PARENT-CHILD RELATIONSHIPS AS PREDICTORS OF CHANGE IN TEACHER-CHILD RELATIONSHIPS AND SCHOOL CONNECTEDNESS DURING EARLY ADOLESCENCE

by

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A DISSERTATION

Presented to the Department of Counseling Psychology
and Human Services
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

September 2010

University of Oregon Graduate School

Confirmation of Approval and Acceptance of Dissertation prepared by:

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"Parent-Child Relationships as Predictors of Change in Teacher-Child Relationships and School Connectedness During Early Adolescence"

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in the Department of Counseling Psychology and Human Services

to be taken September 2010

Title: PARENT-CHILD RELATIONSHIPS AS PREDICTORS OF CHANGE IN TEACHER-CHILD RELATIONSHIPS AND SCHOOL CONNECTEDNESS DURING EARLY ADOLESCENCE

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Past research demonstrates the importance of parent-child relationships, teacher-child relationships, and school connectedness on the emotional, behavioral and academic outcomes of youth. Some studies report declining levels of parent-child, teacher-child bonds and school connectedness during early adolescence, while other research suggests little change or that change may be contingent on gender and ethnic differences.

Of the few studies that have examined variation in youths' relationships with their parents, teachers, and school connectedness during early adolescence, many have relied on cross-sectional data collection methods. No published research has examined the interconnection between the parent-child relationship, teacher-child relationship and school connectedness utilizing a latent growth modeling (LGM) approach.

This dissertation study tested the growth patterns of youths' 1) relationships with parents, 2) relationships with teachers and 3) school connectedness over the course of

middle school. Next, the relationships between growth models were tested to determine whether changes in parent-child relationship quality influenced youths' declining perceptions of teacher-child relationships and school connectedness. Differences in model fit by gender and ethnicity were also tested.

Study participants included 592 ethnically diverse youth recruited in their first year of middle school (6th grade). These participants were assessed again in 7th grade (n = 524), and 8th grade (n = 467). The sample included a similar number of males (n = 305) and females (n = 288) and a greater number of students of color (n = 378), in comparison to European American students (n = 214).

Results from LGM analysis showed the sample as a whole reported declining levels of parent-child, teacher-child and school connectedness over the course of middle school; however, the decline in school connectedness was not significant for students of color. The decline in parent-child relationship quality was associated with 1) reductions in youths' commitment to learning, especially for European American students, 2) declines in youths' reported perception of their teachers, regardless of gender or ethnicity and 3) decreased school connectedness, especially for male students. Parent-child relationship quality in 6th grade also predicted the decline in youths' school connectedness and teacher-child relationship quality from 6th to 8th grade.

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CHAPTER I

INTRODUCTION

Adolescence is a time of important biological, social and cognitive maturation. Many youth transition through this developmental period with relatively few behavioral or emotional difficulties, while some youth escalate in problem behavior (Dahl & Spear, 2004). In order to understand the pathways that lead to positive and negative youth outcomes, more in-depth exploration of the relationship processes impacting youth development is needed.

Adolescents are embedded in many different contexts that shape their developmental trajectories. Dishion and Stormshak (2007) noted the importance of including not only the family, sibling, and peer relationships in models of youth development, but also the neighborhood, school, and community environments that influence youth. Much of the research conducted in the past several decades that has included children's various social, familial, and community influences stems from Brofenbrenner's (1979, 1989) early work stressing the importance of ecological theory in understanding human development. Bronfenbrenner argued that in order to know the contextual domains that impact youth development, different levels of children's ecological systems need to be studied. Furthermore, Bronfenbrenner noted the importance of examining how interactions betweens systems (e.g., parent-child relationships, child-school relationships) impact overall youth development. This dissertation proposal focuses on several key contextual domains influencing youth development, including youths': 1) relationships with parents, 2) relationships with teachers 3) school connectedness, and 4) how changes in parent-child

relationship quality influence youths' perception of connection to teachers and school connectedness over time.

A history of developmental research suggests the parent-child relationship plays a critical role in youths' ability to make positive connections with others, such as teachers (Cohn, 1990; Motti, 1986). The primary premise in both the attachment literature and the child development literature suggests that parents' influence on children's social skills is often indirect. Parents teach their children social skills that in turn strengthen their ability to develop relationships with others through modeling relationship competence and providing feedback on behavior, but not necessarily in a structured or planned manner aimed at helping their children develop social partners (Parke & Ladd, 1992).

Research conducted to date demonstrates a link between youths' perception of relationship quality with parents and youths' perceptions of school connectedness (Brookmeyer, Fanti, & Henrich, 2006; Yoon & Carcamo, 2007). Children who report better parent-child relationships also tend to report feeling more connected to their schools. Again, this research does not suggest parents directly teach their children specific skills for developing connections with the school environment, but rather, parents who provide an early learning environment where children feel connected and supported in the family context may be more likely to have the skills to connect with new environments such as schools. Children who report low levels of parent-child and teacher child relationship quality and disconnection from the school environment are at risk for a host of behavior problems such as antisocial behavior and school drop-out (Dishion & Stormshak, 2007).

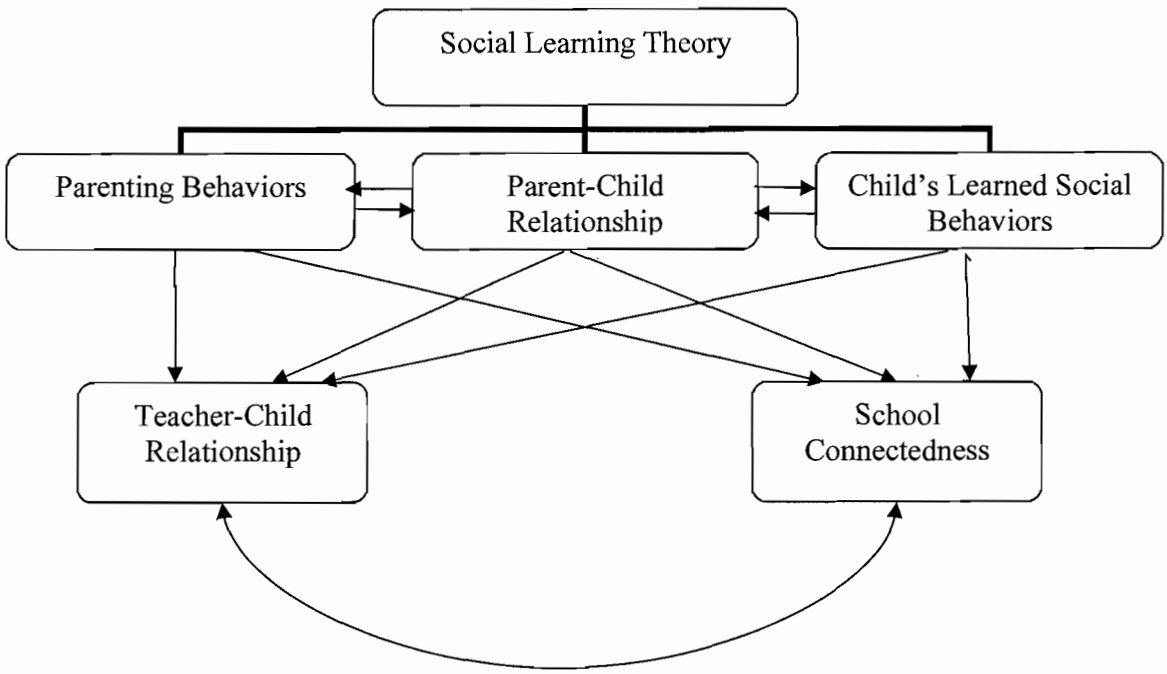
Henry (2008) has recently shown through the use of both longitudinal data and tests of mediation that a poor family-youth connection impacts later adolescent drug use through

low levels of school connectedness and association with drug using friends. The data suggests a process where youth who disengage from positive contexts such as families and schools are at an increased risk for affiliation with negative influences such as deviant peers, and this in turn increases the likelihood of drug use (Dishion, Capaldi, & Yoerger, 1999; Dishion & Owen, 2002; Patterson, Dishion, & Yoerger, 2000). Research also suggests the early adolescent developmental period is an especially critical time for many at-risk youth when connection to schools (Juvonen, Le, Koganoff, Augustine, & Constant, 2004) and families (Dishion, Nelson, & Bullock, 2004) drops considerably during the middle school years.

The past several decades of child and family research have shown both direct and indirect effects of youths' relationship with parents, relationship with teachers, connection to schools and important youth outcomes such as substance use. One of the major limitations of research in this field includes a lack of testing the mechanisms that underlie the process of change between youths' relationship with parents, and how these changes impact teacher-child relationships and levels of school connectedness over time.

In this study I provide a theoretical and empirical framework, using social learning theory as an overarching structure, to explain a mechanism through which youths' perception of parent-child relationships are linked with changes in youths' perception of relationships with teachers and overall sense of school connectedness during the middle school years (See Figure 1).

Figure 1. *Theoretical model of the proposed relationships among study variables.*



Overview of Social Learning Theory

Bandura's social learning theory suggests learning occurs via observation, imitation, modeling, and the observed outcomes of given behaviors. Social learning theory proposes human behavior develops through continuous reciprocal interactions between cognitive, behavioral and environmental influences. Parents serve as a key source of behavior modeling and teaching for young children, as children learn many behaviors through early interactions with parents (Bandura, 1977).

Socialization is one of the most crucial roles the family plays in the development of young children (Patterson & Forgatch, 2005). Socialization is a process where children learn from their parents and other caregivers the basic rules and expectations of how to behave in socially acceptable manners. Through countless interactions with parents, the socialization process also teaches children methods and strategies for developing relationships with others (Parke, Cassidy, Burks, Carson, & Boyon, 1992).

Positive parent-child interactions teach children how to listen, take turns, share, care for others feelings and cooperate. A lack of positive parent-child interactions may result in children struggling to learn appropriate social behavior, while negative parent-child interactions may teach children that relationships are chaotic and undependable. Parents who role model poor emotion regulation and social skills are at risk for raising children who are socially rejected (Patterson & Forgatch, 2005). Regardless of the quality of the parent-child relationship, parents teach children about relationships through a combination of modeling, and positive and negative reinforcement of specific behaviors (Bandura, 1977). Children who learn the foundations of socially accepted behavior and the skills for building positive and successful relationships tend to be better liked by others (Patterson & Forgatch, 2005).

Parent-Child Relationships

Social learning theory provides a framework for understanding how initial relationship experiences with parents form the foundation for children's later relationship experiences with teachers. Children who learn through parental modeling that relationships are characterized by trust, respect, and mutual affection are more likely to appreciate the value of close relational ties and to transfer those learned behaviors to new relationships with others. Booth, Rose-Krasnor, McKinnon, & Rubin (1994) found children raised by mothers who displayed warmth tended to have more positive long-term outcomes, such as better social engagement and acceptance by peers, in comparison to children raised by neglectful or harsh parents. In turn, youth who learn through experience that the family unit is a source of support and nurturance tend to experience more positive developmental outcomes (Allen, Hauser, O'Connor, Bell, & Eickholt, 1996; McElhaney & Allen, 2001).

Strong affective ties developed between adolescents and parents have been shown to be an important protective factor for youth (Sheeber, Davis, Leve, Hops, & Tildesley, 2007). Adolescents who report close parent-child relationships score higher on measures of self-reliance (Steinberg & Silverberg, 1986); school performance (Hill, 1987), and self-esteem (Harter, 1983). Research also suggests adolescents who report higher levels of family connectedness during their teen years report later initiation in sexual activity, fewer unwanted pregnancies, and suicide attempts (DeVore & Ginsburg, 2005; Resnick et al., 1997). Many researchers consider strong positive relationships between adolescents and parents to be one of the most important contributors to adolescent emotional health (Blum & Reinhardt, 1997; Doll & Lyon, 1998; Field, Diego, & Sanders, 2001; Resnick, Harris, & Bloom, 1993).

The process through which parenting behaviors impact youth development is complex. One possible mechanism, supported by social learning theory, involves a progression where repeated interactions between the parent and child reinforce both the safety and dependability of the parent and the parent-child relationship, which in turn positively supports youths' social skill development. Dishion and Bullock (2002) suggested a "nurturance hypothesis", where parents' positive attention, emotional connection, and behavior management skills interact to shape children's developmental trajectories.

Conversely, some youth experience the early home environment as a source of instability and possible threat. Homes characterized by violence, substance abuse, emotional and physical abuse and neglect of children's basic needs create an atmosphere where children learn parents are undependable and possibly dangerous (Dube, et al., 2003). Children in neglectful environments may fail to learn important skills and behaviors necessary for successful adaptation in the world outside the family, including the skills necessary for developing close affective ties with others (Patterson & Forgatch, 2005). Hart, Ladd and Burleson (1990) found children with controlling mothers were less socially accepted by peers, while children with mothers rated as agreeable were more socially liked by peers. Similarly, studies have found parents who displayed a cold, unresponsive, angry, and low in limit-setting parenting style tended to have children with higher levels of anger and noncompliance in the home, and also displayed more negative interactions with peers (Gottman & Fainsilber-Katz, 1989; Pettit, Clawson, Dodge, & Bates, 1996). Studies employing direct parent-child observations have found lack of warmth between parents and children increase antisocial behavior outcomes for children (Dishion, Duncan, Eddy, Fagot,

& Fetrow, 1994; McFayden-Ketchum, Bates, Dodge, & Pettit, 1996; Pettit, Bates, & Dodge, 1993).

