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The contexts of family and peer group play critical roles in shaping children's lives over their development. Biological theory suggests that these two contexts are interlinked to impact children's daily lives and should be examined in integrated models. The present study examined relationship quality with peers as a potential mediator that links maternal parenting style to children's school adjustment. Two dimensions of parenting style—maternal responsiveness and behavioral control, and three aspects of school adjustment—academic grades, problem behaviors in the school setting, and school related experiences of stress, were investigated. The mediation models were tested concurrently and longitudinally in a sample of 347 children during their 4th to 5th grades. Biological theory also suggests personal characteristics as one of the defining factors that influence developmental outcomes. Thus, child gender and child ethnicity were included as moderators in the proposed models.

Using multiple regressions, results of the study indicated both dimensions of maternal parenting style and peer relationship quality were linked to children's wellbeing at school concurrently. Surprisingly, peer relationship quality was unassociated with behavioral problems. Short-term longitudinal associations were found between behavioral control and GPA and between responsiveness and school related stress. In terms of mediation, only maternal responsiveness had indirect effects on one of children's outcome variables via its influence on peer relationships concurrently. Also, moderation effects were not found in the proposed mediation models.

THE CONTEXTS OF PARENTS AND PEERS: LINKAGES TO CHILDREN'S  
SCHOOL ADJUSTMENT

by

Dan Wang

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Approved by

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Committee Chair

To my parents who have encouraged me to pursue my dream and supported my life goals.

And to Xiaolong, your love and support have enabled me to persevere.

APPROVAL PAGE

This thesis written by DAN WANG has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

Committee Chair \_\_\_\_\_

Committee Members \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Date of Acceptance by Committee

\_\_\_\_\_  
Date of Final Oral Examination

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## CHAPTER I

### INTRODUCTION

The contexts of family and peer group have been established as playing critical roles in shaping children's lives over the course of their development. Families are the most proximal contexts for children and set the stage for children's subsequent development. As children enter school, peers become an increasingly important part of children's daily activities (Ladd, 1999). There has been some debate in the past about the relative influences of parents and peers on child development (Harris, 2000). However, the field has moved from the assumption that parents and peers exert competing influences on children (Brown & Bakken, 2011). Instead, researchers are increasingly focusing on understanding multiple possible connections between parent and peer factors and developing a more nuanced understanding regarding their interconnected influences on children's adjustment (e.g., Chen, Chang, He, & Liu, 2005; German, Gonzales, & Dumka, 2009).

Existing research has identified several mechanisms linking dimensions of parenting to children's peer relations and competence (Mize, Pettit, & Meece, 2000) and has documented small-to-moderate associations between parenting and children's peer relationship quality (Schneider, Atkinson, & Tardif, 2001). Missing from this research base is an understanding of how these two relationship systems work together in

meaningful ways to affect children's well-being. That is, how and under what conditions do relations with peers and parents influence children's adjustment?

To address these questions, the purpose of the present study is to examine relationship quality with peers as a potential mediator that links maternal parenting style to children's school adjustment, using bioecological theory as a guiding framework. Two dimensions of parenting style, maternal responsiveness and behavioral control, are examined. Three aspects of school adjustment are investigated: academic grades, problem behaviors in the school setting, and school related experiences of stress. The mediation models are tested concurrently and longitudinally in a sample of 347 children.

### **Theoretical Foundations**

Bioecological theory (Bronfenbrenner & Morris, 2006) serves as the theoretical foundation for the present study. Bioecological theory portrays human development as an ongoing process which is shaped by a variety of individual and environmental factors over time. Accordingly, bioecological theory requires a research design that simultaneously includes proximal processes as well as individual, environmental, and time factors as they work together to shape development—what Bronfenbrenner termed the Process–Person–Context–Time (PPCT) model.

Central to the theory is the concept of proximal processes, defined as enduring forms of reciprocal interactions between the developing person and his or her immediate environment. Proximal processes are regarded as the driving forces of human development and vary as a function of the characteristics of the developing person, the

contexts in which the person lives, and the nature of the person's current development (Bronfenbrenner & Evans, 2000).

The second factor in the PPCT model is person. Individual characteristics of the developing person are believed to affect proximal processes and developmental outcomes. Person characteristics include behavioral dispositions (e.g., aggressiveness and shyness), psychological and cognitive capability (e.g., current knowledge and skill level), and biological characteristics (e.g., gender and physical appearance; Bronfenbrenner & Morris, 2006).

Contexts are another defining feature of the bioecological model. Four interconnected environmental systems are identified: microsystem, mesosystem, exosystem, and macrosystem (Bronfenbrenner, 1979). Microsystems are defined as the most proximal settings in which the developing person spends the most time (e.g., school and family). Mesosystems refer to the relations between two or more microsystems (e.g., the interrelation between family and school). Bronfenbrenner (1979) defined exosystems as settings that the developing person does not actively participate in but which exert influence on him or her (e.g., workplace of parents impacting children). Finally, macrosystems are broader cultural structures, such as the economic, political, and religion systems. The influences of macrosystems on development are reflected in their effects on the lower level systems (Bronfenbrenner, 1979).

The fourth component of the PPCT model is time. Bioecological theory emphasizes the importance of both ontogenetic and historical time on development (Bronfenbrenner & Morris, 2006). First, proximal processes take place and affect

development over time. Thus, development can only be fully understood by following individuals over a period of time. Second, historical time in which the developing person grows up should be considered (e.g., whether individuals are developing during times of war). Together, these four components compose the bioecological model of human development.

In the present study, I focus on the family setting and the peer setting to examine how these two microsystems work together to influence children's well-being at school. A focus on proximal processes draws attention to the microsystem as it is within these settings that proximal processes occur. Families are a critical microsystem influencing development within early and middle childhood and have direct impacts on children. Parents also are likely to influence proximal processes that take place in the peer microsystem context by supporting and controlling children's behaviors, and thus also have an indirect effect on children via their influence on peer interactions. Additionally, bioecological theory suggests that the effects of families can only be understood as they operate in conjunction with extrafamilial influences (such as those of the peer group) in the broader contexts of children's lives (Bronfenbrenner, 2001). Therefore, I examine the influences of family and peers (two microsystems) and the relations between the two settings (a mesosystem) in this study.

Relationships and interactions with peers represent the proximal processes under investigation. Maternal responsiveness and behavioral control, two dimensions of parental factors, represent environmental factors that affect developmental outcomes both directly and indirectly via effects on proximal processes. The developmental outcomes of

interest are children's academic performance, school related stress, and problem behaviors at school. To emphasize time influences on development, parent factors, peer factors, and indicators of child school adjustment are assessed at two time points and the proposed model is examined both concurrently and longitudinally. Further, the importance of person characteristics in the bioecological model is addressed by including child gender and ethnicity as potential moderators in the model. In summary, bioecological theory frames the present study by suggesting that dimensions of maternal parenting style may influence the nature of peer relationships children maintain within their immediate environment over time. Together, these relationships are predicted to relate to the nature of children's experiences and adjustment within the school context.

## CHAPTER II

### LITERATURE REVIEW

#### **Defining School Adjustment**

Educational achievement is of critical importance to children's well-being and their subsequent success (Brown & Iyengar, 2008; Dubow, Huesmann, Boxer, Pulkkinen, & Kokko, 2006). However, academic performance is only one part of children's lives at school. Other aspects of children's school lives, such as peer relationships and teacher interactions, also are important indicators of children's well-being at school. Behavioral problems, peer victimization, and stress and anxiety at school are examples of difficulties that children may encounter within school settings (Rubin, Dwyer, Booth-LaForce, Kim, Burgess, & Rose-Krasnor, 2004). To consider children's overall school adjustment, it is therefore important to take into account social and psychological aspects of well-being together with academic performance. In the present study, school adjustment is defined as a broad range of behaviors and experiences that reflect children's academic, social, and psychological competencies within the school setting (Betts, Rotenberg, Trueman, & Stiller, 2012; Ladd, 1996).

