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Multiple studies have identified several risk factors for social anxiety symptoms that span individual, familial, peer, and school contexts. Yet few studies have gone beyond the examinations of main effects to investigate the processes and interactions among multiple contexts with respect to changes in social anxiety symptoms. Utilizing a sample of 416 adolescents from two-parent families, the current study examined the contribution of multi-contextual interactions and processes to changes in social anxiety symptoms during early adolescence (6<sup>th</sup> to 8<sup>th</sup> grades). Differences between mother-adolescent and father-adolescent dyads were examined as well as adolescent gender differences.

Results indicated that mother-adolescent hostility during 6<sup>th</sup> grade was associated with increases in adolescent social anxiety symptoms. Adolescent compliance to peers during 7<sup>th</sup> grade fully mediated associations between mother-adolescent hostility and increases in adolescent social anxiety symptoms. In father-adolescent models, there was an indirect effect from father-adolescent hostility to increases in adolescent social anxiety symptoms through adolescent compliance to peers during 7<sup>th</sup> grade. Important adolescent gender differences were found in these associations, and associations were unique to adolescent social anxiety symptoms while controlling for co-occurring adolescent depressive symptoms. Adolescent loneliness during 6<sup>th</sup> grade was not significantly associated with changes in adolescent social anxiety symptoms, and associations were not moderated by teacher support or effective parent-adolescent conflict resolution. The results suggest that parent-adolescent

interactions play an important role in increases in social anxiety symptoms both directly and through its effects on the methods that adolescents employ to engage with peers.

A MODERATED MEDIATION MODEL OF CHANGES IN ADOLESCENT SOCIAL  
ANXIETY SYMPTOMS: THE CONTRIBUTION OF ADOLESCENTS  
AND THEIR RELATIONSHIPS WITH PARENTS, PEERS,  
AND TEACHERS

by

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## CHAPTER I

### INTRODUCTION

Social anxiety ranks third in prevalence among all mental health disorders (Ollendick & Hirshfeld-Becker, 2002), and among late adolescents and young adults, social anxiety is the most prevalent anxiety disorder (Ollendick & Benoit, 2012). Social anxiety *symptoms* (the focus of this study) are defined as feelings of fear, nervousness, insecurity, and avoidance with regard to peers and nonfamilial adults in social interactions and settings (Mallot, Maner, DeWall, & Schmidt, 2009). Research has found that social anxiety symptoms and disorders have substantial immediate and long-term consequences for development, including increased risks for academic and social problems and future deficits in adult psycho-social functioning (Stein, 1995) such as lower quality relationship functioning and drug and alcohol abuse (Ollendick & Hirshfeld-Becker, 2002). Without effective intervention or treatment, children and early adolescents suffering from social anxiety symptoms will likely develop chronic, long-term struggles with social anxiety disorders (Ollendick & Hirshfeld-Becker, 2002). However, epidemiological studies indicate that only about 20 percent of individuals with heightened social anxiety symptoms seek and receive professional help (Knappe, Beesdo-Baum, & Wittchen, 2010). Thus, it is crucial that research identify the processes and conditions that predict increases in social anxiety symptoms over time. Knowledge of the factors, processes, and conditions that contribute to social anxiety will help the development of effective prevention and intervention programs. Programs will be better equipped to

identify individuals who are at risk, thus preventing the development of social anxiety and its subsequent, negative outcomes.