In summary, social learning theory proposes children who learn from parents, via teaching, observation, and imitation that early relationship experiences are safe and rewarding, are more likely to both perceive the value of intimate relationships with others *and* to have learned the skills necessary to develop these relationships (Bandura, 1977). On the other hand, children who learn through parental modeling that early relationship experiences are threatening, unsatisfying, or unpredictable are less likely to have received either the necessary training on how to form close relationships with others, or the positive reinforcement intimate personal relationships may provide.

Teacher-Child Relationships

The student-teacher relationship has been shown to be a critical component of how youth perceive their school environment, with studies showing students who report positive relationships with their teachers and other school staff tend to have improved social and emotional functioning, (Roeser, Eccles, & Samerroff, 2000) academic performance, (Cochran & Bo, 1989; Jacobsen & Hoffman, 1997; Marchant, Paulson & Rothlisberg, 2001; Midgley, Fedlaufer & Eccles, 1989), motivation, achievement, feelings of belonging, and positive affect in school (Roeser, Eccles, & Sameroff, 1998, 2000). DeWilde, Kienhorst, Diekstra, and Wolters (1993) found adolescents who reported feeling supported by school staff, family and peers displayed better coping strategies and were more optimistic about their futures. For some adolescents, positive relationship with educators and other school personnel are the most meaningful in their lives (Anderson, Christenson, Sinclair, & Lehr, 2004; Garbarino, 1999; Hawkins, Catalano, & Kosterman, 1999; Pianta & Walsh, 1998).

Barber & Olson (1997) proposed youths' ability to experience a connection to the school environment may be contingent on previous relationship experiences learned within the family context. From a social learning perspective, children's positive early experiences within the context of the parent-child relationship may teach children other adults such as teachers are safe and potentially available for engaging in relationships. Children who have formed close relationships with their parents may have learned effective tools for building relationships with teachers, while children with poor parental relationships may struggle to make these connections. Schochet, Smyth and Homel (2007) found youths' relationship quality with parents was associated with youths' perception of the likeability of their teachers, overall sense of school connectedness, involvement in academic and extra curricular activities, and general perceptions of the school.

One critical aspect of the child socialization process before entering school includes learning to manage behavior to conform to both peer and teacher expectations. Studies have shown that children who are less behaviorally disordered and challenging in the classroom tend to have higher levels of teacher-child relationship quality (Pianta & Steinberg, 1992), and also tend to like school, participate in class, and succeed academically (Roeser, Eccles, & Sameroff, 2000). Conversely, behaviorally disordered children are more likely to experience conflictual teacher-child relationships. These conflictual relationships have been associated with negative outcomes for youth such as poor school attitudes, school avoidance, classroom disengagement and poor academic achievement (Birch, & Ladd, 1997; Taylor & Machida, 1996). Youth who are able to use their social knowledge acquired in the home environment to successfully navigate the school environment, including teacher-child relationships, tend to have better emotion regulation skills, school liking, peer competence, engagement with the

school environment and self-control (Birch & Ladd, 1997; Kochenderfer & Ladd, 1996; Wentzel, 1996). Social learning theory provides a framework for explaining how the home environment may be especially critical for teaching children the regulatory skills necessary for behavioral control, relationship acquisition and school success (Bandura, 1977).

The body of literature examining the impact of youths' behavior, relationship with teachers, and corresponding developmental outcomes seems to suggest a mechanism whereby children who are taught (directly and indirectly) via the home environment the skills necessary to form positive relationships with others, and how to manage their behaviors in the school environment, have better odds of developing positive relationships with teachers and succeeding at school. Children who fail to learn the skills necessary for developing positive relationships with school personnel, and managing their behavior, are at risk of school failure and other negative behavioral outcomes.

Changes in the Teacher-Child Relationship.

Though the teacher-child relationship has been shown to be important for positive youth outcomes, research suggests early adolescence may be a time when connections to teachers diminish. Lynch and Cicchetti (1997) found in one study that 60% of middle school students felt disengaged from their teachers. Cicchetti and Toth (1998) also reported declines in adolescents' academic, behavioral and emotional adjustment over the middle school years. Several recent studies examining the specific developmental time period where youth transition from elementary to middle school have found academic motivation and school grades often drop during this transition period (Eccles, 2004; Gentry, Gable, & Rizza, 2002; Gutman & Midgley, 2000; Murdock et al., 2000). Reddy, Rhodes, and Mulhall (2003) conducted one of the only studies to date that utilized latent growth curve modeling to help

explain how changes in child-teacher relationships over the middle school years was related to youth outcomes such as depression and self-esteem. Their study supports past research suggesting an overall decline in students' report of teacher support from 6th to 8th grade. Likewise, perceptions of decreasing teacher support corresponded with increased depression scores and lower scores on self-esteem for this sample.

The research conducted to date suggests the decline in teacher-child relationships and connection with the school environment may be partially explained by students' reduction in school motivation and emotional adjustment (Eccles & Midgley, 1989; Harter, 1981; Steinberg, 1990), self-esteem (Seidman, Allen, Aber, Mitchell, & Feinman, 1994; Simmons & Blyth, 1987), and increases in depression, anger, and anxiety (Kazdin, 1993; Roeser & Eccles, 1998). Eccles et al., (1993) argued the transition from often smaller and single teacher classrooms in elementary school to larger middle schools with more teachers and students' per class may partially explain students' declining academic motivation and increased emotional difficulties. Roeser et al., (1999) furthered this argument by suggesting that students transitioning from elementary school to middle school are at risk of losing personal relationships with teachers given the often distant relationship created by larger class sizes and behavioral management philosophies that emphasize discipline instead of close personal bonds. Though several researchers have hypothesized the possible causes of students' declining relationship quality with teachers during early adolescence, few have collected longitudinal data and used empirical support to explain how this change unfolds over time.

Examination of the teacher-child relationship literature published to date seems to suggest that: 1) student-teacher relationships are important for the emotional and academic

success of children, 2) children who fail to develop close relationships with teachers are at risk for school failure and emotional and behavior problems, and 3) several studies suggest students tend to decline in their sense of teacher connection over the middle school years and this has been associated with negative outcomes such as decreased self-esteem, academic performance and increased risk of depression. Given the salience of the teacher-child relationship on youth outcomes, and the relative lack of studies exploring the mechanisms underlying the change in teacher-child relationship quality during early adolescence, it is important to explore factors that may elucidate this process.

School Connectedness

By the time children enter middle school; many youth spend more time with teachers, peers and other school personnel than anyone else in their lives, including parents. Researchers interested in youth development are increasingly recognizing the importance of the middle school climate in early adolescent development (Catalano, Haggerty, Oesterle, Fleming & Hawkins, 2004). The Commission on Children at Risk (2003) concluded many of the current negative trends in child adolescent mental health (e.g., mood disorders, conduct problems) could be traced to community and institutional failures to support youth connectedness in key domains such as schools, neighborhoods, and larger communities.

Researchers interested in the effects of school contexts on children's development have used a variety of terms to describe the relationship between youth and school including: *school attachment, school bonding, school climate, school involvement, student satisfaction, positive orientation toward school,* and *teacher support* (Whitlock, 2006). Though all of these terms share some consistent components (e.g., liking school, feeling supported by teachers, presence of friends), there lacks an agreed upon term or measurement strategy for

elucidating this construct. For this study, I selected s*chool connectedness* to describe the relationship between the school environment and student's sense of fit or acceptance at school. Goodenow (1993, p. 80) defined school connectedness as "the extent to which students feel personally accepted, respected, included, and supported by others in the school environment." Whitlock (2006) expanded the definition of school connectedness to include both the student's psychological sense of belonging and their liking or caring for their school. The term "school connectedness" was selected because it encompasses both students' perception of support from others in the school environment, and a general sense of connection to the school environment.

Adolescents' ability to connect with their school environment helps ensure youth find a sense of direction and purpose and protects against psychological distress (Roeser, Eccles & Sameroff, 2000). School connectedness has been found to increase youths' self-esteem (Chipuer, 2001; Furlong et al., Hagborg, 1994; Maddox & Prinz, 2003), decrease youths' disengagement from school (Chipuer, 2001), decrease the likelihood of youth problem behavior (Dornbusch, Erikson, Laird & Wong, 2001; Simons-Morton, Crump, Haynie, & Saylor, 1999), and increase students' expectations for future success (Israelashvili, 1997). School connection has been found to be strongly associated with students' academic motivation, school performance, feelings of productivity and overall adjustment (L.H. Anderman & Freeman, 2004; Chipuer et al., 2003; Furlong, et al., 2003; Goodenow, 1993; Hagborg, 1994; Haynes, Emmons, & Ben-Avie, 1997; Maddox & Prinz, 2003). Kuperminc et al., (2001) found a positive school climate mediated the negative effects of youths' self-criticism and lack of self-efficacy on the adjustment of 10 to 14 year old adolescents. School

connectedness has also been found to protect students from a sense of loneliness and alienation (Chipuer et al., 1999).

Summary of the School Connectedness Literature

Reduced problem behavior. School connectedness has been negatively linked with future delinquency and health risk behavior during adolescence. Catalano, Haggerty, Oesterle, Fleming, and Hawkins, (2004) found school connection in Grades 5 and 6 was linked with delayed initiation of alcohol and other drug use, reduced drub abuse later in life, delayed sexual activity, lower probability of gang membership and violence. Resnick et al. (1997) and Kirby (2001) also found school connectedness to be associated with reduced sexual risk behavior.

Maddox and Prinz (2003) completed a review of the school connection literature focusing on behavioral outcomes of school bonding including antisocial and delinquent behavior, academic performance, and substance use. They noted several studies showing school connectedness reduced adolescent involvement in violent behaviors, deviant behaviors and health risk behaviors such as smoking, using marijuana, and drinking (Dornbusch, Erikson, Laird, & Wong, 2001; Renick et al., 1997). Focusing specifically on middle school aged students, Simons-Morton, Crump, Haynie, and Saylor (1999) found school connectedness to be negatively associated with problem behavior for students in grades 6, 7, and 8.

Reduced school violence. Mulvey and Cauffman (2001) completed a review examining variables that reduce school violence. They found attachment to the school, defined as a sense of belonging to the school and believing in the fairness of school rules and discipline was more effective in reducing violent behavior at school in comparison to zero-

tolerance policies and strict disciplinary strategies. Similarly, Reinke and Herman (2002) and Ozer (2005) have found links between school climate, school connectedness and reductions of school violence. Wilson (2004) completed a study examining the impact of school variables on students' violent behavior and aggressive victimization. Wilson found school connectedness, school size, ethnic makeup of the school, school performance, and school climate were all predictors of violent and aggressive behavior, but school connectedness was the strongest negative predictor of students' problem behaviors. Brookmeyer (2006) also found school and parent connection can interact to protect adolescents from the negative effects of violence exposure.

Mental health functioning. School connectedness impacts the mental health outcomes of youth as well. Hawkins and Weiss (1985) argued the factors most influential on adolescent mental health include families, schools and peers. Given the critical role parents play in their children's developmental outcomes, Dishion and Stormshak (2007) have stressed the importance of including families, schools, and peers when developing models of youth development.

Jacobson and Rowe (1999) found both family and school connectedness was negatively correlated with depressed mood, while students reporting higher levels of school connectedness also reported being more optimistic, less depressed and less likely to engage in problem behavior. Lower levels of school connectedness have also been shown to predict future mental health problems. Schochet et al., (2006) found youths' depression, anxiety, and general functioning were predicted by the previous years' report of school connectedness, even when students' prior levels of mental health functioning were accounted for in the analysis.

Several studies have also demonstrated that students reporting higher levels of school connectedness report significantly lower levels of psychological problems, suicidal thoughts (Resnick et al., 1997; Steinberg, 1996) and peer harassment (Eisenberg, Neumark-Stzainer, & Perry, 2003). Hagborg (1994) found students in eight-grade with lower levels of school connectedness were more likely than students with higher levels of school connectedness to be receiving counseling at school for problems such as low self-esteem, problems with their family, and problems with their peers.

The Link Between Parent-Child Relationships, Teacher-Child Relationships and School Connectedness

Strengths and Limitations in the Current Body of Literature

When considered individually, the link between youths, 1) connection to parents, 2) connection to teachers, and 3) connection to schools and positive youth outcomes, has been fairly well established in the literature during the past two decades. Less is known, however, about how these three variables interact to impact youth trajectories, or how changes in these variables may be related to one another.

Past research has shown youths' connection to parents is associated with positive academic performance and general attention-participation in the school context (Jacobsen, Edelstein, & Hofmann, 1994). Jacobson and colleagues study focused less on youths' sense of connection to the school environment in general, and instead examined how parent-child connectedness impacted youths' academic performance and attention-participation in class. Though academic performance has been identified by some authors as a component of school connectedness, this study did not examine how youths' relationship with parents might explain students' overall sense of connection at school. This study also included data measured at one

time point, thereby eliminating the possibility of examining changes in school or parent connection over time, and how these changes may impact academic performance or attention-participation in school.