Aspects of school adjustment are recognized to be responsive to contextual factors within both peer and family settings (Simons-Morton & Chen, 2009; Parke & O'Neil, 1999). Family socioeconomic status, ethnic background, childrearing philosophies and practices, and relationship quality have all been linked to children's

well-being at school (Bryant & DeMorris, 1999; Fletcher, Walls, Eanes, & Troutman, 2010; Harris, 2000). In the present study, I include academic performance, school related stress, and problem behaviors as indicators of children's school adjustment and examine parent and peer factors that may predict such adjustment.

### **Maternal Parenting Style as a Predictor of School Adjustment**

It has been well acknowledged in the literature that parents play an important role in shaping children's school performance and psychosocial well-being. Research on parenting has made a distinction between parenting styles and parenting practices (Darling & Steinberg, 1993). Parenting practices are actual behaviors that are focused on attaining specific socialization goals; parenting style refers to the general emotional climate that parents provide. The traditional parenting style framework developed by Baumrind (1971) and later expanded by Maccoby and Martin (1983) identified two important dimensional components of parenting: responsiveness and demandingness. Highly responsive parents respond to children with warmth and support. Parents with high demandingness have developmentally appropriate expectations and rules. Authoritative parenting, which is rated high in both dimensions, is thought to promote the optimal development of children in Western cultures (Sternberg, 2008). However, research conducted with other ethnic groups and in other cultures has indicated that authoritarian parenting also benefits children within some culturally defined contexts (e.g., Chao, 1994; Murray, 2012).

Inconsistent results from empirical studies and theoretical distinctions between parenting styles versus practices suggest that parenting processes are complex and require

a focus on specific aspects of parenting versus overall parental influence on child well-being. In fact, more recent work in this field has moved beyond the study of global measures of parenting style to consider specific components of parents' beliefs and attitudes towards childrearing (i.e., dimensions of parenting style) and their relation to child well-being (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Gray & Steinberg, 1999; Prevatt, 2003). In this study, I therefore focus on individual dimensions of maternal parenting style and mechanisms that link them to children's school adjustment.

Research on parenting has documented positive effects of dimensions of authoritative parenting on various aspects of child school adjustment. In general, positive parenting, indicated by warmth, autonomy granting, and behavioral control, has been shown to be associated with fewer externalizing behavioral problems (Doyle & Markiewicz, 2005), lower levels of anxiety and depression (Duchesne, Ratelle, Poitras, & Drouin, 2009), and better academic achievement (Brown & Iyengar, 2008). Longitudinal studies have provided further evidence regarding the long-term effects of parenting style on child development. For example, Joussemet, Koestner, Lekes, and Landry (2005) reported that maternal autonomy support assessed in kindergarten was associated with better academic and social adjustment in school for children at grade 3.

An important distinction between psychological control and behavioral control has been noted by some parenting scholars (Barber, Olsen, & Shagle, 1994; Barber, 1996; Sternberg, 2001). Behavioral control provides protection and structure and is usually associated with positive child development. In contrast, parental control that is



perceived by children as intrusive, overly harsh, and psychologically restraining is referred to psychological control and is believed to have negative influence on children. Psychological control is a parenting dimension that has been conceptualized as specific to adolescence (Sternberg, 2001). Adolescents who are beginning to develop their own beliefs and identities may perceive parents' attempts to interfere in their decision-making processes as overly controlling. However, it may not be appropriate to apply this construct to young children, for whom parental psychological control may not be developmentally relevant. Therefore, in the current study I only assess behavioral control and maternal responsiveness, two of the three dimensions of parenting style in my sample of elementary school aged children.

Behavioral control is believed to help children to develop a sense of self-regulation (Gray & Steinberg, 1999). With consistent monitoring and regulation, children are more likely to avoid risk-taking behaviors and develop good study habits such as completing homework on time. Thus, higher levels of behavioral control are likely to be associated with lower levels of externalizing problem behaviors and better academic performance. Responsiveness (or acceptance) is another dimension of parenting style that is linked to positive developmental outcomes among children (Maccoby & Martin, 1983). Parents who are high in acceptance may create a loving home environment which fosters a general feeling of well-being (Gray & Steinberg, 1999). For example, if a child experiences anxiety or stress at school, a responsive mother is likely to sense her child's tension and offer comfort and suggestions to this child. Thus, the child who feels such affection is less likely to develop internalizing problems and the advice offered by a

responsive mother may help enhance the child's coping skills and better adjustment at school.

Empirically, both parental responsiveness and behavioral control are found to be correlated positively with indicators of school adjustment. Barber and colleagues (1994) reported that behavioral control was associated with lower levels of externalizing behavioral problems in a sample of students of 5th, 8th, and 10th grades. Mattanah (2001) found parental limit-setting and parental warmth/responsiveness were both positively related to children's academic competence and negatively related to externalizing and internalizing problem behaviors in middle childhood. Similarly, Bronstein, Ginsburg, and Herrera (2005) reported that lack of parental guidance and coercive control in 5th grade predicted poorer academic results at 7th grade. Based on the theoretical and empirical evidence, it is hypothesized in the present study that behavioral control and responsiveness both are associated positively with academic grades and negatively associated with behavioral problems at school and school related stress.

Why do these dimensions of maternal parenting style promote or inhibit children's school success? In addition to their direct effects on academic achievement and psychosocial adjustment, parenting style may also impact child school outcomes by shaping children's social relationships and interactions in their immediate environment (Collins et al., 2000). In the next sections, I explore peers as one potential mechanism linking parenting to child school adjustment.

## **Peer Relationships as Predictors of School Adjustment**

Peer interactions and the quality of peer relationship are of critical importance to children's social and psychological adjustment (Betts et al., 2012; Ladd, 1999).

Researchers have postulated that both family and the peer group serve as critical socialization contexts within which children learn social rules and behaviors through experience and interactions with members of society (Criss, Shaw, Moilanen, Hitchings, & Ingoldsby, 2009; Harris, 2000). Unlike relationships with parents that are characterized by both authority and reciprocity (Kuczynski, Marshall, & Schell, 1997), the uniqueness of peer relationships is suggested by reciprocity and mutual respect among peers with more comparable levels of power (Youniss, 1985). This perspective suggests that parent-child relationships and peer relationships have both similar and unique influences on child development and adjustment.

Peers, as an important socialization context, provide both emotional and instrumental support that could help children adjust to school. Developing trustworthy relationships with peers provides intimacy and affection (Kingery, Erdley, & Marshall, 2011). Peer acceptance promotes positive interactions and prosocial behaviors. These interactions not only might represent a source of direct help with children's school work but also may create a friendly and emotion-sensitive environment to help reduce school-related stress and anxiety (Wentzel, 2009). In contrast, children having trouble communicating with peers or experiencing peer alienation are at a greater risk of developing behavioral problems or experiencing higher levels of stress (Betts, Rotenberg, Trueman, & Stiller, 2013; Hay, Payne, & Chadwick, 2004).

Empirically, the linkage between peer relationships and child school adjustment has been well recognized by scholars in this field. Ladd, Kochenderfer, and Coleman (1996) found that friendship quality within the classroom environment was associated positively with children's adjustment during their transition to elementary school. More recently, Betts and colleagues (2012) examined aspects of peer relationships as antecedents of school adjustment in two samples of children in their early school years. Results from this study indicated that children with higher ratings of peer liking had higher levels of school engagement and more positive attitudes towards school. In the present study, it is hypothesized that quality of peer relationships is associated positively with indicators of school adjustment.

### **Peer Relationships as Potential Mediators of Associations between Dimensions of Parenting Style and School Adjustment**

The social systems of family and peer group do not work in isolation but rather operate together to influence child well-being. Scholars have proposed several ways in which parents may influence children's peer relationships and competence (Mize et al., 2000; Parke & O'Neil, 1999). First, parents can influence children's peer relationships in their roles as educators, by providing supervision and guidance of their children's peer interactions. Second, parents may indirectly influence peer relationships and competence by shaping children's social skills that are needed to develop positive peer relationships. In addition, parents may provide opportunities for social encounters in which children develop and practice social skills (Parke & O'Neil, 1999). Empirical research exploring the links between parenting and peer relationships and competence is extensive (for a

review, see Brown & Bakken, 2011; Schneider et al., 2001). Following children from infancy to early adolescence, Howes and Tonyan (2000) found that the quality of mother–child relationships was associated with friendship quality in middle childhood and early adolescence. In another study, Mounts (2010) investigated parental management of peer relationship in a group of 7th graders. Findings indicated that parental guidance and consulting regarding peer interactions were related to more positive peer relationship quality.