This study focuses on the processes and conditions that predict changes in social anxiety symptoms that emerge during early adolescence. The specific focus on the early adolescent period is important for several reasons. First, although social anxiety disorders and heightened symptoms can occur at any age, late childhood through early adolescence represents a heightened risk period for the emergence of social anxiety disorders (SAD). Specifically, studies have found that the first onset of SAD occurs, on average, between 10 and 17 years old (Wittchen & Fehm, 2001). Thus, early adolescence represents a developmental period that is characterized by heightened risk for increases in social anxiety symptoms. Second, early adolescence is characterized by important social-cognitive changes which are posited to contribute to the heightened risk for emerging social anxiety disorders and increasing symptoms during this developmental period. Changes in the striatum, a subcortical brain region, occur during early adolescence and are linked to increases in reward-seeking, including social rewards (Tillfors & Van Zalk, 2015). As such, interactions with peers become increasingly important from late childhood through adolescence. Concurrently, self-awareness also increases during early adolescence. Early adolescents become more aware of their own thoughts and feelings, as well as how they present themselves and are perceived by others in the social realm (Tillfors & Van Zalk, 2015). Third, early adolescence also is a period of important environmental changes. Many early adolescents experience the transition into middle school, which often involves moving from a smaller to larger school environment and disruptions in previously established peer and adult networks. Within families, early adolescents also begin to negotiate more

egalitarian relationships with parents (La Greca & Ranta, 2015). These changes and transitions across multiple domains of development can be conceptualized as stressors which constitute greater risk for psychosocial difficulties among adolescents who struggle to deal with the changes and transitions effectively (Grant, Compas, Thurm, McMahon, & Gipson, 2004).

Although existing research on social anxiety has examined and identified several correlates of social anxiety disorders and symptoms that span individual, familial, and peer contexts, the existing body of research is characterized by several limitations. First, existing studies on social anxiety are overwhelmingly limited to cross-sectional examinations. This represents a major limitation of existing research, because although there is accumulating evidence regarding risk factors for social anxiety symptoms and disorders, directional conclusions cannot be made. Second, identified risk factors that span different contextual domains have largely remained discrete in developmental examinations of social anxiety. A developmental psychopathology perspective emphasizes that research should use longitudinal designs and highlights that children and adolescents are situated within multiple contexts. According to this perspective, multiple contexts contribute to psychopathology, and the contribution of these contexts to the emergence of psychopathology should be examined in integrative models (Cummings, Davies, & Campbell, 2000).

Consistent with this perspective, this study improves and expands upon previous research. Guided by theoretical and developmental saliency, the purpose of this study is to examine the contribution of multi-contextual interactions and processes to changes in adolescent social anxiety symptoms during early adolescence. It is important to note that this study takes a developmental approach to social anxiety and examines social

anxiety symptoms, characterized by fears of negative evaluation and social withdrawal, rather than clinical diagnoses. Research indicates that, when assessed over time, patients often do not consistently meet diagnostic cutoffs for diagnoses (Knappe, Beesda, Fehm, Lieb, & Witchen, 2009), although individuals might still experience symptomatic and subclinical levels of social anxiety. Thus, a focus on symptoms allows this study to capture some of this variability over time.

Using a 3-wave, longitudinal design this study examines: (a) the unique and conjoint effects of adolescent loneliness and parent-adolescent hostility on changes in adolescent social anxiety symptoms; (b) if and how direct associations are contextualized by teacher support and effective parent-adolescent conflict resolution, respectively, (c) the role of adolescent compliance to peers as a mechanism of influence, (d) if and how teacher support and effective parent-adolescent conflict resolution moderate transmission processes, (e) and if associations are specific and unique to social anxiety symptoms while taking into account comorbid depressive symptoms. This study also examines differences in associations based on parent and adolescent gender. Mother-adolescent hostility and father-adolescent hostility are examined in separate models. Although findings cannot speak to the strength of differences across mother-adolescent and father-adolescent models, the examination of separate mother- and father-adolescent models can explicate whether associations are overall similar or different across these relationships. Moreover, this study examines whether associations differ across sons and daughters.