Yoon and Carcamo (2007) examined the relationship between supportive parents and teachers and school connection and involvement in the first year of middle school for a predominately African-American sample of 6th graders. This study demonstrated a link between parental support and involvement at school, as well as youths' school connection. Teacher's support, however, explained greater variance, above and beyond that explained by relationships with parents. Given the design of the study and that data collection was limited to one time point, this study was unable to establish temporal precedence to show the direction of influence between parent, teacher, youth and school outcomes, and so calls in to question the mechanisms underlying the association found between study variables.

Marchant, Paulson, and Rohlisber (2001) examined the relationship of both family and school contexts on students' academic achievement. Authoritative and involved parents were associated with the best academic outcomes for youth. Parental values, teacher responsiveness, school responsiveness and a supportive social environment predicted students' motivation and academic competence. This study provides some support for the importance of parenting qualities on students' academic success, but does not explain how relationships with parents may impact students' perception of teacher responsiveness, or students' overall report of school connectedness. Again, this study utilized a cross-sectional design, eliminating the possibility of examining change in any of the variables over time.

Schochet, Smyth, and Homel (2007) conducted one of the only studies examining how parent-child connection might be related to school connectedness and how school environment variables (e.g., classroom environment) might mediate this relationship in an

adolescent sample. They found parent-child connection was associated with school connectedness, and school environment variables partially mediated this relationship. This study is one of few demonstrating a specific link between youths' relationship experience with parents and school connectedness. Schochet, Smyth, and Homel's (2007) study utilized a cross sectional design and incorporated a sample of upper class students residing in Brisbane (n = 171 students, mean age = 15 years). This study does show relationships between parenting variables and school connectedness in a unique sample, but the direction of influence and generalizability of findings is tenuous.

Research Hypotheses

The research hypotheses included: 1) there would be a change in the parent-child relationship, the teacher-child relationship and youths' report of school connectedness over the middle school years. I hypothesized that students would report declining levels of parent-child relationship quality, teacher-child relationship quality, and school connectedness from 6^{th} to 8^{th} grade, 2) there would be a relationship between parent-child relationship quality and students' report of teacher-child relationship quality. I expected the intercept of parent-child relationship quality would be associated with the intercept of teacher-child relationship quality, and 3) there would be a relationship between parent-child relationship quality and students' report of school connectedness. I expected the intercept of parent-child relationship quality would be associated with the intercept of school connectedness.

My next set of hypotheses related specifically to the latent growth curve analysis that I used to test my assumptions. The first hypothesis was the slope of parent-child relationship quality would predict the slope of teacher-child relationship quality. The decelerating growth pattern of parent-child relationship quality would predict the decelerating growth pattern of

teacher-child relationship quality. Second, the slope of parent-child relationship quality would predict the slope of students' school connectedness. The decelerating growth pattern of parent-child relationship quality would predict the decelerating growth pattern of school connectedness.

Given the body of literature suggesting possible ethnic and gender differences in parent-child relationship quality, teacher-child relationship quality and school connectedness during early adolescence, I expected there may be gender and ethnic differences in terms of overall model fit. I tested the latent growth curve models in 3 separate stages. In stage 1, I tested the model with the entire sample of students. In stage 2, I re-ran the model based on gender and ethnicity. In stage 3, I used chi-square fit indices to determine if there was a statistically significant difference in model fit by gender and ethnicity (Duncan, Duncan & Stryker, 2006).

CHAPTER II

METHOD

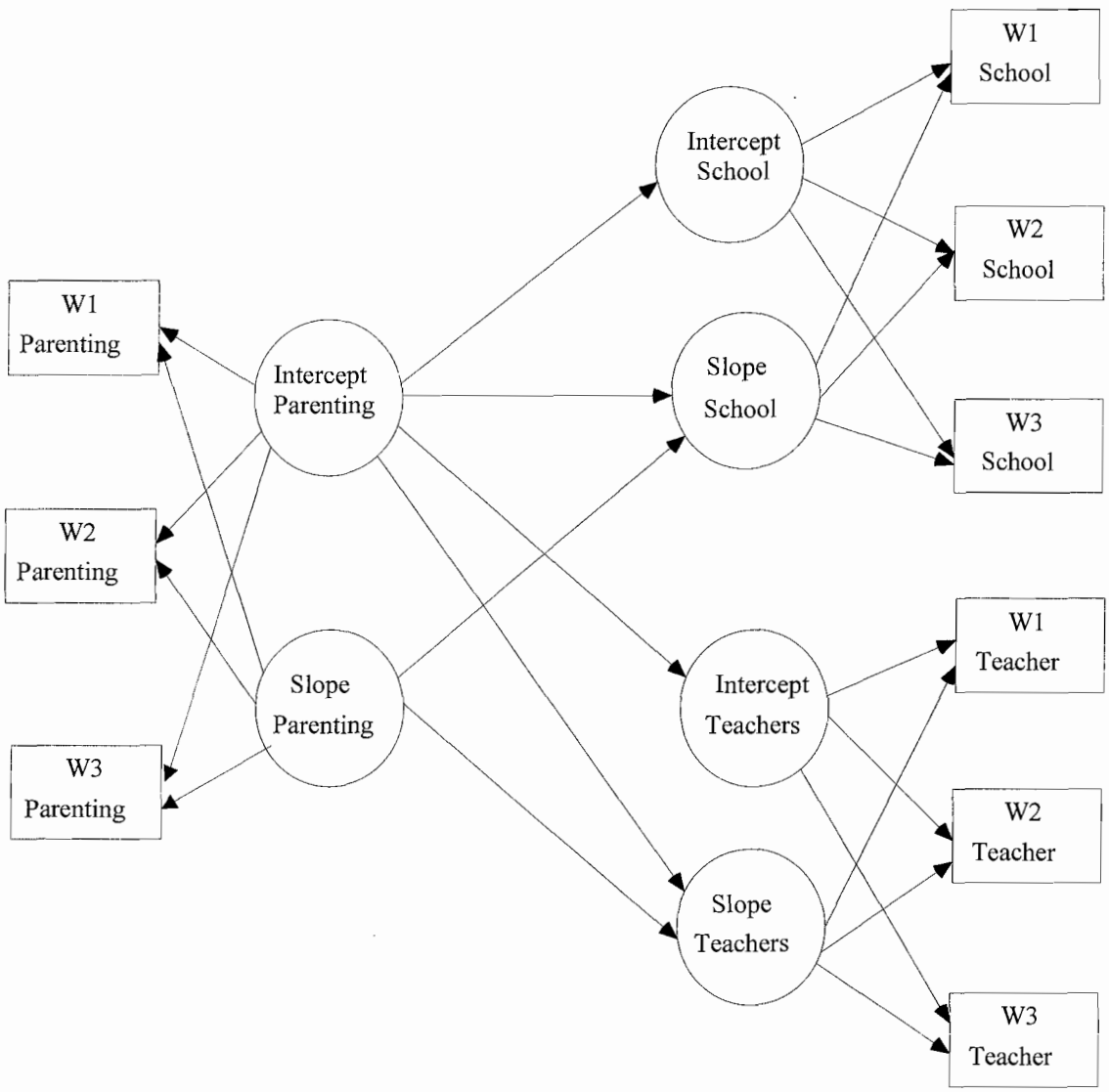
Study Purpose

To date, a thorough review of the literature including school search terms such as: *school attachment, school bonding, school connectedness, school climate, school involvement, student satisfaction, positive orientation toward school,* and parent-child relationship terms such as: *parent bonding, parent relationship, parent attachment, parent connection, positive family relationship, parent support,* and teacher-child relationship terms such as: *teacher support, child-teacher relationship,* and *teacher connection* have not revealed any studies that have included an investigation of growth or change in school connectedness, parent-child relationships, and teacher-child relationships over time. The current study would be the first to my knowledge to utilize growth modeling to investigate the relationship between the three mentioned variables with an ethnically diverse sample of middle school students, collected over 3 time points in 6th, 7th, and 8th grade.

The purpose of this study is to further the field of early adolescent development by extending past research that demonstrates a link between parent-child relationship quality, teacher-child relationship quality, and school connectedness, by examining how change in the parent-child relationship measured over 3 years of middle school may also influence change in teacher-child relationships and school connectedness. I am hypothesizing that for the sample as a whole, there will be reported declines in parent-child relationship quality, teacher-child relationship quality and school connectedness over the middle school years. Furthermore, I am hypothesizing that declines in the parent-child relationship between 6th and

8th grade (slope) will be associated with declines in both the teacher-child relationship quality and students' report of school connectedness. I am also hypothesizing that initial levels of parent-child relationship quality (intercept) in 6th grade may explain initial levels of teacher-child relationships and students' school connectedness (See Figure 2).

Figure 2. *Proposed Full Model Including All Study Variables*



Participants

Project Alliance-2 (PAL2) recruited 592 youth from 3 middle schools in Portland, Oregon. PAL-2 first assessed participants in 6th grade (M = 11.8 years) and will collect longitudinal data through their transition to high school. The overall PAL-2 sample demographics include 36.3% identifying as European American, 14.4% African American, 17.7% Latino, 7.9% Asian, 2.3 % Native American, 1.7% Pacific Islander, and 19.7% Multiethnic (identifying with more than one ethnic group). 34.45% of the sample, report an annual income less than $29,999; 28.2% of the sample report an annual income between $30,000-$59,999; and 39.85% of the sample report an annual income between $60,000-$90,000 or greater.

Study description. Project Alliance -2 (PAL2) is a longitudinal research study, which utilizes the Adolescent Transition Program (Dishion & Kavanagh, 2000) model in Portland, Oregon middle schools. PAL2 also includes an empirically validated clinical intervention known as the Family Check-Up (Dishion & Stormshak, 2007). The Family Check-Up has been shown to reduce problem behaviors and mental health problems in children and adolescents (Dishion, Nelson & Kavanagh, 2003).

PAL2 recruited 6th graders at three public schools. Once parental consent was obtained, students were asked to complete questionnaires during school time. For universal intervention, each middle school established a Family Resource Center that was staffed by a parent consultant who was primarily responsible for the intervention activity within each school. After universal intervention at the school level, all children and families were randomly assigned to the Family Check-Up or control group. The Family Check-Up includes a comprehensive ecological assessment of the risk factors and strengths of the children and

family which is provided to families during a family feedback session. Families were then offered treatment services based on the ATP model which has shown that targeting parenting practices in the public school setting, substance abuse use during the transition to high school was prevented for typically developing youth, and was reduced for high-risk youth (Dishion et al., 2002; Spoth et al., 2002).

Measured Variables

The independent variables in the study included: (1) initial levels of parent relationship quality (intercept), and (2) change in levels of parent-child relationship quality (slope). The dependent variables in the proposed dissertation study included: (1) initial levels of school connectedness, (2) change in levels of school connectedness, (3) initial levels of teacher-child relationship quality, and (4) change in levels of teacher-child relationship quality.

Independent and dependent variables were measured via the Child and Family Center Youth Survey (Dishion, Stormshak, & Kavanagh, 2000). The Youth Survey includes a range of items assessing students' relationship with parents, relationships with teachers, and school connectedness. The means, standard deviations of all study variables are presented in Table 1 (See the Appendix for all tables).

Parent-Child Relationships

To measure parent-child relationship quality items from three subscales were used. The first set of items asks students to rate how they would describe their perception of parents on a scale of 1 to 5 on: 1) fairness, 2) niceness, 3) warmness, 4) friendliness, 5) goodness, 6) kindness, and 7) honesty. Higher scores represent more positive feelings about parents (Dishion, 1985). A reliability coefficient of .94 for time one, .95 for time two, and .94

for time three were estimated.

The second set of items asks students to rate how often their parents have given them praise in the past month. The Likert type scale ranges from 1 to 5, with higher scores representing greater amounts of praise. The items on this sub-scale include: "In the past month how often have your parents or caregiver....1) given you a hug, pat, or kind word, 2) bought you something small or given you money as a reward, 3) praised you or complimented you for anything you did well, and 4) let you do something special that you really like as a reward (such as extra phone time, going to the movies, special activity)" (Metzler et al., 2001). A reliability coefficient of .82 for time one, .85 for time two and .87 for time three were estimated.

The third set of times asks students to rate how well they got along with their parents in the past month. The Likert type scale ranges from 1 to 5 with higher scores representing getting along better with parents in the past month. The items on this subscale include: 1) "how often do you talk about problems with your parents, 2) how much do you enjoy being with your parents, 3) my parents and I have gotten along very well with each other, and 4) my parents trusted my judgment, 5) there has been a feeling of togetherness in my family, 6) things my family did together have been fun and interesting, and 7) family members really backed each other up" (Metzler et al., 2001). A Cronbach's alpha of .90 was estimated for time one, .91 for time two, and .91 for time three.

Teacher-Child Relationships

Teacher-child relationship quality was measured with items from one subscale of the Youth Survey. The set of items asks students to rate their perception of teachers on a scale of 1 to 5 on items such as: 1) fairness, 2) niceness, 3) warmness, 4) friendliness, 5) goodness, 6)

kindness, and 7) honesty. Higher scores represent more positive feelings about teachers (Dishion, 1985). A reliability coefficient of .91 for wave one, .92 for wave 2, and .92 for wave 3, was estimated.

School Connectedness.