Theoretically speaking, bioecological theory suggests that parents are likely to influence proximal processes that take place in peer contexts, which in turn shape child developmental outcomes. In other words, the manner and attitudes in which parents raise their children influence the ways in which children interact with peers. Peer relationships and competence that develop as a result of these processes are closely correlated with children's social and academic well-being at school (Betts et al., 2012; Ladd, 1999). Therefore, it seems likely that peer relationship quality may serve a potential mediator of the linkage between parenting style and school adjustment.

In fact, existing research has provided some empirical support for this mediation model. In a longitudinal study, Criss et al. (2009) found that supportive parenting in early childhood predicted better peer relations in middle childhood, which, in turn, predicted lower levels of antisocial behavior in early adolescence. Domitrovich and Bierman (2001) reported that warm, non-hostile parenting was associated with higher quality of peer relationships, which in turn was related to lower levels of loneliness and aggressive problem solving in a sample of 4th graders. Research with adolescents mainly has

focused on the mediating role of contact with deviant peers in the relation between parental supervision and adolescent problem behaviors (Keijsers et al., 2011; Reitz, Dekovi , Meijer, & Engels, 2006). These studies have indicated that overly controlling parenting leads to more deviant peer contacts, which, in turn, predicted more adolescent delinquency. However, to the author's knowledge, no published studies have examined peer relationship quality as a mediator linking parenting style to children's academic performance.

From the existing literature base and the bioecological theoretical perspective, I hypothesize that quality of peer relationships partially mediates the associations between the two dimensions of maternal parenting style—behavioral control and responsiveness—and indicators of school adjustment.

### **Child Gender as a Potential Moderator**

The bioecological model emphasizes the role of child characteristics as a factor that shapes development. Bronfenbrenner (2001) encouraged scholars to treat personal characteristics such as gender and ethnicity as predictors or moderators rather than controlling for these variables in developmental studies. Previous research has documented gender differences in mean levels of problem behaviors, social competence, peer group processing, and parenting behaviors (Masten, Juvonen, & Spatzier, 2009), yet what remains unknown is whether and how associations among these factors may differ for boys and girls. Given gendered socialization processes and temperamental differences between boys and girls, it is likely these associations differ. For instance, girls might be more responsive to parental acceptance and warmth as girls tend to be socialized in terms

of the development of relatedness and are more emotionally sensitive (Gilligan, 1982; Kashima, Yamaguchi, Kim, Choi, Gelfand, & Yuki, 1995). Thus, girls may benefit more from an accepting mother (in terms of alleviating school stress) more than do boys. Also, the protective effects of behavioral control in terms of behavioral problems may be stronger for boys as boys tend to be more vulnerable to environmental factors (e.g., neighborhood context) and have lower levels of internal control than do girls (e.g., Leventhal & Brooks-Gunn, 2011).

Studies that have sought to explore gender differences in such associations have begun to emerge with respect to parent and peer relationships (e.g., Chen et al., 2005; Kullik & Petermann, 2012). For example, in a sample of fifth graders, Rubin and colleagues (2004) found that better peer relationships buffered the negative effects of low maternal support on girls' internalizing problems, whereas having a supportive mother buffered the low quality friendship on boys' social competence. Chen et al. (2005) also reported that the effects of peer group functioning on the association between parenting and child school adjustment (i.e., behavior problems and academic achievement) were stronger for boys than for girls. However, Bascoe et al. (2009) failed to find gender differences in the strength of the path from parent-child relationship to peer processing or the path from peer processing to school adjustment in a group of 1<sup>st</sup> graders. These mixed findings suggest a need for further investigation of the role of gender with regard to associations among parenting, peer relationships, and school adjustment. Thus, I include child gender as one personal characteristic that may potentially moderate the paths among dimensions of maternal parenting style, peer relationship quality, and child school

adjustment. Given limited and inconsistent findings with regard to the potential role of gender as a moderator of such pathways, I do not have specific hypothesis about the direction or magnitude of moderation effects in the proposed models.

### **Child Ethnicity as a Potential Moderator**

Ethnicity is another personal characteristic that may influence peer processes, family dynamic, and child development. Socialization processes and availability of peer connections and family resources are likely to vary across various ethnic groups and cultures (Harris, 2000). For example, previous research has indicated that authoritarian parenting style are more prevalent among, and have a less negative impact on, African American children than European American children (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Sternberg, 2008). Cultural values and contextual factors may be responsible for these differences. African Americans, as an ethnic minority group, have a unique history of segregation and discrimination in the United States (Hill, 2006). Thus, African American parents may demonstrate a more restrictive parenting style in order to protect their children from potentially risky social environments and parental control in such cases may represent an expression of love and care rather. Given the unique cultural values and experiences of African Americans, it is reasonable to expect variations in peer and family processes, and that these variations may lead to differences in child outcomes. Yet the question as to whether ethnicity might moderate associations between parenting style dimensions and aspects of relationships with peers has seldom been tested empirically.



There is minimal research exploring parent and peer influences on children's adjustment in ethnic minority groups. Though some studies included ethnic diverse samples from urban, suburb, and rural areas in North America (e.g., Laible, Carlo, & Raffaelli 2000; Rubin et al., 2004), only a few have treated ethnicity as a moderator or included ethnic group comparisons (e.g., Deutsch, Crockett, Wolff, & Russell, 2012), and only two studies looked at a particular ethnic group (i.e., Chen et al., 2005; Chester, Jones, Zalot, & Sterrett, 2007). In Deutsch et al.'s study, the authors found that ethnic differences in paths linking parental support and control, deviant peer affiliation, and delinquency. Specifically, the protective effects of maternal support and the positive association between deviant peer affiliation and delinquency were stronger for European American youth than for African American youth. Also, their results indicated that the indirect path from parental control to deviant affiliation and then to delinquency was stronger for African American youth. Results of this study are consistent with the theoretical perspective that restrictive parenting may be beneficial to African American youth and also provide initial support for the moderated mediation model being tested in this study. More research is needed to replicate these findings and to explore other mediation models involving both parenting and peer variables. To address this gap in the literature, I include child ethnicity as another personal characteristic and examine it as a potential moderator in the proposed model. As is the case with gender, I do not have specific hypothesis regarding the direction or magnitude of moderation effects because of the limited research in this area.

## **The Present Study**

### **Research Questions and Hypotheses**

**Research Question 1.** Are dimensions of parenting style (maternal responsiveness and behavioral control) associated with children's school adjustment (academic grades, problem behaviors at school, and school related stress) concurrently and longitudinally?

**Hypothesis 1a.** Maternal responsiveness and behavioral control at 4th grade are associated positively with academic grades at 4th grade and with academic grades at 5th grade, controlling for 4th grade academic grades.

**Hypothesis 1b.** Maternal responsiveness and behavioral control at 4th grade are associated negatively with levels of problem behaviors at school and school related stress at 4th grade and with levels of problem behaviors at school and school related stress at 5th grade, controlling for 4th grade problem behaviors and stress at school.

**Research Question 2.** Is quality of peer relationships associated with children's school adjustment?

**Hypothesis 2a.** Levels of peer relationship quality at 4th grade are associated positively with academic grades at 4th grade and with academic grades at 5th grade, controlling for 4th grade academic grades.

**Hypothesis 2b.** Levels of peer relationship quality at 4th grade are associated negatively with levels of problem behaviors at school and school related stress at 4th grade and with levels of problem behaviors at school and school related stress at 5th grade, controlling for 4th grade problem behaviors and stress at school.

**Research Question 3.** Does quality of peer relationships mediate the associations between dimensions of parenting style and indicators of school adjustment?

**Hypothesis 3a.** Quality of peer relationships at 5th grade partially mediates the associations between maternal behavioral control and school adjustment both concurrently and in terms of longitudinal prediction of academic grades, problem behaviors at school, and school related stress at 5th grade, controlling for 4th grade levels of these variables.

