invariance. *Medical Care, 44*, S69–S77.

Mischel, W., & Ebbesen, E. B. (1970). Attention in delay of gratification. *Journal of Personality and Social Psychology, 16*, 329-337.

Molins, N. C., & Clopton, J. R. (2002). Teachers' reports of the problem behavior of children in their classrooms. *Psychological reports*, *90*(1), 157-164.

Moilanen, K. L., Shaw, D. S., & Maxwell, K. L. (2010). Developmental cascades: Externalizing, internalizing, and academic competence from middle childhood to early adolescence. *Development and psychopathology*, *22*(03), 635-653.

Morrison, E. F., Rimm-Kauffman, S., & Pianta, R. C. (2003). A longitudinal study of mother–child interactions at school entry and social and academic outcomes in middle school. *Journal of School Psychology*, *41*(3), 185-200.

Moss, E., & St-Laurent, D. (2001). Attachment at school age and academic performance. *Developmental Psychology, 37*(6), 863.

Murray, C., Murray, K. M., & Waas, G. A. (2008). Child and teacher reports of teacher-student relationships: Concordance of perspectives and associations with school adjustment in urban kindergarten classrooms. *Journal of Applied Developmental Psychology, 29*(1), 49-61.

Murray, C., Waas, G. A., & Murray, K. M. (2008). Child race and gender as moderators of the association between teacher-child relationships and school adjustment. *Psychology in the Schools, 45*(6), 562-578.

Muthén, L. K. & Muthén, B. (2010). *Mplus*. Los Angeles, CA: Muthén & Muthén.

NICHD Early Child Care Research Network (1993). The NICHD study of early child care: A comprehensive longitudinal study of young children's lives. (ERIC Document Reproduction Service No. ED3530870)

NICHD Early Child Care Research Network (2002). The relation of global first grade classroom environment to structural classroom features and teacher and student behaviors. *The Elementary School Journal,* 102, 367–387.

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.

NICHD Early Child Care Research Network (2005). A day in third grade: Classroom quality, teacher, and student behaviors. *Elementary School Journal*, *105*(3), 305–323.

NICHD Early Child Care Research Network & Duncan, G. J. (2003). Modeling the impact of child care quality on children's preschool cognitive development. *Child Development, 74,* 1454-1475.

NICHD Study of Early Child Care and Youth Development (2007). *Phases I to III instrument documentation.* Retrieved December 12, 2007, from http://secc.rti.org

Nicholls, J. G. (1979). Development of perception of own attainment and causal attributions for success and failure in reading. *Journal of Educational Psychology; Journal of Educational Psychology, 71*(1), 94.

Nishina, A., Juvonen, J., & Witkow, M. R. (2005). Sticks and stones may break my bones, but names will make me feel sick: The psychosocial, somatic, and scholastic consequences of peer harassment. *Journal of Clinical Child and Adolescent Psychology, 34*(1), 37-48.

Normandeau, S., & Guay, F. (1998). Preschool behavior and first-grade school achievement: The mediational role of cognitive self-control. *Journal of Educational Psychology, 90*(1), 111.

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*(2), 340-369.

Parke, R. D., & Ladd, G. W. (Eds.). (1992). *Family-peer relationships: Modes of linkage.* Hillsdale, NJ: Erlbaum.

Patrick, H., Ryan, M.A., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology*, *99*(1), 83-98.

Perdue, N. H., Manzeske, D. P., & Estell, D. B. (2009). Early predictors of school engagement: Exploring the role of peer relationships. *Psychology in the Schools, 46*(10), 1084-1097.

Pianta, R. C. (1999). *Enhancing relationships between children and teachers.* Washington, DC: American Psychological Association.

Pianta, R. C., Belsky, J., Houts, R., Morrison, F., & The NICHD Early Child Care Research Network (2007). Opportunities to learn in America's elementary classrooms. *Science, 315,* 1795-1796.

Pianta, R. C., Belsky, J., Vandergrift, N., Houts, R., & Morrison, F. J. (2008). Classroom effects

on children's achievement trajectories in elementary school. *American Educational Research Journal, 45*, 365-397.

Pianta, R. C., Hamre, B. K., & Allen, J. P. (2012). Teacher-student relationships and engagement: Conceptualizing, measuring, and improving the capacity of classroom interactions. In *Handbook of research on student engagement* (pp. 365-386). Springer US.

Pianta, R. C., & Harbers, K. L. (1996). Observing mother and child behavior in a problem-solving situation at school entry: Relations with academic achievement. *Journal of School Psychology*, *34*(3), 307-322.

Pianta, R. C. & Nimetz, S. L. (1991). Relationships between children and teachers: Associations with classroom and home behavior. *Journal of Applied Developmental Psychology*, *12*(3), 379-393.

Pianta, R. C., Nimetz, S. L., & Bennett, E. (1997). Mother-child relationships, teacher-child relationships, and school outcomes in preschool and kindergarten. *Early Childhood Research Quarterly, 12*(3), 263-280.

Pianta, R. C., Smith, N., & Reeve, R. E. (1991). Observing mother and child behavior in a problem-solving situation at school entry: Relations with classroom adjustment. *School Psychology Quarterly*, *6*(1), 1.