School connectedness was measured with items from 2 subscales of the Youth Survey. The items are scored on a scale from 1 to 5, with 1 representing "never or almost never" and 5 representing "always or almost always". Students are asked to rate their school connectedness during the past month on the following items: 1) "there are chances for students in my school involved in sports, clubs, and other school activities outside of class, 2) I have chances to be part of class discussions or activities, 3) the school lets my parents know when I have done something well, and 4) I feel safe at my school, 5) there are chances for students in my school to talk with a teacher one-on-one, 6) teachers ask me to work on special projects, 7) my teachers notice when I am doing a good job and tell me, 8) my teachers can relate to someone of my own race, and 9) my teachers treat some kids better than others (reverse coded)" (Bollen & Hoyle, 1990). A reliability coefficient of .73 for time one, .80 for time two, and .76 for time three were estimated.

Commitment to Learning.

Youths' commitment to learning was measured from one subscale of the Youth Survey. Items in the subscale included, 1) "In general, how often do you try to learn as much as possible about a new subject" and 2) "work hard to understand what you are learning". Scores ranged from 1-5 with higher scores representing more commitment to learning (Metzler et al., 2001). A reliability coefficient of .77 was estimated for time one, .84 for time two, and .85 for time three.

CHAPTER III

RESULTS

Data Analyses

Latent growth modeling (LGM) was utilized to test the study hypotheses (Arbuckle, 2006). Standard assumptions of LGM are: (a) the means of all latent variables, error terms, and factors have zero variance, (b), the variances of all latent variables have zero means; (c) the means and variances of latent variables do not covary, and (d) the error variances do not covary with each other or with any other variables except the measured variables they directly affect (Duncan, Duncan & Stryker, 2006).

LGM requires careful screening of descriptive statistics to examine the possible shape of the data (e.g., linear, quadratic, non-linear), that there are no extreme outliers that may result in misinterpretation of model fit and coefficient values, and that the data is not highly skewed or kurtotic (Singer & Willett, 2003).

An examination of the means and plots of study variables prior to running LGM suggested all study variables had a declining growth pattern. There were no extreme outliers (a cutoff of 3 standard deviations from the mean was utilized). All study variables were negatively skewed in 6^{th} grade, however, based on Kline's (2005) cutoff value of 3.0 for skewness, the variables included in the present study were within the acceptable range. Kline (2005) suggests a kurtosis value greater than 10.0 may imply a problem with the distribution of study variables. No variables utilized in the present analysis had kurtosis values close to 10.0.

Considerations were made a priori regarding the planned analysis for separate groups of youths based on gender and ethnicity. A minimum of two-hundred subjects per group may be necessary for adequate power in structural equation modeling to detect differences if they exist (Kline, 2005). Sample sizes larger than two-hundred are sometimes needed given more complex models. Due to sample size limitations, a decision was made to run each unconditional model with 4 groups: 1) males (n = 305), 2) females (n = 288), 3) European American students (n = 214) and 4) students of color (n = 378).

Finally, patterns of missingness in the dataset were examined to determine the appropriate method for handling missing data. Missing values were 11% between waves 1 and 2, and 8% between waves 2 and 3. The total amount of missing data was within the acceptable range for modeling repeated measured data with longitudinal data sets in LGM (Stull, 2008). In terms of the pattern of missing data, data can be assumed to be missing at random (MAR) if the pattern of data missingness is not related to the variables of interest (Enders & Bandalos, 2001). In this dataset, data were assumed to be MAR because most students completed all three waves assessments, the percentage of missingness was low and it was hypothesized that students who missed certain waves of assessment due to absences or moving were most likely similar to students who competed all waves of assessment.

AMOS 7.0 uses a procedure known as Full Information Maximum Likelihood (FIML, also known as "Raw Maximum Likelihood") to handle missing data. FIML has been shown to outperform most common methods of handling missing data, including listwise and pairwise data deletion, mean substitution, and the Similar Response Pattern Imputation (SRPI) procedure (Joreskog & Sorbom, 1993). FIML uses all available data to generate likelihood-based sufficient statistics.

Unconditional models were run for the full sample including all participants and next the unconditional model was run separately for each group (i.e., males, females, European American students, students of color). Differences by gender and ethnicity were evaluated in two steps. In step one, the unconditional model was run and tested for acceptable fit to the data. If the model fit well for each group, a chi-square difference test was used to evaluate if there were significant differences in model fit for the two groups being compared (Kline, 2005).

Descriptive Statistics

Table 1 presents the means, and standard deviations of the study variables. Table 2 presents the correlations among study variables. Table 3 through 8 display the means, variances, standard error of the mean, and the critical ratio of all unconditional models; separate results by gender and ethnicity are also reported. Groups that had unconditional model that did not show an acceptable fit to the data, were not included in the tables.

Perception of Parents

The unconditional model for perceptions of parents fit the data well: $\chi^2(3) = 3.17, p > .05$, RMSEA = .08, CFI = .99. After running the full model with all participants, the unconditional model was tested separately for each group (Duncan, Duncan & Stryker, 2006).

Gender and Ethnic Differences in Perception of Parents.

The unconditional model was a good fit for students of color: $\chi^2(3) = .75, p > .05$, RMSEA = .00, CFI = 1.0, but not for European American students. For males, the model showed marginally acceptable fit to the data: $\chi^2(1) = 4.0, p < .05$, RMSEA = .10, CFI = .98. The model showed a good fit to the data for females: $\chi^2(1) = .374, p > .05$, RMSEA = .00,

CFI = 1.0. A chi-square difference test revealed the model fit the data equally well for males and females. Table 3 presents the estimates of means and variances for each group tested.

Parent-Child Relationships

The unconditional model for youths' report of parent-child relationship quality fit the data reasonably well: $\chi^2(3) = 16.08$, $p < .01$, RMSEA = .09, CFI = .98. In the full model, students varied significantly in both their initial reports of parent-child relationship quality in 6th grade, and the change in this relationship over the course of middle school (see Table 4).

Gender and Ethnic Differences in Parent-Child Relationships

The model fit the data well for males: $\chi^2(3) = .46$, $p > .05$, RMSEA = .00, CFI = 1.0, but not females. For youth of color, the model showed a strong fit to the data: $\chi^2(1) = 1.49$, $p > .05$, RMSEA = .04, CFI = 1.0. The model did not fit the data well for European American students.

Positive Reinforcement.

The unconditional model for youths' report of parental positive reinforcement fit the data very well: $\chi^2(3) = .889$, $p > .05$, RMSEA = .00, CFI = 1.0. Table 5 presents the estimates of means and variances for the positive reinforcement unconditional model.

Gender and Ethnic Differences in Positive Reinforcement.

For males, the model showed an acceptable fit to the data: $\chi^2(1) = .312$, $p > .05$, RMSEA = .00, CFI = 1.0. For females, the model was also a good fit to the data: $\chi^2(1) = .81$, $p > .05$, RMSEA = .00, CFI = 1.0. The chi-square difference test was non-significant suggesting gender did not impact how well the model fit the data.

The model fit the data well for students of color (χ^2 (1) = .02, p > .05, RMSEA = .00, CFI = 1.0). The model showed a strong fit to the data for European American students: χ^2 (3) = .70, p > .05, RMSEA = .00, CFI = 1.0.

Teacher-Child Relationships

Based on the descriptive statistics, it appeared that although there was a decrease in perception of teachers from 6th to 8th grade, the shape of the change was not perfectly linear. Therefore, the slope for perception of teachers was set so the first time point was fixed at zero and the third time point at two, to represent the starting measurement time and the final measurement occasion. The second slope factor was allowed to be freely estimated to model the true shape of change over time (Duncan, Duncan & Stryker, 2006). The unconditional model for perception of teachers fit the data well: χ^2 (2) = 8.83, p < .05, RMSEA = .08, CFI = .96. To test that it was appropriate to allow the second slope parameter to be freely estimated, the unconditional was run again forcing the slopes to equal zero, one and two, respectively. The fixed linear slopes model did not fit the data as well as the model allowing the third slope parameter to be freely estimated (χ^2 (3) = 8.53, p < .01, RMSEA = .11, CFI = .86), therefore, the model allowing the second time point to be freely estimated was retained. Table 6 displays the estimates of means and variances for the full sample and the model results by gender and ethnicity.

Gender and Ethnic Differences in Teacher-Child Relationships.

For European American students, the model fit the data well: χ^2 (2) = 4.11, p > .05, RMSEA = .07, CFI = .96. For students of color, the model showed a good fit to the data: χ^2 (2) = 5.06, p > .05, RMSEA = .06, CFI = .97. The chi-square difference test was non-

significant suggesting the model fit equally well for European American students and students of color.

For males, the model showed a marginally acceptable fit to the data: $\chi^2(1) = 4.0$, $p < .05$, RMSEA = .10, CFI = .98. In contrast, females showed strong model fit to the data: $\chi^2(1) = .37$, $p > .05$, RMSEA = .00, CFI = 1.0. The difference was not statistically significant based on the chi-square difference test.

School Connectedness

Based on the descriptive statistics, it appeared that although there was a decrease in school connectedness from 6th to 8th grade, the shape of the change was not perfectly linear. Additionally, the pattern of change in school connectedness appeared different for European American students and students of color. An examination of the regression lines showed European American students started with higher levels of school connectedness in 6th grade, in comparison to students of color, and showed a steep decline from 6th to 7th grade, with a tapering off from 7th to 8th grade. Students of color started with lower levels of school connectedness in 6th grade and showed some small declines in school connectedness in 7th grade, and very little change between 7th and 8th grade.

To estimate the shape of change from 6th to 8th grade for European American students, the slope for perception of school connectedness was set so the first and third time points were fixed at zero and two, to represent the starting measurement point and the third measurement occasion. The second slope factor was allowed to be freely estimated to model the true shape of change over time. The unconditional model for students of color was set so time one equaled zero and time two and time three were both set equal to two, to represent no

change in school connectedness from time two to time three (Duncan, Duncan & Stryker, 2006).

For the full sample, the first and third time points were fixed at zero and two so the 7th grade time point could be estimated. The unconditional model for school connectedness converged in nine iterations and fit the data very well: $\chi^2(2) = 3.36$, $p > .05$, RMSEA = .04, CFI = .99. To test that it was appropriate to allow the third slope parameter to be freely estimated, the unconditional was run again forcing the slopes to equal zero, one and two, respectively. The fixed linear slopes model did not fit the data as well as the model allowing the second slope parameter to be freely estimated ($\chi^2(3) = 8.63$, $p < 01$, RMSEA = .14, CFI = .85). The initial status, growth patterns, and individual variability of results are presented in Table 7.

Gender and Ethnic Differences in School Connectedness.

For European American students, the unconditional model for school connectedness fit the data very well ($\chi^2(2) = .943$, $p > .05$, RMSEA = .00, CFI = 1.0). The model fit the data well for students of color: $\chi^2(3) = .30$, $p > .05$, RMSEA = .02, CFI = .99. The chi-square difference test was non-significant.

Male students' unconditional model showed a strong fit to the data: $\chi^2(2) = .54$, $p > .05$, RMSEA = .00, CFI = 1.0. Female students' unconditional model also showed a strong fit to the data: $\chi^2(2) = 3.12$, $p > .05$, RMSEA = .04, CFI = .99. The chi-square difference test comparing model fit results based on gender and ethnicity were non-significant.

Commitment to Learning

Based on the descriptive statistics, mean levels of commitment to learning decreased from 6th to 8th grade, but the shape of the change was not perfectly linear. Plotting the data

showed a greater difference in commitment to learning from 6th to 7th grade, in comparison to the change from 7th to 8th grade. Therefore, the slope for perception of commitment to learning was set so the first and last time points were fixed at zero and two, to represent the starting measurement time and the final measurement occasion. The second slope factor was allowed to be freely estimated to model the true shape of change over time (Duncan, Duncan & Stryker, 2006). The unconditional model for commitment to learning converged in eight iterations and fit the data well ($\chi^2(2) = 1.59, p > .01$, RMSEA = .00, CFI = 1.0). To test that it was appropriate to allow the second slope parameter to be freely estimated, the unconditional was run again forcing the slopes to equal zero, one and two, respectively. The fixed linear slopes model did not fit the data as well as the model allowing the second slope parameter to be freely estimated ($\chi^2(3) = 9.54, p < .01$, RMSEA = .14, CFI = .85). The growth patterns and initial starting values, as well as the individual variances are presented in Table 8.

Gender and Ethnic Differences in Commitment to Learning.

The model fit the data well for students of color: $\chi^2(3) = .97, p > .05$, RMSEA = .00, CFI = 1.0. For European American students, the model fit the data very well: $\chi^2(2) = .70, p > .05$, RMSEA = .00, CFI = 1.0.

For males, the model showed a good fit to the data: $\chi^2(2) = 1.96, p > .05$, RMSEA = .00, CFI = 1.0. For female students, the model fit the data well: $\chi^2(2) = .72, p > .05$, RMSEA = .00, CFI = 1.0. The chi-square difference test revealed model fit was not significantly different based on gender or ethnicity.

In summary, all the unconditional models tested showed acceptable fit to the data for the full sample and the growth was in the expected direction. When examining model fit by gender and ethnic group, some unconditional models did not provide acceptable to the data

(i.e., European American students and the unconditional model for perception of parents and the parent-child relationships, females and the unconditional model for parent-child relationships). If acceptable fit statistics were not achieved for a sub-group when testing the unconditional model, that group was removed from the next step of the analysis. The next step in the analysis included regressing the intercept and slope of the parenting variables on to the intercept and slope of school variables. Differences by gender and ethnicity were also tested.