**Hypothesis 3b.** Quality of peer relationships at 4th grade partially mediates the associations between maternal responsiveness and school adjustment both concurrently and in terms of longitudinal prediction of academic grades, problem behaviors at school, and school related stress at 5th grade, controlling for 4th grade levels of these variables.

**Research Question 4.** Does child gender moderate the associations among dimensions of maternal parenting style, quality of peer relationships, and indicators of school adjustment?

I do not have specific hypothesis about the direction or magnitude of moderation effects because of limited and inconsistent findings regarding the potential role of gender as a moderator of such pathways.

**Research Question 5.** Does child ethnicity moderate the associations among dimensions of maternal parenting style, quality of peer relationships, and indicators of school adjustment?

I do not have specific hypothesis about the direction or magnitude of moderation effects because of limited studies regarding the potential role of ethnicity as a moderator of such pathways.

## CHAPTER III

### METHOD

#### **Participants**

Participants included 347 children and their mothers from nine public elementary schools in a county in the southeastern United States. Children ( $M_{\text{age}} = 9$  years and 5 months in wave 1,  $SD = .5$  years; 53% girls) and their mothers were interviewed in fourth grade during the first wave and fifth grade during the second wave. Sixty-two percent of the participants were European American, and 38% were African American.

Socioeconomic status (SES) of participating families was diverse, ranging from 9 (unskilled laborers) to 66 (major business persons and professionals), with a mean of 43 (medium business personnel and minor professionals), based on the Hollingshead (1975) four factor index obtained in year 1 interview. Seventy-eight percent of mothers had a relationship partner living within the household.

#### **Measures**

##### **Demographic Variables**

Demographic information was gathered via an interview with mothers in year 1. Questions asked about family members' ethnicity, age, and gender, parents' educational levels, and their current occupations. Educational and occupational information was used to calculate a social class score for each child via the Hollingshead (1975) four factor index of social status. Presence of a maternal relationship partner was indicated by a

dichotomous variable: whether the mother had a relationship partner (husband or significant other) living within the household.

### **Dimensions of Maternal Parenting Style**

Dimensions of maternal parenting style were assessed using the 108-item Children's Report of Parenting Behaviors Inventory (CRPBI; Schludermann & Schludermann, 1970). The CRPBI consists of 18 subscales and 3 superordinate scales assessing children's perceptions of parental acceptance, control, and autonomy granting. Children rate each statement on a 3-point scale ranging with 1 (*My mother is not like...*), 2 (*My mother is a little like...*), and 3 (*My mother is a lot like...*). The measure of parental responsiveness in this study was the 50-item acceptance superordinate scale. Sample items from this subscale include "worries about me when I am away," "gives me a lot of care and attention," and "enjoys doing things with me." The alphas for year 1 and year 2 were .87 and .90, respectively. The measure of behavioral control was the 25-item firm control superordinate scale. Sample items from this subscale include "sees to it that I know exactly where I may or may not do," "is easy with me" (reverse coded), and "sticks to a rule instead of allowing a lot of exceptions." The alphas for year 1 and year 2 were .71 and .74, respectively. Summary scores for both parenting style variables were computed by summing items within each subscale and then combining weighted subscales. Higher scores were indicative of higher levels of parental responsiveness and behavioral control.

## **Peer Relationships**

The quality of peer relationships was assessed through the Inventory of Parent and Peer Attachment (IPPA, Armsden & Greenberg, 1987). The IPPA is a 53-item self-report scale that assesses children's perceptions of their relationships with mothers and peers. The relationship with peer scale has 25 items and three subscales (communication, trust, and alienation). Children rate each statement on a 5-point scale ranging from (1) *almost never or never true* to (5) *almost always or always true*. Sample items include "My friends sense when I'm upset about something" and "My friends understand me." In the present study, peer alienation subscale is not used because alienation is likely to have different mechanism on children's adjustment from that of positive aspects of peer interaction. In my sample, the two positive subscales (communication and trust) were correlated at .59 and .64 for year 1 and year 2. Therefore, items from these two subscales were averaged to create an overall peer relationship quality score. Higher scores are indicative of better quality of peer relationships. The Cronbach's alphas for the peer relationship quality subscale for year 1 and year 2 were .88 and .90, respectively.

## **School Related Stress**

The School Situation Survey (Helms & Gable, 1989) was used to assess school related stress. It is a 34-item survey designed to assess sources of stress (teacher interaction, academic stress, peer interactions, and academic self-concept) and manifestation of stress (emotional, behavioral, and physiological) within the school environment. Children's responses were on a 5-point scale ranging from (1) *hardly ever* to (5) *most of the time*. A composite score of sources of stress was formed by averaging

items from the teacher interaction, academic stress, peer interactions, and academic self-concept subscales. A sample item from the sources of stress subscale is "Some of my teachers yell at me for no reason." The Cronbach's alphas for this scale for year 1 and year 2 were .83 and .84, respectively. Similarly, a composite score of school related manifestations of stress was formed by averaging items from three subscales of the manifestation of stress scale. A sample item from this subscale is "I feel angry at school." The Cronbach's alphas for year 1 and year 2 were .85 and .85, respectively.

### **Problem Behaviors**

Children's problem behaviors were assessed using the Teacher's Report Form (TRF; Achenbach & Edelbrock, 1981). The TRF is a standardized 118-item problem items measure used in the school setting to assess a broad spectrum of child behaviors. For each statement, teachers indicate whether children exhibit specific behaviors on a 3-point scale ranging from (0) *not true* to (2) *very true or often true*. The externalizing behaviors grouping and social problems syndrome subscale are used in the current study. The externalizing behaviors grouping assesses children's rule-breaking behaviors and aggressive behaviors at school. Sample items include "Breaks school rules" and "Demands lots of attention." The social problems syndrome subscale measures children's difficulty experiences in their peer relationships and interactions at school. Sample items include "Lonely" and "Doesn't get along with other pupils." Item scores for each scale were summed, and higher scores on the scales indicate higher levels of behavioral problems. These two problem behavior variables were highly skewed with approximately half of children having scores of zero on each subscale. Therefore, a dichotomous



variable was created for each problem behavior scale using median splits of distributions, with 0 indicating few or no problem behaviors and 1 indicating more problem behaviors.

### **Academic Achievement**

Children's academic achievement was measured using end-of-year grade point average (GPA). With permission from parents, official academic grades were obtained from participating schools. GPA was on a 4-point scale and was calculated for each child by averaging grades in math and reading.

### **Procedure**

Following approval from the university's Institutional Review Board, participants were recruited from nine public elementary schools in a county in the southeastern United States. Parents of all eligible students in participating schools were sent a letter describing the study and asking students to participate. Upon mothers' written consent and children's oral assent, mothers and children were interviewed by two research assistants. Interviews took place during children's fourth grade school year and again during children's fifth grade school year in a location of their choosing (e.g., the participants' homes, a university laboratory). Mothers and children completed questionnaires and answered interview questions separately. Mothers completed questionnaires with the help of research assistants if they appeared to be having difficulty completing measures. All questionnaire items were read aloud to children, and children indicated their answers to the interviewers.

## **Plan of Analysis**

The data were analyzed in multiple steps using SPSS (version 20). First, descriptive statistics and correlations among main variables were presented.

To address Research Question 1, I conducted multiple regression analyses to evaluate associations between dimensions of parenting style and indicators of children's school adjustment. For cross-sectional analyses, for each school outcome variable (end-of-grade GPA, manifestations of school related stress, sources of stress at school, externalizing behavioral problems at school, and social problems at school), a two-step hierarchical multiple regression was performed. At step one, family social class, maternal partner status, child ethnicity, and child gender were entered as control variables. At step two, maternal responsiveness and behavioral control were entered. For short-term longitudinal analyses, the steps were the same except that previous year levels of outcome variables were also included as control variables.

To address Research Question 2, multiple regression analyses were conducted to evaluate associations between quality of peer relationships and each indicator of school adjustment. A two-step hierarchical multiple regression was performed for each school adjustment variable. For cross-sectional analyses, the previously identified control variables were entered at step one. At step two, scores of peer relationship quality were entered. For longitudinal analyses, the steps were the same except that previous year levels of outcome variables were also included as control variables.