### **Direct Influences of Adolescent Loneliness and Parent-Adolescent Hostility**

Characterized by feelings of inadequate companionship and/or closeness with others, loneliness is defined as a negative emotional experience in which individuals feel

that their social network is lacking in both quantity and quality (Perlman & Peplau, 1981). Early adolescence is an important time to examine the effect of adolescent loneliness on changes in adolescent social anxiety symptoms. During early adolescence, many adolescents experience the transition into middle school which might be context for challenges during this developmental period (Barber & Olsen, 2004). Specifically, the middle school transition is often characterized by a move from smaller elementary schools to larger middle schools in which students must navigate novel and larger social networks, and make new friends. This transition can result in the disruption of social networks, and thus, is one factor that has been linked to increases in loneliness during early adolescence (Kingery, Erdley, & Marshall, 2011). Likewise, studies have demonstrated that loneliness peaks during early adolescence (Heinrich & Gullone, 2006).

Heightened adolescent loneliness might, in turn, increase adolescent risk for other social problems, including changes in social anxiety symptoms. Cacioppo and Hawkley's (2003) evolutionary model of loneliness suggests that loneliness might alter adolescents' perceptions of peer relationships. In this model, individuals' innate needs to affiliate with others conflicts with low feelings of safety and hypervigilance in social situations. Hypervigilance produces cognitive biases of greater social threat and fear and avoidance of social situations, leading to social anxiety symptoms (Cacioppo et al., 2006; Hawkley & Cacioppo, 2010). The need to affiliate with others might be especially pertinent during early adolescence, which is characterized by increasingly advanced social cognitive skills which promote greater adolescent needs to spend time with peers and the importance that adolescents place on peer relationships (Blakemore & Choudhury, 2006). Thus, adolescents who experience greater loneliness might

experience greater hypervigilance, self-doubt, and fear in social situations. These altered social perceptions are proposed to lead to heightened anxiety in social situations.

Parent-adolescent hostility also is an important predictor of social anxiety to consider during early adolescence. I defined parent-adolescent hostility as specific, overt behavior and expression/communication between parents and adolescents that includes arguing, angry comments, contempt, yelling, swearing, name-calling, and/or physical aggression (Buehler, 2006). Growth in adolescent cognitive processing also influences how adolescents view their relationships with parents (Laursen & Collins, 2009). Specifically, adolescents' advancing cognitive abilities facilitate adolescent reflection about parents' social conventions and the boundaries that divide which issues are subject to parents' authority versus adolescents' personal jurisdictions (Steinberg & Silk, 2002). The period of early adolescence also is concurrently characterized by changes and transitions for parents. For example, parents must adjust their parenting to meet adolescent needs for growing autonomy (Oudekerk, Allen, Hessel, & Molloy, 2015) and parenting stress increases (Putnick et al., 2010). The changes and transitions that are experienced conjointly by parents and adolescents during the early adolescent period have the potential to create stress and might have profound impacts on parent-adolescent relationships (McCubbin & Patterson, 1983). Likewise, research suggests that parent-adolescent hostility increases during early adolescence (De Goede, Branje, Delsing & Meeus, 2009).

Studies have found that greater parent-adolescent hostility is associated with a range of adolescent maladaptive emotional and behavioral outcomes, including higher depressive symptoms (El-Sheikh & Elmore-Staton, 2004), anxiety (Pasch et al., 2006), and aggression (Steeger & Gondoli, 2013). Few studies, however, have focused on the

association between parent-adolescent hostility and adolescent social anxiety symptoms specifically, and studies rarely utilize longitudinal designs. Attachment theory (Bowlby, 1973) posits that adolescents' relationships with parents have profound impacts on adolescents' internal working models of themselves and their relationships with others. Thus, greater parent-adolescent hostility might create internal working models of the self and relationships which are characterized by greater emotional dysregulation, damage adolescents' confidence in navigating the peer domain successfully, and lead to increases in adolescent social anxiety symptoms.