Combined Model

Perception of Parents on School Connectedness

European American students were removed from the analysis because acceptable fit statistics were not obtained for the perception of parents' unconditional model. To examine the influence of perception of parents on school connectedness for the remaining youth in the sample, the intercept of perception of parents was regressed on the slope of school connectedness, and the slope of perception of parents was regressed on the slope of school connectedness (see Table 9). The model showed acceptable fit to the data: $\chi^2(9) = 30.60$, $p < .001$, RMSEA = .06, CFI = .97.

Gender differences: Perception of parents on school connectedness. For males, the model fit the data well: $\chi^2(9) = 20.97$, $p < .05$, RMSEA = .07, CFI = .97. For females, the model also fit the data well, $\chi^2(9) = 14.17$, $p > .05$, RMSEA = .05, CFI = .98. A chi-square difference test revealed no significant differences in model fit based on gender.

Perception of Parents on Perception of Teachers

European American students were excluded from the dataset because the unconditional model for perception of parents did not reach an admissible solution for this

group. The model showed an acceptable fit to the data for students of color: $\chi^2(13) = 36.75$, $p < .001$, RMSEA = .07, CFI = .93. Regression coefficients are presented in Table 10.

Gender differences: Perception of parents on perception of teachers. In terms of gender differences, the model did not reach an acceptable solution for females. For males, the model showed an acceptable fit to the data: $\chi^2(10) = 26.34$, $p < .001$, RMSEA = .09, CFI = .92.

Perception of Parents on Commitment to Learning

First, European American students were removed from the analysis because the unconditional model for perception of parents did not reach an admissible solution. The model showed an acceptable fit to the data for students of color: $\chi^2(9) = 22.30$, $p < .01$, RMSEA = .06, CFI = .97. The relationship between the intercept and slope is presented in Table 11.

Gender differences: Perception of parents on commitment to learning. For males, the model fit the data well, $\chi^2(9) = 16.78$, $p > .05$, RMSEA = .07, CFI = .96. For females, the model also fit the data well, $\chi^2(9) = 9.64$, $p > .05$, RMSEA = .02, CFI = 1.0. The chi-square difference test revealed the model fit equally well for males and females.

Parent-Child Relationships on School Connectedness

Females were removed from the analysis due to poor model fit in the unconditional model of parent-child relationship quality. For the remaining sample the intercept of parent-child relationship was regressed on the slope of school connectedness and the slope of parent-child relationship was regressed on the slope of school connectedness (see Table 12). The model showed an acceptable fit to the data: $\chi^2(9) = 21.36$, $p < .01$, RMSEA = .05, CFI = .98.

Ethnic differences: Parent-child relationships on school connectedness. The model did not reach an acceptable solution for students of color. For European American males, the model was an acceptable fit to the data, $\chi^2(12) = 22.06$, $p < .01$, RMSEA = .09, CFI = .96.

Parent-Child Relationships on Perception of Teachers

First, females were removed from the analysis due to poor model fit in the unconditional model. The model showed an acceptable fit to the data: $\chi^2(9) = 12.97$, $p > .05$ RMSEA = .04, CFI = .99. The relationships between the intercept and slope are presented in Table 13.

Ethnic differences: Parent-child relationships on perception of teachers. An acceptable solution was not reached for the European American students in the sample. For students of color, the model reached an acceptable fit: $\chi^2(9) = 27.81$, $p < .05$, RMSEA = .09, CFI = .94.

Parent-Child Relationships on Commitment to Learning.

Females were removed from the analysis due to poor model fit in the unconditional model of parent-child relationships. The model testing the relationships between the intercepts and slopes of parent-child relationships and commitment to learning with the remaining sample showed an acceptable fit to the data: $\chi^2(13) = 19.60$, $p < .05$, RMSEA = .06, CFI = .98. The unstandardized regression coefficients, standard errors, critical ratios, and *p* values are presented in Table 14.

Ethnic differences: Parent-child relationships on commitment to learning. For European American students, the model fit the data well, $\chi^2(9) = 8.81$, $p > .05$, RMSEA = .00, CFI = 1.0. For students of color, the model also fit the data well, $\chi^2(9) = 19.57$, $p < .05$, RMSEA = .06, CFI = .97. Unlike European American students, the slope of parent-child

relationships was related to commitment to learning for students of color (See Table 16). A chi-square difference test revealed no statistically significant difference in model fit based on ethnicity.

Positive Reinforcement on Perception of Teachers

The model regressing the intercept and slope of positive reinforcement on the intercept and slope of perception of teachers fit the data well, $\chi^2(9) = 12.31$, $p > .05$ RMSEA = .04, CFI = .99. Table 15 presents the regression coefficients for this model.

Ethnic and gender differences: Positive reinforcement on perception of teachers. The model fit the data well for European American students: $\chi^2(7) = 5.0$, $p > .05$ RMSEA = .00, CFI = 1.0. For students of color, the model resulted in an acceptable fit to the data: $\chi^2(7) = 9.42$, $p > .05$ RMSEA = .03, CFI = .99. A chi-square difference test revealed a non-statistically significant difference in model fit based on ethnicity.

For male students, the model reached an acceptable solution: $\chi^2(9) = 18.49$, $p < .05$ RMSEA = .06, CFI = .96. The intercepts were significantly related ($B = .30$, $p < .001$), as were the slopes ($B = .33$, $p < .05$). The intercept was not significantly related to the slope. The model also reached an acceptable solution for females: $\chi^2(9) = 21.66$, $p < .05$ RMSEA = .07, CFI = .95. The chi-square difference test revealed a non-significant difference in model fit based on ethnicity.

Positive Reinforcement on School Connectedness.

The full model testing the relationship between positive reinforcement and school connectedness fit the data well, $\chi^2(7) = 22.25$, $p < .01$ RMSEA = .06, CFI = .98. Table 16 presents the regression coefficients for the model testing positive reinforcement on school connectedness.

Ethnic and gender differences: Positive reinforcement on school connectedness. The model also showed a good fit to the data for males: $\chi^2(7) = 5.32$, $p > .05$, RMSEA = .00, CFI = 1.0. The model showed an acceptable fit for females: $\chi^2(10) = 27.72$, $p < .01$, RMSEA = .08, CFI = .94. The model fit the data significantly better for males than females ($\chi^2(10) = 22.40$, $p < .001$).

For European American students, the model fit the data well: $\chi^2(9) = 14.91$, $p > .05$, RMSEA = .06, CFI = .98. The model also fit the data well for students of color: $\chi^2(8) = 17.03$, $p < .05$, RMSEA = .06, CFI = .97. The chi-square difference test was non-significant.

Positive Reinforcement on Commitment to Learning.

For the full sample of participants, the model fit the data well: $\chi^2(8) = 27.71$, $p > .01$, RMSEA = .07, CFI = .97. The unstandardized regression coefficients obtained from regressing the intercept on to the slopes is presented in Table 17.

Ethnic and gender differences: Positive reinforcement on commitment to learning. The model fit the data very well for European American students: $\chi^2(8) = 6.59$, $p > .05$, RMSEA = .00, CFI = 1.0. For students of color, the model provided an adequate fit to the data : $\chi^2(8) = 23.38$, $p < .01$, RMSEA = .07, CFI = .96. The model provided a statistically significantly better fit to the data for European American students: $\chi^2(8) = 16.79$, $p < .01$.

For male students in the sample, the model provided an acceptable fit to the data: $\chi^2(8) = 16.31$, $p < .05$, RMSEA = .06, CFI = .97. The model also provided an acceptable fit to the data for females: $\chi^2(8) = 17.78$, $p < .05$, RMSEA = .07, CFI = .98. The chi-square difference test was not significant.

In summary, all of the combined models showed an acceptable fit to the data for the full sample. Positive reinforcement was significantly related to all the school outcome

variables, regardless of gender or ethnicity. The primary hypothesis that there would be a significant relationship between the intercept of parenting variables and the intercept of school variables was supported by the data. The hypothesis that the slope of parenting variables and the slope of school variables would be related was also supported for most students in the sample. The final hypothesis that the intercept of parenting variables would be related to the slope of school variables was not supported for most models in the present analysis.

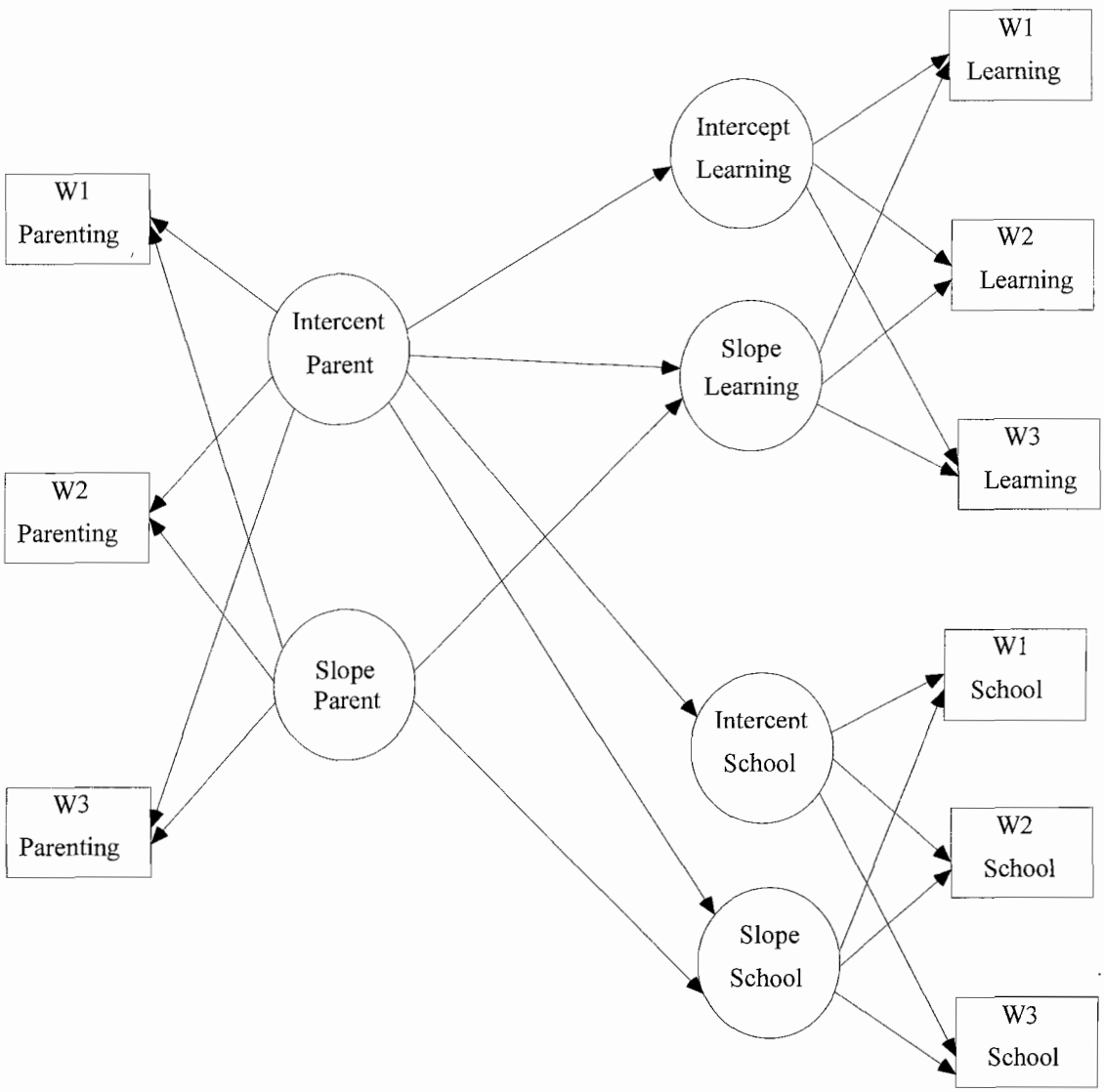
Full Model Including Parent-child Relationships, Teacher-child Relationships and School Connectedness

To test the full model with parenting regressed on the school outcomes variables, a composite parent-child relationship variable was created that included: 1) youths' perception of parents, 2) parent-child relationship quality, and 3) positive reinforcement. The two dependent variables included: 1) commitment to learning, and 2) a composite variable that included perception of teachers and school connectedness (See Figure 3).

The full model including the original hypothesized relationship among all study variables fit the data marginally well: $\chi^2(22) = 154.43$, $p < .001$, RMSEA = .10, CFI = .91. This model revealed 1) the intercept of parent-child relationships was related to the intercept of commitment to learning ($B = 1.10$, $p < .001$), 2) the intercept of parent-child relationships was related to the slope of commitment to learning, but not in the hypothesized direction ($B = -.03$, $p < .001$), 3) the intercept of parent-child relationships was related to the intercept of school connectedness ($B = 1.01$, $p < .001$), 4) the intercept of parent-child relationships was related to the slope of school connectedness, but not in the expected direction ($B = -.03$, $p < .001$), 5) the slope of parent-child relationships was related to the slope of commitment to

learning ($B = .28$, $p < .001$), and 6) the slope of parent-child relationship was related to the slope of school connectedness ($B = .13$, $p < .001$).