To test the hypothesis that the associations between dimensions of parenting style and school adjustment are mediated partially by peer relationship quality (Research

Question 3), I applied Baron and Kenny's (1986) three-step mediation model on each outcome variable and each stylistic dimension of parenting ( $5 * 2 = 10$  models). Maternal responsiveness and GPA are presented as an illustration. First, to test path a, peer relationship quality was entered as the dependent variable and maternal responsiveness as the independent variable. To test paths b and c', maternal responsiveness was entered first as a predictor of GPA to get coefficients for path b; next, peer relationship quality was entered to get coefficients for path c'. Coefficients for path c were obtained by regressing GPA on maternal responsiveness. Bootstrapping methods and confident intervals were used to test the significance of indirect effects. In all the regression analyses, family social class, maternal partner status, child gender, and child ethnicity were entered first as control variables. These mediation models were tested using all grade 4 data (cross-sectional analyses) and again using combined data from grades 4 and 5 (longitudinal analyses; adding grade 4 levels of school adjustment variables as additional controls when testing paths b, c, and c').

Finally, hierarchical regression analyses were conducted to evaluate child gender and ethnicity as potential moderators of the mediation model. These analyses were similar to those in the above mediation models, but an additional step was added to each hierarchical regression. In the final step, product terms between child gender (or ethnicity) and parenting variables or peer relationships variables (predictor variables) were entered to determine whether the strength of associations differ for boys versus girls (or for White and Black children). Both mediation and moderated mediation models were

tested using the SPSS Macro (PROCESS) developed by Hayes (2013) and what described above are how these analyses would be conducted conceptually.

## CHAPTER IV

### RESULTS

#### **Preliminary Analyses**

Only 1.6% of data were missing and these data were missing completely at random,  $\chi^2(66) = 66.916, p = .48$ . Therefore, single imputation was conducted using a fully conditional specification model (Acock, 2005). A fully conditional specification model uses information from all other variables available to predict missing values on any variable (Schafer, 1997).

Descriptive statistics and correlations for main variables are presented in Table 1. Zero-order correlations were in the expected directions. The two parenting style variables (maternal responsiveness and behavioral control) were positively correlated with peer relationship quality. In general, higher levels of maternal responsiveness were associated with greater child school adjustment; however, behavioral control was not correlated with indicators of child school adjustment. Peer relationship quality was positively associated with GPA and negatively associated with stress but unassociated with problem behaviors. Most of the indicators of child school adjustment were strongly intercorrelated.

#### **Conditions for Mediation**

Baron and Kenny's (1986) three-step mediation model requires testing associations between independent variables and dependent variables, between independent variables and mediators, and between mediators and dependent variables.

Therefore, I conducted a set of multiple regression analyses to test these associations with demographic controls (child gender, ethnicity, social class, and maternal partner status) included. For short-term longitudinal analyses, previous year levels of outcome variables were also included as control variables. Two outcome variables, externalizing problem behaviors and social problems, were dichotomous variables. Thus, binary logistic regressions were used for these two variables. Results of regression analyses are reported in Tables 2-5.

For associations between dimensions of parenting style and child school adjustment variables (Research Question 1 and mediation condition path c), higher levels of maternal responsiveness were associated with lower levels of manifestation of school stress,  $t(345) = -3.97, p < .001$ , lower levels of sources of stress at school,  $t(345) = -6.42, p < .001$ , and higher GPA,  $t(345) = -2.26, p = .025$ . Higher levels of behavioral control were associated with a higher probability of having social problems at school, Wald  $\chi^2(1) = 7.37, p = .007$ . This statistic indicates that for a one unit change in behavioral control, there is 16% increase in the odds of being in the having social problems group. Longitudinally, higher levels of responsiveness at grade 4 were associated with lower levels of manifestation of school stress at grade 5,  $t(345) = -2.37, p = .018$ . Higher levels of behavioral control at grade 4 were associated with higher GPA at grade 5,  $t(345) = 2.27, p = .024$ . These results only partially supported my hypotheses. Higher levels of maternal responsiveness and behavioral control were only associated with some child school adjustment outcomes. Contrary to my hypothesis, behavioral control was associated with having more social problems at school.

With regard to associations between peer relationship quality and child school adjustment outcomes (Research Question 2 and mediation condition path b), the data only partially supported cross-sectional hypotheses and did not support longitudinal hypotheses. At grade 4, higher levels of peer relationship quality were associated with lower levels of manifestation of school stress,  $t(345) = -3.15, p = .002$ , and lower levels of sources of school stress,  $t(345) = -5.96, p < .001$ . In addition, there was a trend indicating that higher levels of peer relationship quality were associated with higher GPA,  $t(345) = 1.83, p = .065$ . Levels of grade 4 peer relationship quality did not predict grade 5 indicators of child school adjustment.

The last set of analyses concerned associations between dimensions of parenting style and peer relationship quality (mediation condition path a). Results indicated that both maternal responsiveness and behavioral control were associated with peer relationship quality,  $t(345) = 7.46, p < .001$  for responsiveness;  $t(345) = 1.97, p = .05$  for behavioral control. Based on the results and Baron and Kenny's (1986) mediation model, only three groups of variables met requirements for tests of mediation. The independent variable was the same: maternal responsiveness. The mediation variable was peer relationship quality. Dependent variables were manifestation of school stress, source of school stress, and GPA. Variables were all from grade 4 data, meaning that tests of mediation could only be tested cross-sectionally.

### **Moderated Conditions for Mediation**

Though Baron and Kenny's (1986) mediation model has been widely accepted, some scholars argued that it is also possible that some of the conditions for mediation to

be masked if there are moderational effects for these associations (Iacobucci, 2008; MacKinnon, 2008). Therefore, I conducted another series of regression analyses parallel to the regressions described in the previous section but including child gender and ethnicity as moderators to test whether conditions for mediation were met within groups defined by different levels of the two potential moderators. The first two steps of regressions (control variables and main independent variables) were the same, as described above. In the third step, I entered interaction terms for gender x parenting/peer variable and ethnicity x parenting/peer variable. In the fourth step, I entered the interaction term for gender x ethnicity x parenting/peer variable.

For cross-sectional analyses, a total of three out of 45 interaction terms were significant at  $p < .05$ . Similarly, for longitudinal analyses, three out of 45 interaction terms were significant. Overall, only 7% of all interaction analyses conducted were significant, a rate that is very close to chance level. Moreover, significant interactions did not demonstrate any clear patterns (3 gender, 1 ethnicity, 2 gender x ethnicity). Therefore, a decision was made to conduct mediational tests for the sample as a whole. However, issues of moderation were revisited in subsequent analyses.

### **Mediational Analyses**

To conduct mediational analyses, I used the SPSS Macro (PROCESS) developed by Hayes (2013). PROCESS uses regression-based path analyses to estimate indirect and direct effects in various types of models involving mediation and moderation. It also uses bootstrapping methods to estimate indirect effects. Three sets of analyses were run for the three models that met mediational conditions. Child gender, ethnicity, social class,



and maternal partner status were entered as control variables, maternal responsiveness was the independent variable, peer relationship quality was the mediator variable, and the three dependent variables were sources of school stress, manifestation of school stress, and GPA. All data were from grade 4.

Only one mediation model was significant (See Figure 1). That is, peer relationship quality partially mediated the association between maternal responsiveness and sources of school stress. All paths in the mediation models were significant. The effect of maternal responsiveness on sources of school stress was reduced from  $\beta = -.089$ ,  $t = -6.42$ ,  $p < .001$  to  $\beta = -.067$ ,  $t = -4.59$ ,  $p < .001$ , after taken peer relationship quality into account. The indirect effect was significant,  $\beta = -.023$ , 95% CI [-.035,-.010]. The results only partially supported the hypothesis that peer relationship partially mediated the associations between maternal parenting style and indicators of child school adjustment in that mediation was observed for only one of these indicators.