Pianta, R. C., Steinberg, M. S., & Rollins, K. B. (1995). The first two years of school: Teacher-child relationships and deflections in children's classroom adjustment. *Development and Psychopathology*, *7*(02), 295-312.

Pianta, R. C., & Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review*, *33*(3), n444-458.

Pintrich, P. R., & Zusho, A. (2002). The development of academic self-regulation: The role of cognitive and motivational factors. In A. Wigfield & J. Eccles (Eds.), Development of Achievement Motivation (pp. 249-284). San Diego: Academic Press.

Perdue, N. H., Manzeske, D. P., & Estell, D. B. (2009). Early predictors of school engagement: Exploring the role of peer relationships. *Psychology in the Schools, 46*(10), 1084-1097.

Pomerantz, E. M., & Eaton, M. M. (2001). Maternal intrusive support in the academic context: Transactional socialization processes. *Developmental Psychology, 37*(2), 174.

Portilla, X. A., Ballard, P. J., Adler, N. E., Boyce, W. T., & Obradović, J. (2014). An Integrative View of School Functioning: Transactions Between Self Regulation, School Engagement, and Teacher–Child Relationship Quality. *Child Development*, *85*(5), 1915-1931.

Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., ... & Udry, J. R. (1997). Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health. *Jama*, *278*(10), 823-832.

Rimm-Kaufman, S. E., Curby, T. W., Grimm, K. J., Nathanson, L., & Brock, L. L. (2009). The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom. *Developmental Psychology, 45*(4), 958.

Risi, S., Gerhardstein, R., & Kistner, J. (2003). Children's classroom peer relationships and subsequent educational outcomes. *Journal of Clinical Child and Adolescent Psychology*, *32*(3), 351-361.

Roeser, R.W., Eccles, J.S., & Sameroff, A. (1998). Academic and emotional functioning in early adolescence: Longitudinal relations, patterns, and prediction by experience in middle school. *Development and Psychopathology, 10,* 321 – 352.

Roeser, R. W., Eccles, J. S., & Sameroff, A. J. (2000). School as a context of early adolescents' academic and social–emotional development: A sum- mary of research findings. Elementary School Journal, 100, 443–471.

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. *Review of Educational Research, 81*(4), 493-529.Fr

Rothbaum, F., & Weisz, J. R. (1994). Parental caregiving and child externalizing behavior in nonclinical samples: a meta-analysis. *Psychological bulletin*, *116*(1), 55.

Royston, P. (2005). Multiple imputation of missing values: Update of ice. *Stata Journal,* 5, 527-536.

Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys.* New York: John Wiley & Sons.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*(1), 54-67. doi: 10.1006/ceps.1999.1020

Ryan, R. M., Stiller, J. D., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *The Journal of Early Adolescence,* 14(2), 226.

Sameroff, A. (1975). Transactional models in early social relations. *Human Development 18*(1).

Sameroff, A. (1994). Developmental systems and family functioning. In Parke, R. D. & Kellam, S. G. (Eds), *Family Research Consortium: Advances in Family Research.,* (pp. 199-214). Hillsdale, NJ: Lawrence Erlbaum Associates.

Sandler, I. N., Miller, P., Short, J., & Wolchik, S. A. (1989). Social support as a protective factor for children in stress. In D. Belle (Ed.) *Children's Social Networks and Social Supports,* 136 - 277. Oxford: Wiley & Sons.

Sarason, I. G., Pierce, G. R., & Sarason, B. R. (1990). Social support and interactional processes: A triadic hypothesis. *Journal of Social and Personal Relationships, 7*(4), 495-506.

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*(2), 147-177.

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, *99*(6), 323-338.

Schneider Rosen, K., & Wenz Gross, M. (1990). Patterns of compliance from eighteen to thirty months of age. *Child development*, *61*(1), 104-112.

Silva, K. M., Spinrad, T. L., Eisenberg, N., Sulik, M. J., Valiente, C., Huerta, S., . . . School Readiness Consortium. (2011). Relations of children's effortful control and teacher-child relationship quality to school attitudes in a low-income sample. *Early Education & Development, 22*(3)*,* 434-460.

Simons, R. L., Johnson, C., Conger, R. D., & Elder, G. (1998). A test of latent trait versus life-course perspectives on the stability of adolescent antisocial behavior. *Criminology, 36*, 217-242.

Shaw, D. S., & Bell, R. Q. (1993). Developmental theories of parental contributors to antisocial behavior. *Journal of Abnormal Child Psychology, 21*, 493-518.

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*(4), 571.

Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic?. *Journal of Educational Psychology*, *100*(4), 765.

Skinner, E. A., Kindermann, T. A., Connell, J. P., & Wellborn, J. G. (2009). Engagement and disaffection as organizational constructs in the dynamics of motivational development. In K. Wentzel & A. Wigfield (Eds.), *Handbook of motivation in school* (pp. 223–245). Mahwah, NJ: Erlbaum.

Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology, 82*(1), 22.