Figure 3. *Final Model Including all Study Variables*



Results in the unexpected direction may be explained by the significant correlation between the intercept and slope ($r^2 = .23, p < .01$). Students with higher starting values of parent-child relationship quality also had higher starting values of school connectedness and commitment to learning. These students had steeper slopes, in comparison to students with lower starting values. Therefore, an inverse relationship between the starting values and slopes may partially explain why students who started 6th grade with higher levels of parent-child relationship quality would have steeper slopes in the school outcome variables.

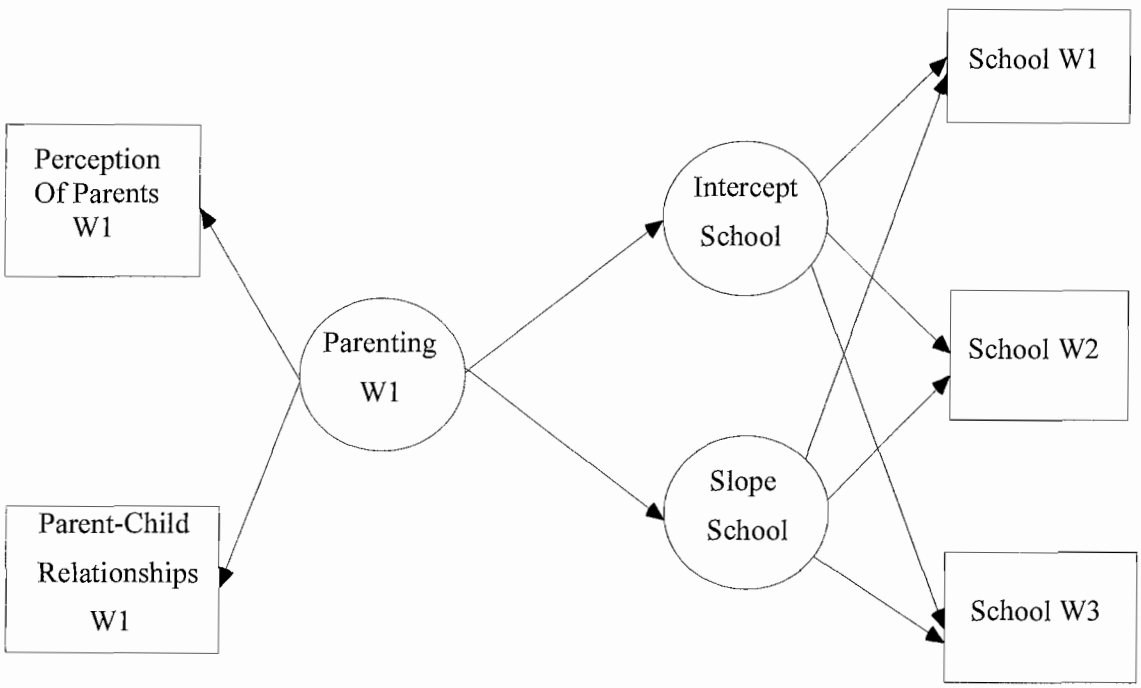
Time One Family Variables Predicting Intercept and Slope of School Variables.

A model was tested to determine if time one parenting variables would predict the slope and intercept of the school variables. A latent construct of parent-child relationship quality comprised of youths' perception of their parents and the parent-child relationship quality was created. Next, a composite school variable consisting of youths' report of their perception of their teachers, school connectedness and commitment to learning was created to represent overall school connection. The time 1 latent variable was entered as a predictor of the intercept and slope of the new composite school variable (See Figure 4). This model fit the data well, $\chi^2(5) = 14.52, p < .05$, RMSEA = .07 CFI = .98. The time one parenting variable accounted for 9% of the variability in the slope of the composite school variable ($B = .09, p < .05$) and 56% of the variability in the intercept ($B = .56, p < .001$).

Competing model. Next, a competing model was tested to lend statistical support to the hypothesized direction of influence among study variables. Specifically, a latent construct comprising school connectedness and teacher-child relationship (e.g., school effects) was entered as the time one variables and was then regressed on the intercept and slope of the parent-child relationship composite variable. The overall model fit the data well, $\chi^2(5) =$

30.07, $p < .001$, RMSEA = .09, CFI = .97. When examining the paths, however, the initial school effect in 6th grade was negatively and non-significantly related to the slope of the parent-child relationship composite variable, $B = -.23$, $p > .05$, suggesting the school variables were not a significant predictor of the change in the parenting variables. This result is in contrast to the significant, positive association found between the 6th grade parent-child relationship latent and the school composite slope. These results lend partial support to the hypothesized direction of study variables, that is, parent-child relationships influence change in school connectedness, and not vice-versa.

Figure 4. *Time One Parenting Predictors of Slope and Intercept of School Variables*



CHAPTER IV

DISCUSSION

The goals of this study were to: (1) examine the growth patterns of parent-child relationship quality, perceptions of teachers, and school connectedness during early adolescence, and (2) use latent growth modeling to test the associations between youths' family and school trajectories.

Implications

Parent-Child Relationships Growth Patterns

Results from the preliminary analysis showed students reported worsening perception of their parents, reduced parent-child relationship quality, and less positive reinforcement from their parents from 6th to 8th grade. These results are similar with recent studies that have utilized LGM to examine youths' perceptions of parent-child relationship quality during the middle school years and have noted an overall decline in parent-child relationship quality during early adolescence (Hannen & Laursen, 2009). Shek (2007) employed a longitudinal dataset and found parent-child relationship quality declined from grades 7 to 9 for a sizeable sample of Chinese adolescents.

Contrary to the current findings, some authors suggest a curvilinear pattern of change in the parent-child relationship quality for girls, and a slightly negative linear pattern for boys (Fritz van Wel, Linssen, & Abma, 2000). In this sample, males and females both reported worsening perception of their parents and the amount of praise received from parents, but only males reported deterioration in the quality of the parent-child relationship.

Early adolescence is often a time associated with greater family conflict as young adolescents begin the process of attempting to gain increased autonomy and personal decision making power, while parents are simultaneously adjusting to their changing role as parents (Smetana, 2004). Parents who are able to adapt to their children's increasing demands for autonomy, while maintaining parental warmth and involvement, appropriate limit setting, and monitoring, may have youth who are less likely to perceive reduced parental support and relationship quality during early adolescence (Karavsilis, Doyle, & Margolese, 1999).

Though a certain degree of individuating from parents, while simultaneously developing closer bonds with peers, may be a normative aspect of adolescent development, parents who fail to remain connected to their children through parental monitoring and positive family relationships, have children who are at an increased risk for problem behavior in adolescence (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Stormshak, Dishion, Light, & Yasui, 2005). Youth who feel disconnected from their families during adolescence have higher prevalence of unhealthy weight control behaviors, suicide attempts, low self-esteem, depression (Ackard, Neumark-Sztainer, Story, & Perry, 2006), and aggressive behavior (Scholte, van Lieshout, & van Aken, 2001). Results from this study suggest that although declines in youths' perception of parent-child closeness may be a normal aspect of adolescent development for many youth, these declines in relationship quality were also associated with negative outcomes, such as reduced school connectedness and commitment to learning.

Teacher-Child Relationships Growth Patterns

Students' reported declining perceptions of their teachers from 6th to 8th grade and these results did not vary based on gender or ethnicity. There have been few published studies measuring the change in teacher-child relationship or students' perception of their

teachers during the middle school years using a longitudinal dataset. Lynch and Cicchetti (1997) found middle school students (grades 6-8) reported less quality relationships with mothers and teachers in comparison to elementary school children (grades 2-5), but did not explore how this change unfolded over time. Other research has shown reductions in both teacher-student relationship quality and teachers' perception of their effectiveness during the transition to middle school (Eccles et al., 1996; Eccles & Midgley, 1989). Investigating the quality and change of teacher-child relationships during early adolescence is relevant given the body of literature suggesting teachers play an important role in students' development of self-regulation skills, academic success and motivation (Ryan & Pattrick, 2001; Ryan, Stiller, & Lynch 1994).

School Connectedness Growth Patterns

As hypothesized, students reported declining levels of school connectedness and commitment to learning from 6th to 8th grade. European American youth reported initially higher levels of school connectedness in 6th grade in comparison to students of color, and declined significantly over the course of middle school. Youth of color reported less school connectedness in 6th grade and did not tend to change in their perceptions of connection to the school environment over the course of middle school. Females reported higher levels of school connectedness in comparison to males, but their slopes were the same. These findings are contrary to past research that has found females, in comparison to male students, reported lower levels of school connectedness during middle school (Bonny, Britto, Klostermann, Homun, & Slap, 2000). The present study found school connectedness was highest across the sample during 6th grade, a steeper decrease in school connectedness occurred from 6th to 7th grade, with a leveling off between 7th and 8th grade. The results from this study may inform

future researchers interested in the optimal time to intervene and measure changes in school connectedness. Changes in youths' report of school connectedness may appear quite different depending on when youth are assessed during the course of early adolescence.

Current findings from this study mirror previous research suggesting early adolescence may be a time when disconnection from school is especially likely (Resnick, Bearman, & Blum, et al., 1997). Past research has found the transition to middle school is associated with students' reduced class preparation, academic motivation and achievement, and deteriorating perceptions about the quality of school life (Seidman, Allen, Aber, Mitchel, & Feinman, 1994). In this study, the change in perceptions of school connectedness was most pronounced from 6th to 7th grade, possibly due students' recent transition from elementary schools to larger middle schools, or other developmental and social factors not explored in the current study.

It is critical to identify the factors underlying students' disconnection to their school environment, as school connectedness has emerged as one of the most important protective factor for youth (Blum & Libbey, 2006). Ayres et al., (1999) found females who were more committed and attached to school in 7th grade were less likely to initiate delinquent behavior by 9th grade. Both males and females who were engaged in some delinquent activity in 7th grade were more likely to stop this activity by 9th grade if they reported feeling connected to their school environment. Research has also shown youths' school connectedness during the middle and high school years, regardless of gender or ethnic differences, was significantly and negatively associated with substance use, violence, delinquency, gang membership, academic problems, and early engagement in sexual activity (Hawkins et al.,1997). 5th grade students who reported feeling connected to their school environment were less likely to have

initiated drinking and smoking by 12th grade, in comparison to students who did not feel connected (Hawkins, Guo, Hill, Battin-Pearson, & Abbot, 2001). Though past research has examined how school connectedness may influence concurrent or future behavior problems, the present study was the first to utilize LGM to evaluate the growth pattern of school connectedness during middle school and to examine differences in growth by gender and ethnicity.

Commitment to learning is one important aspect of students' connection to their school environment and also plays a role in students' motivation for academic learning and achievement (Elliot & Dweck, 2005). Past research has shown students with higher intrinsic academic motivation, a factor related to commitment to learning, have positive perceptions of their academic ability and less academic anxiety (Gottfried, Gottfried, Cook, & Morris, 2005). Students in the present sample reported declining levels of commitment to learning across the middle school years, regardless of gender or ethnicity. These results are similar with past studies that have found similar levels of classroom engagement and commitment to learning for European American, African American, Latino, and Asian students (Bishop, et al., 2004). The results also mirror past studies that have found students' values of achievement and goal orientations tend to decrease during the middle school years (Wigfield & Wagner, 2005). Identifying both the patterns of change in students' commitment to learning over time, as well as factors that may influence this change are two important contributions of the current study.

Perception of Parents and Parent-Child Relationships on School Connectedness.

The hypothesis that there would be a relationship between youths' perception of their parents, and their sense of school connectedness was supported by the data for European

American students, but not students of color. From a theoretical perspective, parent-child relationships may influence youth development differently, based on the unique cultural experiences and variations among families. For example, the relationships African American youth experience with extended family members may be rated as strong and influential as the parent-child relationship (Parke & Burial, 1998). Therefore, other adolescent-adult relationships and how these relationships change during early adolescence may be an important predictor of school connectedness for youth of color. Some Latin American families, and Puerto Rican families in particular, are more likely to live with extended family members and to rely on these family members for social support, and this may include parenting support (Zayos, Caninos, & Suarez, 2001). Ignoring the role of extended family members on adolescent development and perceptions of school connectedness may partially explain why model results were not significant for youth of color in this study.

Social learning theory suggests children learn behaviors from their parents and these learned behaviors transfer outside of the home to other contexts, such as the school environment (Bandura, 1977). Children who perceive their parents as kind and trustworthy are more likely to have positive relationship experiences with their parents. These positive relationship experiences may teach children how to leave the home environment and forge positive relationships with other adults (e.g., teachers, coaches, other school personnel). Additionally, positive relationships with parents may provide a context for learning the self-regulatory skills necessary for pro-social interactions with peers, and academic competence (Blum & Libbey, 2004). Students who learn through family relationship patterns how to approach new and ambiguous situations, such as the changing physical structure of larger middle schools, differing peer and teacher relationships, and educational demands, may be

better suited to excel in these environments and remain connected to their school environments.

In summary, ethnic differences in how youth perceive relationships with parents and other caregiving adults may partially explain why there was a significant association found between parent-child relationship quality and school connectedness for European American youth but not youth of color. Youth of color may be influenced by not only their relationship with their parents, but also other salient adults such as extended family members or close family friends. This study may have benefited from exploring other adult-child relationships and how these relationships impact school connectedness. It is possible that the parent-child relationship is not the most influential in impacting school connectedness for youth of color.