### **Mitigation and Mediation of Associations among Adolescent Loneliness, Parent-Adolescent Hostility and Adolescent Social Anxiety Symptoms**

Although studies have shown that adolescent characteristics and familial factors constitute risks for adolescent social anxiety symptoms and disorders, not all adolescents who experience greater loneliness or parent-adolescent hostility will develop social anxiety symptoms over time. Moreover, research is not extensive, but effect sizes are only small to moderate among the few studies that have examined associations among adolescent loneliness, parent-adolescent hostility, and social anxiety symptoms or disorders. Few studies, however, have examined *the conditions under which* risk factors are most strongly linked to changes in social anxiety symptoms. Thus, existing research is limited by examinations of main effects or between-group comparisons (Epkins & Heckler, 2011). Few studies have examined interactions among risk factors as they relate to social anxiety symptoms, and even fewer studies have examined interactions among factors situated within different contexts. Moreover, a limited number of studies have examined longitudinal *processes* that explain how and why risk factors are associated with changes in social anxiety symptoms. I assert that it

is time for research to move beyond examinations of main effects and for research to begin examining the interactions and processes among multiple factors and contexts in relation to the development of social anxiety symptoms and disorders.

**Teacher support and effective parent-adolescent conflict resolution as moderators.** No studies to my knowledge have identified potential protective factors that might ameliorate the negative effects of adolescent loneliness and parent-adolescent hostility on adolescent social anxiety symptoms. Yet, the identification of protective factors is crucial to prevention and intervention efforts and their ability to identify the conditions under which adolescents are most at risk for increasing social anxiety symptoms. Likewise, a developmental psychopathology perspective (Cummings et al., 2000) emphasizes the importance of conjoint examinations of both negative and positive factors in relation to the development of child psychopathology. Thus, in addition to examining the contribution of adolescent loneliness and parent-adolescent hostility to changes in social anxiety symptoms, this study also examines how teacher support and effective parent-adolescent conflict resolution might moderate associations. Through its examination of moderators, this study makes a substantive contribution to the literature on the development of social anxiety symptoms in two ways. First, in concordance with a developmental psychopathology perspective, this study reflects that adolescents are situated within multiple contexts which interact and work conjointly to impact adolescent social anxiety symptoms. Second, this study also recognizes that adolescents engage in contexts and experiences which can both buffer against and contribute to adolescent social anxiety symptoms (Cummings et al., 2000).

Teacher support, as indicated by warmth, engagement with student needs, encouragement in school, and respect of students (Tennant et al., 2014), is a factor



situated within adolescents' extra-familial and school domains that has not been considered with regard to adolescent social anxiety symptoms. However, teacher support is an important factor that might buffer the effects of adolescent loneliness on adolescent social anxiety symptoms. Tangential research has demonstrated that greater teacher support has beneficial impacts on adolescents' socio-emotional development (De Wit et al., 2011). Greater teacher support might help ameliorate adolescent stress related to the middle school transition (Rueger, Chen, Jenkins, & Choe, 2014), including the impact of changing social networks. Negative perceptions about personal affiliative abilities and extra-familial relationships, which are theoretically a consequence of greater loneliness and lead to greater socially-related anxieties, might be reduced if adolescents have teachers who are engaged with students, listen to and meet their needs, and encourage them in school. Thus, greater teacher support might reduce the effect of loneliness on increases in adolescent social anxiety symptoms.

Effective parent-adolescent conflict resolution is a factor situated within the parent-adolescent relationship that might buffer the effects of parent-adolescent hostility on changes in adolescent social anxiety symptoms. Effective parent-adolescent conflict resolution is defined as conflict that is concluded by the cessation of negative emotionality and a positive evaluation that the argument has been mutually resolved. Specifically, this study distinguishes hostility, or the way in which conflict is expressed, from resolution, or the way in which conflict is concluded. It is possible that both hostility and effective conflict resolution can occur conjointly and interactively in parent-adolescent relationships. Adolescence is a time of several changes for adolescent and parents and also is characterized by adjustments in parent-adolescent relationships. Likewise, studies show that parent-child relationships transform from more hierarchical

to more horizontal relationship processes during adolescence (Van Doorn, Braje, & Meeus, 2011). Thus, the co-occurrence of parent-adolescent hostility and effective parent-adolescent conflict resolution might both facilitate and reflect steps toward readjustments in the parent-adolescent power dynamics that occur during adolescence.