### **Moderated Mediation**

PROCESS (Hayes, 2013) was also used to conduct moderated mediation analyses for the three models that met mediational conditions. Parallel to mediation analysis, moderation analyses were only conducted on the three models that met mediation conditions. Variables were the same as for previously reported mediation analysis. For each model, three sets of moderation analyses were performed. Gender, ethnicity, and gender by ethnicity were each entered into the mediation model to test for moderation in all three paths (direct and indirect) simultaneously.

Only one moderation effect was significant. That is, child gender moderated the association between maternal responsiveness and sources of school stress,  $b = -.063$ ,  $t = 2.16$ ,  $p = .032$ . The direction of coefficients (negative main effects, positive interaction term) indicated that the benefits of responsiveness were weaker for boys than for girls. Follow-up tests confirmed that the association between responsiveness and sources of school stress was stronger for girls,  $b = -.100$ ,  $t = -4.84$ ,  $p < .001$ , than for boys,  $b = -.037$ ,  $t = -1.81$ ,  $p = .036$ . Only one out of nine (3 outcome variables \* 3 moderators) moderation models was significant and this moderation effect was for the direct path linking parenting to child outcomes. Therefore, it seems safe to conclude that no moderated mediation was present in the proposed models.

## CHAPTER V

### DISCUSSION

Family and peers are two of the most important contexts that shape children's development. Bioecological theory suggests that these two contexts are interlinked to impact children's daily lives and should be examined in integrated models. Yet, the mechanism through which these two relationship systems work together to influence children's well-being, especially during middle childhood, remains largely unknown. To fill this gap in the literature, the goal of the current study was to examine a mediation model that links maternal parenting style to child school adjustment via peer relationship quality, using Bronfenbrenner's bioecological model as a conceptualizing framework. The results of the present study suggest that both maternal responsiveness and peer relationship quality are associated with children's academic well-being. However, the proposed mediation model was not supported.

#### **Direct Effects of Dimensions of Parenting Style**

Cross-sectional analyses indicated that maternal responsiveness was associated with numerous indicators of child school adjustment, at least cross-sectionally. On the other hand, maternal behavioral control was largely unassociated with indicators of child adjustment. Why was responsiveness, but not behavioral control, related to child outcomes? Findings in terms of responsiveness are highly consistent with a body of research that has reported that children whose parents are warm, responsive, and

supportive tend to have better developmental outcomes in multiple domains that include those of interest in the current investigation—lower levels of sources of stress at school, fewer manifestations of school related stress, and higher academic achievement (e.g., Barber et al., 1994; Mattanah, 2001). Responsive and accepting mothers likely create a home environment that makes children feel loved and cared for and thus insulates them from pressure and stress from school.

Structure and rule setting (behavior control) in such environments are likely to benefit children as well. However, behavior control, if expressed in a harsh manner, may lead to dysfunction among children, such as anxiety and poor academic achievement. This possibility is consistent with the theoretical perspective of Darling and Steinberg (1993) in that mothers displaying similar levels of behavior control practice may express it in totally different manners. Gray and Sternberg (1999) also discussed the possible interactive effects among various dimensions of parenting style. It may be that behavioral control is only beneficial for children's academic adjustment when it is experienced in the context of high responsiveness. Findings in the current study are consistent with theoretical perspectives in the parenting literature and reinforce the need to consider the parenting climate in which behavioral control occurs.

Interestingly, behavioral control was associated with more social problems, contrary to my hypothesis. It is likely that this association is bi-directional and that mothers respond to children with existing problems with more controlling behavior. Also, it could be the case that for children who are experiencing anxiety related to school experiences, being exposed to parenting that pushes them out of their comfort zones may

exacerbate their existing problems. This finding further illustrates that the relationship between behavioral control and child outcomes may be a complex one, varying across domains of outcomes and child characteristics and depending on the reasons why control is exerted. Also, this result should be interpreted with caution given the small effect size of this association (one SD change of the independent variable results in about 16% change in the outcome variable). Further research is warranted to explore the complex nature of associations between behavioral control and child development and take into account of the characteristics of children, which bioecological theory would suggest are important.

In addition, some parenting scholars have suggested a curvilinear relationship between behavioral control and child problem behaviors in that too little or too much control may lead to problems rather than reducing them (Gray & Sternberg, 1999). This proposal has received some empirical support. For example, in an African American adolescent sample, Mason, Cauce, Gonzales, and Hiraga (1996) reported a curvilinear relationship between maternal behavioral control and adolescent problem behavior, controlling for initial levels of problem behavior. In the current study, I did not include squared terms in the regression analyses so only linear relationships could be detected. If there were a curvilinear relationship present in my data, I would have missed it.

Longitudinally, only two significant effects emerged related to the prediction of change in indicators of school adjustment—one between maternal responsiveness and manifestation of school stress and the other between maternal behavioral control and GPA. The lack of short-term longitudinal effects of maternal parenting style in general

may be partially due to the inclusion of previous year outcome variables as controls—making longitudinal analyses a highly conservative test of change in child adjustment outcomes over a one year period of time. Variances in child adjustment variables accounted for by dimensions of parenting style may have been manifested in previous year adjustment variables. A one year period may not add much more variance to account for because no significant developmental transitions took place from grade 4 to grade 5. This perspective is in line with bioecological theory in that age (person characteristics) and context changes (from elementary school to middle school) should be considered in developmental research. Longitudinal effects of dimensions of parenting style may be more evident during the transition to adolescence and to middle school when multiple changes are taking place and effects of parenting on children’s school adjustment are more likely to be observed.

Despite the potential difficulty in detecting change over a one-year period, I was able to in two cases. There was a significant longitudinal positive association between maternal behavioral control and grade 5 GPA, controlling for GPA in grade 4. Behavioral control provides structure and guidance that may help children spend more time studying and develop good study habits (e.g., completing homework on time). Once good study habits are formed, children are very likely to continue investing time studying which will likely result in better grades. Thus, behavioral control may impact children’s academic grades both in the short term and over an extended period of time. Also, maternal responsiveness at grade 4 predicted fewer manifestations of school stress at grade 5, controlling for manifestations of school stress at grade 4. Again, a positive emotional

climate that parents create in the home setting could help alleviate stress at school and this influence may be long-lasting. Given the inclusion of previous year outcome variables as controls, these longitudinal associations between dimensions of parenting style and child adjustment outcomes reinforce the importance of dimensions of parenting style on children's adjustment over the course of their development.

### **Direct Effects of Peer Relationship Quality**

Cross-sectionally, the quality of peer relationships was negatively associated with both indicators of school-related stress and positively associated with GPA, as predicted. Results of this study parallel those reported by Kingery et al. (2011) in which peer acceptance emerged as a significant predictor of academic achievement. This finding is consistent with bioecological theory in that proximal processes (peer interaction and relations) have a direct impact on children's developmental outcomes (academic well-being). Peers may support each other emotionally by offering companionship and could also provide direct academic assistance with school work (Wentzel, 2009). Yet these results should be interpreted with caution because it is also possible that better adjusted children both have more positive peer relationships and have better school experiences. Moreover, the effect sizes for the effects of peer relationship quality were relatively small ( $< .30$ ), especially for GPA (about  $.10$ ), which suggests that other factors (such as parenting variables and educational aspiration) as well as peer variables are responsible for changes in child school adjustment.

Few short-term longitudinal effects of peer relationships on child school adjustment were found in the current study. This is not surprising though. Proximal

processes refer to the enduring interaction between the developing person and the immediate environment. Peer contexts are highly likely to change over time (Neckerman, 1996) and thus the influence of peers may be more immediate and short-term. Concurrent peer interactions and relationships may be more likely to exert influence on children than is peer relationship quality from the previous year.

Surprisingly, I did not find significant direct effects of peer relationship quality on children's problem behaviors. This finding is contrary to other studies within which such effects have been reported (e.g., Chester et al., 2007; Criss et al., 2009). The lack of significant effects may be partially accounted for by the fact that only positive dimensions of peer relationships were included in the analyses. The existing literature on peer influence has indicated positive associations between children's problem behaviors and affiliation with devious peers (e.g., German et al., 2009). In the current study, however, negative dimensions of peer relationship such as peer alienation and affiliation with devious peers were not included. It also should be noted that about half of the children in the current study had no indicated problem behaviors (which were rated by their teachers) and only a small percentage of children had scores that might indicate a serious behavioral problem. The low variability in the measure of problem behaviors is likely a consequence of sampling (a community sample rather than a clinical one) and restricted statistical power for detecting potential associations.