Perception of Parents and Parent-Child Relationships on Perception of Teachers

As hypothesized, there was a significant relationship between the initial levels of perception of parents and perception of teachers in 6th grade, but only for European American males. There are many possible factors contributing to poor model fit for students of color and females, including differences in the perceived value of various relationships, how these relationships change over time, and how these relationships impact development. For example, past research had found perceived teacher support was especially related to positive outcomes for females (Goodenow, 1993), however, past studies have found females tend to perceive less support from their teachers in comparison to males (Sadker, & Sadker, 1995). In this sample, females reported lower levels of perception of teachers in 6th grade, in comparison to males. On the other hand, Reddy, Rhodes and Mulhall (2003) found that although males and females reported declining perception of teacher support, females in the sample reported higher initial levels of teacher support in 6th grade. These conflicting

findings might suggest that variables of interest are not being measured the same across studies, youth are being measured at different developmental time periods, or that females and European American youths' developmental process does not fit a linear trend.

A phenomena known as racial asymmetry (youth of color being taught by European American teachers) may partially explain why there was not a significant relationship between changes in relationships with parents and teachers (Takei & Shouse, 2008). Perhaps youth of color who do not have the opportunity to develop relationships with teachers of the same race experience the teacher-child relationship formation and change process differently than European American students. Little is known about the experience of racial asymmetry and its impact on the classroom and learning environment for youth of color. Future research may benefit from exploring the role of racial asymmetry on the development and change of teacher-child relationships for students of color.

Additionally, Critical Race Theory (CRT), (emphasizing the socially constructed nature of race and its relationship to racial subordination and discrimination) and Critical Pedagogy (CP) (the belief in the importance of teaching students to think critically) are two concepts that suggest the classroom environment may be hostile to youth of color if concerted efforts are not made to create a learning environment that welcomes differing learning styles and attitudes. Teachers who fail to acknowledge the potential of their own bias toward youth of color may negatively influence the overall classroom environment and the potential for building a strong teacher-child relationship (Leonardo, 2005). Future research may benefit from exploring teachers' level of training in teaching youth of color (pedagogy experiences), their perceptions of the student-teacher relationship, and how the classroom environment may contribute to youth of colors' learning experience.

To date, few studies have examined how the quality of parent-child relationships may be related to the quality of teacher-child relationships during early adolescence. Past research has shown a link between younger children's relationship quality with their parents and the relationship quality with teachers during early elementary school (O'Connor & McCartney, 2006). Given the rather substantial body of work that has accumulated showing the importance of parent-child (Hill, 1987; Jacobsen, Edelstein, & Hofmann, 1994; Yoon & Carcamo, 2007) and teacher child relationships (Battistich, Solomon, & Kim, 1995; Klem & Connell, 2004; Lee & Smith, 1999; Marks, 2000) on youth academic and behavioral outcomes, this study contributes to the literature by showing a significant and positive association between European American male students changing relationship quality with their parents and teachers during middle school. These results highlight the importance of studying how children's relationships with salient adults may change over time, the interconnectedness of youths' interpersonal relationship experiences, and how change in important relationships is related to academic and behavioral outcomes. The results also suggest relationship patterns that emerge during early adolescence between children, parents and teachers, may be best viewed from an ecological perspective, that posits a dynamic interplay of systems and members that ultimately contribute to the developmental outcomes of early adolescents (Bronfenbrenner, & Morris, 1998).

Perception of Parents and Parent-Child Relationships on Commitment to Learning.

Youth who perceived their parents as more fair and kind in 6th grade, also reported a greater commitment to learning in 6th grade. There was a relationship between the declining slopes of these two variables during middle school, suggesting the negative rate of change of these two variables were related. No gender or ethnic differences were found in this sample

in regards to the impact of parent-child relationship quality on youths' commitment to learning. These results may suggest a typical developmental process that does not differ based on gender or ethnicity.

The association between students' declining relationship quality with their parents and commitment to learning may be explained in part by a model of anxiety, stress and coping proposed by Roeser, Strobel and Quihuis (2002). These researchers argued that students who experience stress and a lack of emotional support from salient adults during adolescence may be at risk of depleting cognitive resources necessary for the engagement, motivation, and enjoyment of academic pursuits. In this study, positive relationship quality with parents may be one factor related to reduced psychological stress, and in turn, a greater likelihood of commitment to learning in 6th grade. The decrease in parent-child relationship quality and commitment to learning through out middle school may signify as young adolescents perceive less emotional support from their parents over time, they may also experience greater stress, and therefore, less commitment to learning. Future studies may benefit from identifying the factors that contribute to a reduction in both parent-child relationship quality, and commitment to learning.

Full Model Including Parent-Child Relationships, Teacher-Child Relationships and School Connectedness.

As expected, there was a significant link between both the initial levels of students' relationship with their parents, relationship with teachers, and school connectedness, and also, how these constructs changed over time. The hypotheses that the intercept and slope of parent-child relationship quality would predict the intercept and slope of teacher-child relationship quality and school connectedness, was supported.

The results from this study suggest the role of parents in impacting youths' sense of school connectedness, perceptions of teachers, and commitment to learning, may be an important aspect of youth development that warrants further attention. The CDC recently released a report (March, 2009) evaluating the results of a long-term national study of more than 36,000 adolescents (http://www.cdc.gov/Features/ConnectToSchool/). The results from various studies published from this dataset highlight the protective roll positive parent-child relationships and school connectedness play in the lives of many adolescents. Family connectedness was found to play the most important role in protecting youth from emotional difficulties, eating disorders, and suicidal ideation and attempts, with school connectedness second in importance (Resnick, Bearman, & Blum et al., 1997; Resnick, Harris, & Blum, 1993). Research further demonstrated school connectedness can be one of the most influential protective factors against substance use, school truancy, violence, early sexual activity, and risk of unintentional injury (Resnick et al., 1997).

Parent-Child Relationships in 6th Grade and Changes in School Connectedness

The results from the present study show youths' initial level of parent-child relationship quality in 6th grade was related to the initial levels of school connectedness for the full sample. Similarly the change in parent-child relationship quality was related to the change in youths' report of school connectedness. Given the nature of relationship among study variables, it is not possible to establish causation; however these results do show an important connection between youths' relationship experience with their parents at the beginning of middle school and the change in their sense of school connection during middle school. An important question to be answered by future research includes whether interventions that target strengthening the quality of the parent-child relationship during early

adolescence may change the pattern of decelerating growth in school connectedness and teacher-child relations quality during middle school.

A competing model was tested to lend support to the conclusion that parent-child relationship quality influenced school connectedness, and not vice-versa. The competing model revealed the initial levels of school connectedness in 6th grade did not predict the change in parent-child relationship quality, lending partial support to the hypothesized direction of influence among study variables.

Summary

Results from the present study show, regardless of gender or ethnicity, youth reported declining perceptions of their parents, parent-child relationship quality, teacher-child relationship quality, school connectedness, and commitment to learning from 6th to 8th grade.

No gender or ethnic differences were found in the association between the intercept or slope of parent-child relationship quality and students' commitment to learning. Of the models that did show differences by gender and ethnicity, family composition, gender socialization, cultural beliefs and experiences, and the saliency placed on parent-child relationships may partially explain the differences detected in the current study.

Taken together, these results highlight the importance parents play in children's sense of connection to their school environment and their relationships with teachers. Furthermore, the results support the importance of considering youth development from an ecological perspective, a perspective that integrates the role of all important persons and contexts in overall youth development (Stormshak & Dishion, 2002).

Given the central role parents play in the socialization process of their children, interventions that target the parent-child relationship and core parenting techniques such as

monitoring, praise, and limit setting, are key to children's emotional, behavioral and academic success (Dishion & Stormshak, 2007; Dishion, Stormshak, & Falkenstein, in press). Because home-school communication often declines during the middle school years (Miller et al., 1990), interventions that aim to improve the connection between parents, students and teachers may be especially successful in keeping youth engaged in school and away from potentially harmful activities. Interventions that are brief, ecologically sensitive, and available in community contexts such as schools have been shown to be highly effectivein reducing adolescent problem behavior (Dishion & Stormshak, 2007).

The strengths of the current study include testing a growth model of parent-child, teacher-child and school connectedness with a culturally diverse sample of middle school youth, from 6th to 9th grade. Latent growth modeling approaches are often favored when research questions involve development and change over time and are preferred over traditional repeated measures analysis of variance due to the ability of LGM to model latent intercepts and slopes and to include measurement error in the models (Duncan, Duncan, & Stryker, 2006).

One of the primary limitations of the current study was the use of youth report only. Future research may benefit from gathering parents' perception of relationship quality with their children, as well as teachers' perception of relationship with students. Direct observation of parent-child and teacher-child relationship quality would have provided a more objective measure of the relationship dynamics throughout the course of middle school. Additional information about the school environment from school staff or direct observations at school may have strengthened measurement of the school connectedness construct.

Another limitation includes a lack of statistical power necessary to examine ethnic differences more thoroughly. This study established some important gender and ethnic differences in terms of youths' perception of relationships with parents, teachers, and overall school connectedness, but sample size limitations prevented an in-depth exploration of differences in model fit based on ethnicity, or gender-by-ethnicity interactions. Comparing European American youth to all youth of color negates the vast differences inherent in various cultural groups. Future research exploring these differences is warranted given recent findings suggesting youth of color may face additional barriers to school connectedness, such as discrimination experiences in the school environment (Falkenstein & Stormshak, 2009).

Overall, this study lends support to past research that highlights the important role parents continue to play in the development of their children during early adolescence, provides empirical evidence regarding the decelerating growth of this relationship during middle school, and demonstrates a relationship between this growth pattern and decelerating growth in both school connectedness and teacher-child relationships during middle school.

APPENDIX

TABLES

Table 1. *Means and Standard Deviations of Parenting and School Variables at Time 1, Time 2, and Time 3*

Variable Name	6th Grade (n = 590)		7th Grade (n = 524)		8th Grade (n = 467)	
	M	*SD*	*M*	*SD*	*M*	*SD*
1. Perception of Parents (PPR)	4.45	.78	4.20	.89	4.06	.91
2. Parent-Child Relationship (PCR)	3.86	.95	3.51	1.01	3.28	1.05
3. Positive Reinforcement (PSR)	3.67	1.05	3.42	1.11	3.18	1.18
4. Perception of Teachers (PTR)	4.04	.88	3.71	.91	3.65	.81
5. School Connectedness (SCL)	3.53	.71	3.38	.69	3.35	.65
6. Commitment to learning (ENL)	4.16	.80	3.86	.88	3.78	.87

Table 2. *Correlations among Parenting and School Variables*

Variables	1	2	3	4	5	6	7	8	9
1. W1 PPR	-								
2. W2 PPR	.52**	-							
3. W3 PPR	.36**	.50**	-						
4. W1 PCR	.66**	.44**	.33**	-					
5. W2 PCR	.48**	.65**	.51**	.62**	-				
6. W3 PCR	.36**	.48**	.70**	.45**	.67**	-			
7. W1 PSR	.42**	.22**	.22**	.63**	.38**	.30**	-		
8. W2 PSR	.33**	.48**	.39**	.42**	.61**	.53**	.41**	-	
9. W3 PSR	.28**	.35**	.49**	.30**	.43**	.45**	.35**	.53**	-

Table 2. Cont. *Correlations among Parenting and School Variables*

Variables	10	11	12	13	14	15	16	17	18
10. W1 PPT	.37**	.29**	.23**	.28**	.29**	.23**	.20**	.29**	.19**
11. W2 PPT	.27**	.43**	.32**	.16**	.32**	.29**	.02	.22**	.20**
12. W3 PPT	.20**	.27**	.35**	.10*	.23**	.32**	.00	.14**	.20**
13. W1 SCL	.30**	.19**	.08	.39**	.24**	.12*	.35**	.18**	.11*
14. W2 SCL	.27**	.32**	.22**	.27**	.37**	.31**	.19**	.31**	.23**
15. W3 SCL	.18**	.27**	.32**	.17**	.34**	.39**	.24**	.29**	.33**
16. W1 ENL	.37**	.23**	.20**	.40**	.23**	.27**	.27**	.31**	.16**
18. W3 ENL	.28**	.32**	.39**	.30**	.40**	.44**	.20**	.36**	.36**

Table 3. *Unconditional Model: Perception of Parents*

Perception of Parents	Estimate	Standard Error	Critical Ratio	P Value
Mean Estimates				
Intercept	4.44	.03	140.23	***
Slope	-.20	.02	-9.42	***
Male Intercept	4.48	.05	100.51	***
Male Slope	-.16	.03	-5.70	***
Female Intercept	4.40	.05	97.97	***
Female Slope	-.24	.03	-7.46	***
Students of Color Intercept	4.39	.041	105.731	***
Students of Color Slope	-.19	.029	-6.613	***
European American	-	-	-	-
European American Slope	-	-	-	-
Variance Estimates				
Intercept	.46	.06	8.20	***
Slope	.12	.03	4.59	**
Male Intercept	.51	.08	6.62	***
Male Slope	.13	.03	3.81	**
Female Intercept	.40	.08	4.97	***
Female Slope	.13	.04	2.90	**
Students of Color Intercept	.42	.08	5.63	***
Students of Color Slope	.14	.04	3.62	**
European American	-	-	-	-
European American Slope	-	-	-	-