Skinner, E. A., Zimmer-Gembeck, M. J., & Connell, J. P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development, 63*(2–3, Whole No. 204).

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*, *13*(1982), 290-312.

StataCorp. 2007. *Stata Statistical Software: Release 10*. College Station, TX: StataCorp LP

Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology, 52,* 83-110.

Stebbins, M. S., & McIntosh, D. E. (1996). Decision-making utility of the Bracken Basic Concept Scale in identifying at-risk preschoolers. School Psychology International, 17, 293 – 303.

Stipek, D. (1999). *Success in School - For a Head Start in Life.* New York: Cambridge University Press.

Stipek, D., & Miles, S. (2008). Effects of aggression on achievement: Does conflict with the teacher make it worse? *Child Development, 79*(6), 1721-1735.

Thompson, R. A., & Goodman, M. G. (2009). Development of self, relationships, and socioemotional competence: Foundations for early school success. In O. A. Barbarin & B. H. Wasik (Eds.), *Handbook of child development and early education: Research to practice* (pp. 147–171). New York: Guilford.

Thorndike, R. L., Hagen, E. P., & Sattler, J. M. (1986). *The Stanford-Binet Intelligence Scale* (4th ed.). Chicago: Riverside.

Thijs, J. T., Koomen, H. M. Y., & Van Der Leij, A. (2008). Teacher-child relationships and pedagogical practices: Considering the teacher's perspective. *School Psychology Review, 37*(2), 244-260.

Trentacosta, C. J., Criss, M. M., Shaw, D. S., Lacourse, E., Hyde, L. W., & Dishion, T. J. (2011). Antecedents and outcomes of joint trajectories of mother–son conflict and warmth during middle childhood and adolescence. *Child development*, *82*(5), 1676-1690.

U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse. (2013, February). *Early Childhood Education Interventions for Children with Disabilities intervention report: Social skills training.* Retrieved from http://whatworks.ed.gov.

Vandell, D. L., Belsky, J., Burchinal, M., Vandergrift, N., Steinberg, L., & NICHD ECCRN. (2010). Do effects of early child care extend to age 15 years? Results from the NICHD Study of Early Child Care and Youth Development. *Child Development, 81*(3), 737-756.

Vaughn, B. E., Kopp, C. B., & Krakow, J. B. (1984). The emergence and consolidation of self-control from eighteen to thirty months of age: Normative trends and individual differences. *Child development*, 990-1004.

Vaughn, B. E., Kopp, C. B., Krakow, J. B., Johnson, K., & Schwartz, S. S. (1986). Process analyses of the behavior of very young children in delay tasks. *Developmental Psychology*, *22*(6), 752.

Walsh, D. J., & Pianta, R. (1998). Applying the construct of resilience in schools: Cautions from a developmental systems perspective. *School Psychology Review, 27*(3), 407-417.

Wang, M.-T., & Peck, S. C. (2012, October 15). Adolescent Educational Success and Mental Health Vary Across School Engagement Profiles. *Developmental Psychology*. Advance online publication. doi: 10.1037/a0030028

Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of Educational Psychology, 90*(2), 202.

Wentzel, K. R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology, 91*(1), 76.

Wentzel, K. R. (2009). Students' relationships with teachers as motivational contexts. *Handbook of Motivation at School* (pp. 301 – 322). New York: Routledge.

Wentzel, K. (2012). Part III commentary: Socio-cultural contexts, social competence, and engagement at school. In *Handbook of research on student engagement* (pp. 479-488). Springer US.

Widaman, K. F. (2006). Missing data: What to do with or without them. *Monographs of the Society for Research in Child Development, 71*, 42 – 64.

Wigfield, A., & Eccles, J. S. (2002). The development of competence beliefs, expectancies for success, and achievement values from childhood through adolescence. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 92-122). San Diego: Academic Press.

Wechsler, D. (1989). Wechsler Preschool and Primary Scale of Intelligence-Revised. Chicago: Psychological Corporation.

Woodcock RW, Johnson MB (1989): *Woodcock–Johnson Psy- cho-Educational Battery–Revised*. Allen, TX: Developmental Learning Materials.

deWolff, M. S., & vanIjzendoorn, M. H. (1997). Sensitivity and attachment: A meta analysis on parental antecedents of infant attachment. *Child Development*, *68*(4), 571-591.

Wolters, C. A., & Taylor, D. J. (2012). A self-regulated learning perspective on student engagement. In S. L. Christenson, A. L. Reschly & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 635–651). New York: Springer.

Wu, J.Y., Hughes, J. N., & Kwok, O.-M. (2010). Teacher-student relationship quality type in elementary grades: Effects on trajectories for achievement and engagement. *Journal of School Psychology, 48*(5), 357-387. doi: 10.1016/j.jsp.2010.06.004

END NOTES

[i] Note: Significant standardized path coefficients are reported. Error terms, covariances, and covariates have been omitted for simplicity. Solid arrows indicate significant pathways, dashed are trend. All models control for children's gender, race/ethnicity, number of children in the household, parental marital status, income, and years of education. Models also include controls for classroom and teacher characteristics, including years of teaching experience, highest educational degree attained, class size, and classroom instructional quality.