### **Indirect Effects of Parenting Style**

I hypothesized that quality of peer relationships would mediate the associations between dimensions of parenting style and indicators of school adjustment. Concurrently,



peer relationship quality partially mediated the negative association between maternal responsiveness and sources of school stress. This finding is consistent with Domitrovich and Bierman's (2001) findings that among 4<sup>th</sup> graders, warm parenting was associated with better peer relationships, which in turn related to positive functioning at school. However, no significant mediation was found between behavioral control and any of the child outcome variables. As discussed earlier, the effect of behavioral control on child development is likely to vary depending on the amount of control and the manner in which control is expressed. Findings of the current study seem to suggest that extent to which parents provide warm and nurturing environment for their children, more than the provision of structures and direct guidance (behavior control), facilitates children's peer relationships which are linked to less stressful experiences in the school environment.

However, mediational hypotheses were not supported longitudinally in a one-year period. Dimensions of parenting style have been shown to have long-lasting effects on children across several developmental domains. For instance, Criss et al. (2009) found mediation effects of peer group acceptance (averaged ratings of social preference from peers) on the path between supportive parenting and antisocial behaviors following children from early childhood to early adolescence. As discussed earlier, it is possible that the period between two time points in the current study (one year) was not long enough to capture changes in children. Given the inclusion of the previous year's levels of outcome variables in models, it could be the case that children did not display enough change in outcome variables over a one year period of time to be statistically significant. If problems already exist, it may take years for parenting to further impact children. The

lack of significant short-term longitudinal effects in the current study may also suggest that for some children, middle childhood represents a stable period of development.

### **Gender and Ethnicity as Moderators**

Although previous research and bioecological theory suggest potential gender and ethnicity differences in associations between parenting and peer variables, results of the current study generally did not support the moderation role of gender or ethnicity in the proposed mediation model. Though some moderation effects of gender were found in the paths linking parenting style to child outcomes, these effects were only for the direct path. It may not be surprising that no significant moderated mediation effects were found. In fact, previous research that reported gender differences has mainly focused on the direct paths between parenting and child adjustment and between parenting and peer relationships (e.g., Chen et al., 2005; Rubin et al., 2004). The one significant interaction effect for this study, however, is consistent with predictions. That is, the benefits of maternal responsiveness in terms of lower levels of school stress were stronger for girls than for boys, which suggests that girls are more responsive to the warm environment an accepting and supportive mother creates. This study was the first attempt to explore the role of gender and ethnicity in a mediation model and seems to suggest that the peer process is more complex than expected. That is, gender or ethnicity may function differently in relation to various paths linking parenting, peer relationships, and child outcomes rather than affecting the whole mediation model the same way.

### **Limitations and Directions for Future Research**

The current investigation used short-term longitudinal data to test a mediation model that links parenting, peer relationship, and child school adjustment and examined the potential moderation roles of gender and ethnicity. Though innovative, this study did have several limitations. First, the findings were limited because prospective and cross-sectional analyses do not allow for conclusions regarding the directionality of effects in my models. I only had data at two points in time and could not elucidate the influence of the variables as they unfolded over time. It is plausible that child outcomes or peer relationship quality may affect how parents regulate their children as well. For example, parents may respond to children with existing behavioral problems with more control and/or in a strict manner. Moreover, a true longitudinal study requires at least three waves of data. Thus, future research would benefit from data gathered at multiple time points to examine alternative models that may explain the possible transactional dynamics accounting for relationships among parenting, peer relationships, and child school adjustment.

Second, the results were limited by the measures that were used to assess the key variables. A single indicator of peer relationship quality was not a well justified representation of peer processes. Proximal processes are defined as enduring forms of reciprocal interactions between the developing person and the objects, persons, and symbols in his or her immediate environment (Bronfenbrenner & Morris, 2006). Corresponding to this definition, the assessment of process is better captured through observational data that is bidirectional and extends across some period of time (Tudge,

Odero, Hogan, & Etz, 2003). If only self-report measures are possible, information from both parties (i.e., two persons involved in the interaction) is necessary, and items in the measures should be detailed and descriptive so that processes might be described thoroughly. Another limitation is that two of outcome variables (social problems & externalizing problems) were dichotomized. Dichotomizing variables decreased statistical power to detect effects and limited the ability to distinguish children with a few problems versus a great many problems. However, the decision to dichotomize was based on the fact that these two variables were highly skewed in that about half of the participants had a score of zero. Efforts to transform these variables were unsuccessful. Furthermore, most of the measures (all parenting and peer variables and some of child outcome variables) in this study were based on child self-report. This may potentially bias the results because parents or peers may perceive relationships or behaviors differently than children do (Pettit & Arsiwalla, 2008). In light of these issues, future research should aim to gather information from multiple informants (both parents and children) and use observation if possible, or at least use multiple indicators to represent peer processes. Yet including several outcome variables that were not based on child self-report (GPA from school records and problem behaviors based on teacher's reports) represents a strength of the current investigation.

Finally, this study is limited by the statistical technique that was used to analyze the data. In this study, I used multiple regressions to apply Baron and Kenny's (1986) approach to test my mediation model. Baron and Kenny's (1986) method is a classic approach to test mediation but has its own limitations. I could only test my outcome

variables one at a time but indicators of school adjustment (GPA, stress, problem behaviors) are likely to be correlated with each other. Statistical tools such as structural equations models (SEM) would allow me to account for mediational interrelationships among variables (Iacobucci, 2008). SEM could also enhance the reliabilities of measured constructs and allow tests of multiple mediators. If data from multiple informants or observations were available, I could use SEM to test the process model more precisely and with greater reliability. As such, future research could build on the conceptual model but test it with more advanced statistical methods.

### **Conclusion**

Parents and peers represent two important contexts for children and exert substantial influence on child development. This study provides evidence that parents and peers make unique contributions to children's adjustment at school during middle childhood. More importantly, it examined peer relationships as a mechanism that might link dimensions of parenting style to child school adjustment. Bioecological theory provided a theoretical framework for this current investigation by linking parent, peer, and child factors in a meaningful way. Results of this study indicated that maternal responsiveness and behavioral control are both linked to children's well-being at school, but only maternal responsiveness has indirect effects on children's school adjustment via its influence on peer interactions and relationships. This study represents a first step in examining the complex mechanisms involving parenting, peer relationship quality, and child adjustment even while it is limited by measurement and analytical approaches. Further research should continue to explore the mechanisms that represented the focus of

this study using more elaborated measures of peer interaction and advanced statistical tools.

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APPENDIX A

TABLES

Table 1

Maternal Parenting, Peer Relationship Quality, and Child School Adjustment Variables: Correlations and Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Responsiveness 4th grade	-												
2. Behavioral control 4th grade	.172**	-											
3. Sources of stress 4th grade	-.338**	.022	-										
4. Sources of stress 5th grade	-.256**	.033	.566**	-									
5. Manifestations of stress 4th grade	-.229**	.050	.714**	.524**	-								
6. Manifestations of stress 5th grade	-.247**	.016	.521**	.669**	.648**	-							
7. GPA 4th grade	.169**	.022	-.473**	-.376**	-.357**	-.341**	-						
8. GPA 5th grade	.111*	.099	-.390**	-.407**	-.355**	-.278**	.635**	-					
9. Externalizing problems 4th grade	-.087	.094	.224**	.219**	.226**	.270**	-.376**	-.359**	-				
10. Externalizing problems 5th grade	-.122*	.055	.260**	.260**	.274**	.309**	-.385**	-.374**	.600**	-			
11. Social problems 4th grade	.000	.155**	.207**	.197**	.228**	.165**	-.269**	-.241**	.467**	.307**	-		
12. Social problems 5th grade	-.065	.001	.274**	.307**	.266**	.280**	-.251**	-.291**	.284**	.532**	.306**	-	
13. Peer relationship quality 4 <sup>th</sup> grade	.388**	.066	-.343**	-.141**	-.211**	-.147**	.163**	.089	-.030	-.070	-.023	-.002	-
Minimum	17.71	16.40	1.00	1.00	1.00	1.00	.00	.05	.00	.00	.00	.00	1.00
Maximum	29.18	28.00	4.28	3.95	4.33	4.20	4.00	4.00	1.00	1.00	1.00	1.00	5.00
Mean	25.69	23.61	1.91	1.88	1.75	1.69	3.11	3.07	.41	.47	.43	.49	3.91
SD	2.06	2.18	.59	.56	.61	.57	.84	.86	-	-	-	-	.66

Note. \* $p < .05$ . \*\* $p < .01$ .