Note. The dash symbol (-) denotes the fit statistics for the unconditional model was unacceptable; therefore, mean and variances estimates are not reported. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 4. *Unconditional Model: Parent-Child Relationships*

Parent-Child Relationships	Estimate	Standard Error	Critical Ratio	P Value
Mean Estimates				
Intercept	3.84	.04	97.89	***
Slope	-.30	-.30	.02	***
Male Intercept	3.84	.06	70.05	***
Male Slope	-.27	.03	-8.20	***
Female Intercept	-	-	-	-
Female Slope	-	-	-	-
Students of Color Intercept	3.83	.05	76.56	***
Students of Color Slope	-.29	.03	-8.77	***
European American	-	-	-	-
European American Slope	-	-	-	-
Variance Estimates				
Intercept	.65	.06	11.75	***
Slope	.13	.13	.02	***
Male Intercept	.62	.08	7.86	***
Male Slope	.10	.03	3.30	***
Female Intercept	-	-	-	-
Female Slope	-	-	-	-
Students of Color Intercept	.79	.10	8.25	***
Students of Color Slope	.28	.04	6.37	**
European American	-	-	-	-
European American Slope	-	-	-	-

Note. The dash symbol (-) denotes the fit statistics for the unconditional model was unacceptable; therefore, mean and variances estimates are not reported. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 5. *Unconditional Model: Positive Reinforcement*

Positive Reinforcement	Estimate	Standard Error	Critical Ratio	P Value
Mean Estimates				
Intercept	3.67	.04	87.71	***
Slope	-.24	.03	-8.42	***
Male Intercept	3.61	.06	61.02	***
Male Slope	-.22	.04	-5.59	***
Female Intercept	3.72	.06	63.46	***
Female Slope	-.26	.04	-6.33	***
Students of Color Intercept	3.68	.05	67.46	***
Students of Color Slope	-.22	.04	-5.72	***
European American	3.64	.07	56.46	***
European American Slope	-.28	.04	-6.55	***
Variance Estimates				
Intercept	.51	.07	7.50	***
Slope	.11	.03	3.25	**
Male Intercept	.71	.13	5.41	***
Male Slope	.19	.07	2.89	**
Female Intercept	.37	.13	2.93	***
Female Slope	.13	.08	1.75	n.s.
Students of Color Intercept	.58	.13	4.62	***
Students of Color Slope	.18	.07	2.63	**
European American	.46	.10	4.74	***
European American Slope	.08	.04	1.88	n.s.

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 6. *Unconditional Model: Perception of Teachers*

Perception of Teachers	Estimate	Standard Error	Critical Ratio	P Value
Mean Estimates				
Intercept	4.04	.04	110.30	***
Slope	-.20	.04	-8.44	***
Male Intercept	4.48	.05	100.51	***
Male Slope	-.16	.03	-5.70	***
Female Intercept	4.40	.05	97.97	***
Female Slope	-.24	.03	-7.46	***
Students of Color Intercept	3.97	.05	84.01	***
Students of Color Slope	-.18	.03	-6.34	***
European American	4.15	.06	72.67	***
European American Slope	-.22	.03	-6.41	***
Variance Estimates				
Intercept	-.35	.05	6.39	***
Slope	.04	.06	2.00	*
Male Intercept	.51	.08	6.62	***
Male Slope	.13	.03	3.81	***
Female Intercept	.40	.08	4.97	***
Female Slope	.13	.04	2.90	**
Students of Color Intercept	.39	.07	5.39	***
Students of Color Slope	.05	.02	2.17	*
European American	.27	.08	3.40	***
European American Slope	.02	.03	.54	n.s.

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 7. *Unconditional Model: School Connectedness*

Perception of Parents	Estimate	Standard Error	Critical Ratio	P Value
Mean Estimates				
Intercept	3.53	.03	119.75	***
Slope	-.09	.02	-5.44	***
Male Intercept	3.52	.04	86.07	***
Male Slope	-.10	.02	-4.19	***
Female Intercept	3.55	.04	83.14	***
Female Slope	-.08	.02	-3.46	***
Students of Color Intercept	3.36	.03	116.07	***
Students of Color Slope	-.02	.01	-1.13	n.s.
European American	3.71	.05	80.12	***
European American Slope	-.14	.03	-5.16	***
Variance Estimates				
Intercept	.30	.03	9.21	***
Slope	.06	.01	5.17	***
Male Intercept	.27	.05	5.78	***
Male Slope	.05	.02	2.81	**
Female Intercept	.34	.05	7.22	***
Female Slope	.07	.02	4.52	***
Students of Color Intercept	.15	.03	5.95	***
Students of Color Slope	-.04	.01	-3.02	**
European American	.29	.05	6.21	***
European American Slope	.07	.02	4.20	***

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 8. *Unconditional Model: Commitment to learning*

Perception of Parents	Estimate	Standard Error	Critical Ratio	P Value
Mean Estimates				
Intercept	4.16	.03	127.17	***
Slope	-.18	.02	-9.12	***
Male Intercept	4.10	.05	86.42	***
Male Slope	-.18	.03	-6.13	***
Female Intercept	4.22	.05	94.42	***
Female Slope	-.18	.03	-6.73	***
Students of Color Intercept	4.12	.04	99.10	***
Students of Color Slope	-.16	.03	-6.38	***
European American	4.24	.05	80.56	***
European American Slope	-.22	.03	-6.74	***
Variance Estimates				
Intercept	.32	.04	7.65	***
Slope	.06	.02	3.90	***
Male Intercept	.30	.07	4.56	***
Male Slope	.05	.02	2.23	*
Female Intercept	.35	.05	6.79	***
Female Slope	.08	.02	4.03	***
Students of Color Intercept	.33	.05	6.02	***
Students of Color Slope	.06	.02	2.87	**
European American	.30	.06	4.58	***
European American Slope	.06	.02	2.64	**

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 9. *Regression Coefficients for the Combined LGM: Perception of Parents on School Connectedness.*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Perception of Parents → School Connectedness: Full Sample (minus European American)				
Intercept on Intercept	.36	.05	6.58	***
Intercept on Slope	.02	.03	.77	n.s.
Slope on Slope	.31	.07	4.78	***
Males				
Intercept on Intercept	.37	.07	5.38	***
Intercept on Slope	-.02	.04	-.41	n.s.
Slope on Slope	.22	.08	2.56	*
Females				
Intercept on Intercept	.34	.08	4.04	***
Intercept on Slope	.01	.10	4.09	n.s.
Slope on Slope	.40	.05	1.53	***

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 10. *Regression Coefficients for the Combined LGM: Perception of Parents on Perception of Teachers.*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Perception of Parents → Perception of Teachers: Full Sample (minus European American)				
Intercept on Intercept	.69	.11	6.21	***
Intercept on Slope	-.06	.11	-.53	n.s.
Slope on Slope	.76	.21	3.67	***
Males				
Intercept on Intercept	.67	.15	4.61	***
Intercept on Slope	-.13	.15	-.92	n.s.
Slope on Slope	.60	.26	2.34	***
Females				
Intercept on Intercept	-	-	-	-
Intercept on Slope	-	-	-	-
Slope on Slope	-	-	-	-

Note. The (-) symbol represents an acceptable solution could not be reached. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 11. *Regression Coefficients for the Combined LGM: Perception of Parents on Commitment to Learning.*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Perception of Parents → Commitment to Learning: Full Sample (minus European American)				
Intercept on Intercept	.44	.08	5.16	***
Intercept on Slope	.49	.11	4.45	***
Slope on Slope	.11	.05	2.22	*
Males				
Intercept on Intercept	.53	.13	4.11	***
Intercept on Slope	-.00	.07	-.02	n.s.
Slope on Slope	.26	.12	2.13	*
Females				
Intercept on Intercept	.39	.12	3.39	***
Intercept on Slope	.25	.08	3.15	**
Slope on Slope	.76	.21	3.67	***

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 12. *Regression Coefficients for the Combined LGM: Parent- Child Relationships on School Connectedness*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Parent-Child Relationships → School Connectedness: Full Sample (minus				
Intercept on Intercept	.42	.06	7.63	***
Intercept on Slope	-.04	.03	-1.26	n.s.
Slope on Slope	.27	.07	3.67	***
European American				
Intercept on Intercept	.42	.08	5.34	***
Intercept on Slope	-.05	.05	-.94	n.s.
Slope on Slope	.37	.21	1.79	n.s.
Students of Color				
Intercept on Intercept	-	-	-	-
Intercept on Slope	-	-	-	-
Slope on Slope	-	-	-	-

Note. The (-) symbol represents an acceptable solution could not be reached. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 13 *Regression Coefficients for the Combined LGM: Parent- Child Relationships on Perception of Teachers*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Parent-Child Relationships → Perception of Teachers: Full Sample (minus females)				
Intercept on Intercept	.40	.07	5.45	***
Intercept on Slope	-.07	.05	-1.55	n.s.
Slope on Slope	.39	.13	3.05	**
European American				
Intercept on Intercept	-	-	-	-
Intercept on Slope	-	-	-	-
Slope on Slope	-	-	-	-
Students of Color				
Intercept on Intercept	.39	.09	4.18	***
Intercept on Slope	-.06	.06	-.99	n.s.
Slope on Slope	.37	.12	3.25	**

Note. The (-) symbol represents an acceptable solution could not be reached. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 14. *Regression coefficients for the combined LGM: Parent- Child Relationships onCommitment to Learning.*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Parent-Child Relationships → Commitment to Learning: Full Sample (minus females)				
Intercept on Intercept	.50	.07	7.27	***
Intercept on Slope	.02	.04	.49	.63
Slope on Slope	.50	.14	3.75	***
European American				
Intercept on Intercept	.50	.10	4.86	***
Intercept on Slope	.04	.06	.73	n.s.
Slope on Slope	.25	.49	.52	n.s.
Students of Color				
Intercept on Intercept	.50	.09	5.39	***
Intercept on Slope	.01	.06	.14	n.s.
Slope on Slope	.52	.14	3.64	***

Note. *** $p < .001$, ** $p < .01$, *$p < .05$, n.s. = non-significant finding

Table 15. R*egression Coefficients for the Combined LGM: Positive Reinforcement on Perception of Teachers.*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Positive Reinforcement → Perception of Teachers: Full Sample				
Intercept on Intercept	.37	.07	5.21	***
Intercept on Slope	-.14	.05	-2.68	*
Slope on Slope	.37	.13	2.87	**
European American				
Intercept on Intercept	.53	.12	4.54	***
Intercept on Slope	-.20	.11	-1.83	n.s.
Slope on Slope	.44	.32	1.38	n.s.
Students of Color				
Intercept on Intercept	.30	.09	3.44	***
Intercept on Slope	-.11	.06	-1.85	n.s.
Slope on Slope	.35	.14	2.45	**
Males				
Intercept on Intercept	.30	.08	3.61	***
Intercept on Slope	-.09	.05	-1.65	n.s.
Slope on Slope	.33	.13	2.52	*
Females				
Intercept on Intercept	.44	.12	3.74	***
Intercept on Slope	-.18	.10	-1.79	*
Slope on Slope	.37	.20	1.82	n.s.

Table 16. *Regression Coefficients for the Combined LGM: Positive Reinforcement on School Connectedness.*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Positive Reinforcement → School Connectedness: Full Sample				
Intercept on Intercept	.37	.05	7.03	***
Intercept on Slope	-.03	.03	-1.19	n.s.
Slope on Slope	.25	.05	5.04	***
European American				
Intercept on Intercept	.44	.08	5.34	***
Intercept on Slope	-.08	.05	-1.72	n.s.
Slope on Slope	.25	.08	3.13	**
Students of Color				
Intercept on Intercept	.34	.07	5.15	***
Intercept on Slope	-.01	.03	-.23	n.s.
Slope on Slope	.25	.06	3.96	***
Males				
Intercept on Intercept	.41	.06	6.43	***
Intercept on Slope	-.06	.04	-1.58	n.s.
Slope on Slope	.25	.08	3.27	**
Females				
Intercept on Intercept	.29	.09	3.33	***
Intercept on Slope	.00	.05	.09	n.s.
Slope on Slope	.26	.07	3.51	***

Table 17. *Regression Coefficients for the Combined LGM: Positive Reinforcement on Commitment Learning*

	Unstandardized Estimate	Standard Error	Critical Ratio	*P* Value
Variable				
Positive Reinforcement → Commitment to Learning: Full Sample				
Intercept on Intercept	.40	.06	6.40	***
Intercept on Slope	.02	.04	.63	n.s.
Slope on Slope	.33	.08	4.09	***
European American				
Intercept on Intercept	.52	.10	5.00	***
Intercept on Slope	.02	.06	.34	n.s.
Slope on Slope	.11	.13	.85	n.s.
Students of Color				
Intercept on Intercept	.35	.08	4.60	***
Intercept on Slope	.03	.05	.71	n.s.
Slope on Slope	.43	.12	3.70	***
Males				
Intercept on Intercept	.35	.08	4.66	***
Intercept on Slope	.02	.05	.40	n.s.
Slope on Slope	.33	.11	3.02	**
Females				
Intercept on Intercept	.46	.11	4.37	***
Intercept on Slope	.04	.06	.61	n.s.
Slope on Slope	.30	.13	2.43	*

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