Table 2

Regression Analyses Predicting Child School Adjustment and Peer Relationship Quality from Maternal Responsiveness—  
Grade 4

Step	Predictor	Child School Adjustment Variables				Peer relationship quality			
		Sources of stress		Manifestation of stress			GPA		
		$R^2$		$R^2$				$R^2$	
1	SES	-.180**		-.168**		.379**		-.030	
	Gender (male=1, female=0)	-.053		-.066		-.157**		.006	
	Ethnicity (Black=1, White=2)	-.128*		-.132*		.218**		.194**	
	Maternal partner status	-.163*		-.107†		.083		.067	
	Total $R^2$		.133**		.104**		.318**		.048**
2	Maternal responsiveness	-.310**	.094**	-.201**	.040**	.101*	.010*	.370**	.134**
	Total $R^2$		.227**		.143**		.328**		.182**
2	Maternal behavioral control	.005	.0	.031	.001	.078	.006	.107*	.011*
	Total $R^2$		.133**		.105**		.324**		.059**
2	Peer relationship quality	-.293**	.082**	-.164**	.025**	.083†	.007†	-	-
	Total $R^2$		.215**		.129**		.325**		-

Note. The first step is the same for two dimensions of parenting and peer relationship quality.

† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ .

Table 3

## Regression Analyses Predicting Child School Adjustment from Maternal Parenting Style-Grade 4 to Grade 5

Step	Predictor	Child School Adjustment Variables					
		Sources of stress		Manifestation of stress			
			$R^2$		$R^2$		
1	SES	-.107*		-.094*		.045	
	Gender (male=1, female=0)	.063		.058		-.118**	
	Ethnicity (Black=1, White=2)	-.002		.001		.00	
	Maternal partner status	.031		-.001		.030	
	Grade 4 outcome variable	.547**		.628**		.588**	
	Total $R^2$		.333**		.431**		.418**
2	Maternal responsiveness	-.069	.004	-.100*	.009*	.001	.00
	Total $R^2$		.338**		.440**		.418**
2	Maternal behavioral control	.017	.00	-.020	.00	.097*	.009*
	Total $R^2$		.334**		.432**		.427**
2	Peer relationship quality	.058	.003	-.009	.00	-.015	.00
	Total $R^2$		.336**		.431**		.418**

*Note.* The first step is the same for two dimensions of parenting and peer relationship quality. Parenting and peer variables are from grade 4; child school adjustment variables are from grade 5.

<sup>†</sup>p < .10. \*p < .05. \*\*p < .01.

Table 4

## Logistic Regression Analysis for Parent and Peer Variables Predicting Child Problem Behaviors--Grade 4

Step	Predictor	Child Behavioral Problems					
		Externalizing Problems			Social Problems		
		<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>
1	SES	-.02	.01	.98	-.02	.01	.98
	Gender (male=1, female=0)	1.06**	.24	2.88	.30	.22	1.35
	Ethnicity (Black=1, White=2)	-1.10**	.28	.33	-.33	.27	.72
	Maternal partner status	-.22	.32	.81	-.30	.30	.74
2	Maternal responsiveness	-.040	.057	.97	.03	.06	1.03
	Constant	2.80	1.50	16.43	.49	1.43	1.63
	$t^2_1$		54.20**			13.88*	
2	Maternal behavioral control	.05	.06	1.05	.15**	.06	1.16
	Constant	.83	1.48	2.29	-2.48	1.41	.08
	$t^2_1$		54.42**			21.25**	
2	Peer relationship quality	.13	.19	1.14	.03	.17	1.03
	Constant	1.49	.81	4.42	1.02	.77	2.78
	$t^2_1$		54.26**			13.68*	

*Note.* The first step is the same for two dimensions of parenting and peer relationship quality.

\* $p < .05$ . \*\* $p < .01$ .

Table 5

## Logistic Regression Analysis for Parent and Peer Variables Predicting Child Problem Behaviors--Grade 4 to Grade 5

Step	Predictor	Child Behavioral Problems					
		Externalizing Problem			Social Problem		
		<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>
1	SES	-.02	.01	.98	-.04**	.01	.97
	Gender (male=1, female=0)	.47	.30	1.60	.32	.24	1.38
	Ethnicity (Black=1, White=2)	-.78*	.34	.46	.24	.29	1.27
	Maternal partner status	-.95*	.39	.39	-.98**	.33	.37
	Grade 4 outcome variable	2.59**	.30	13.37	1.18**	.24	3.24
2	Maternal responsiveness	-.06	.07	.94	-.05	.06	.95
	Constant	3.06	1.80	21.27	2.53	1.51	12.55
	$t^2$		166.44**			59.68**	
2	Maternal behavioral control	-.04	.07	.97	-.03	.06	.97
	Constant	2.47	1.88	11.77	1.95	1.49	7.04
	$t^2$		165.92**			59.07**	
2	Peer relationship quality	-.04	.22	.97	.10	.19	1.10
	Constant	1.71	.98	5.51	.86	.85	2.37
	$t^2$		165.70**			59.05	

*Note.* The first step is the same for two dimensions of parenting and peer relationship quality. Parenting and peer variables are from grade 4; child behavior problem variables are from grade 5.

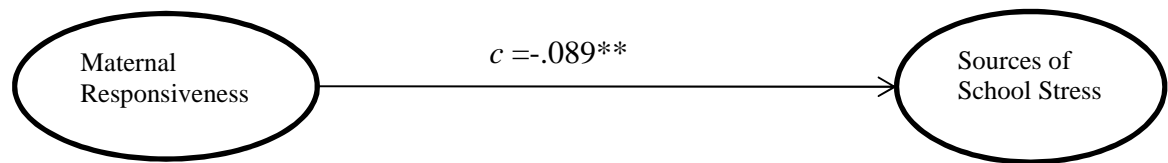
\* $p < .05$ . \*\* $p < .01$ .

APPENDIX B

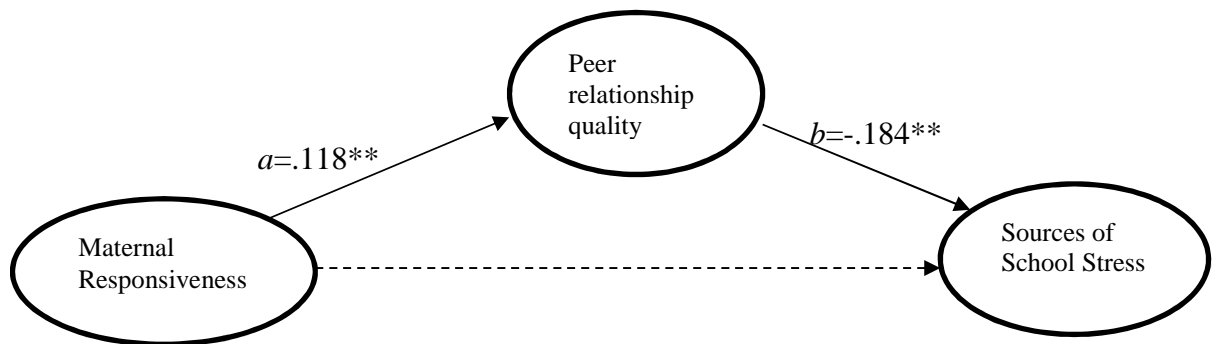
FIGURE

Figure 1.

Mediation Models in the Prediction of Child School Stress.



a) Direct path



b) Indirect path

*Note.* All path weights are standardized. Social class, child gender, child ethnicity, and maternal partner status are entered as control variables.

\* $p < .01$ . \*\* $p < .001$ .