Several studies of parent-adolescent relationships have examined what they termed “conflict resolution styles;” however, the constructs examined in these studies are more closely related to methods of conflict expression and problem solving (i.e., hostility, withdrawal, compromise) than they are to the conclusion of conflicts. Thus, few studies have examined effective parent-adolescent conflict resolution in general or in relation to social anxiety symptoms. Moreover, no studies, to my knowledge, have examined the potentially synergistic effects of parent-adolescent hostility and effective parent-adolescent conflict resolution on adolescent outcomes.

Although there is a lack of research on effective conflict resolution among parent-adolescent relationships, parallel research on marital conflict has considered marital hostility and effective conflict resolution as distinct relationship processes. For example, Davies, Martin, and Cicchetti (2012) examined marital relationships and considered the conjoint role of marital hostility and effective conflict resolution with regard to adolescent outcomes. Thus, this study suggested that hostile conflict and conflict resolution are unique and might have unique implications for adolescent well-being. It also is possible that these distinct relationship factors might interact. Among parent-adolescent relationships, adolescents might find parent-adolescent hostility less distressing if hostility occurs under conditions in which parents and adolescent are able to effectively conclude their arguments. Thus, this study examines the interplay of parent-adolescent

hostility and effective conflict resolution as contributors to changes in adolescent social anxiety symptoms.

**Adolescent compliance to peers as a mechanism.** Despite the accumulating evidence of the role of adolescent and familial characteristics in the development of social anxiety symptoms, recent reviews of the findings on the predictors of social anxiety symptoms suggest that adolescent social anxiety symptoms are more strongly affected by peer-related variables than they are affected by variables situated within adolescents' experiences within families (see Epkins & Heckler, 2011; La Greca & Ranta, 2015, for reviews). Adolescent social anxiety symptoms are inherently situated within adolescents' relationships with peers and nonfamilial adults, thus a stronger association between adolescent social anxiety symptoms and peer-related, versus familial related, variables is not surprising. However, studies on social anxiety have not considered if adolescent and familial factors might be associated with adolescent social anxiety symptoms *through* peer-related variables. This study examines if adolescent compliance to peers is a mechanism of the association among adolescent loneliness, parent-adolescent hostility, and changes in adolescent social anxiety symptoms. Adolescent compliance to peers is defined as proneness to change behavior, attitudes, and beliefs in order to conform to the behaviors, attitudes, and beliefs of peers, which may result from explicit peer persuasion and/or self-volition (Sumter, Bokhorst, & Westenberg, 2011).

The greater importance of peer than familial influence also might be due, in part, to brain development during adolescence which fosters more complex cognitive processes regarding adolescents' relationships with peers (Laursen & Collins, 2009). Specifically, studies suggest that brain development during adolescence is characterized

by remodeling of social processing information systems. Cognitive remodeling possibly leads to increased attention toward peer-related information in social situations, such as the behaviors and opinions of peers (Nelson, Leibenluft, McClure, & Pine, 2005). Likewise, studies have found that adolescence is characterized by an increase in the importance that children place on peer relationships (Brown, 2004) and by heightened proneness to peer opinions and influence (Steinberg & Monahan, 2007). Moreover, studies also have found that greater compliance to peers has negative implications for adolescent emotional and behavioral functioning (Allen, Porter, & McFarland, 2006). With regard to social anxiety specifically, greater compliance to peers might be a transmission mechanism that increases adolescents' self-doubts (Allen et al., 2006) about their ability to engage in and maintain peer relationships. Thus, adolescents experience greater anxiety and avoidance of social interactions and settings.

Adolescent characteristics and parent-adolescent relationships are important agents of socialization during adolescence. Greater adolescent loneliness is theorized to increase adolescent needs to affiliate with others and conform to group norms as a strategy for maintaining relationships (Weiss, 1973). Additionally, parent-adolescent relationships are the contexts in which adolescents first develop social and emotional skills which influence their method of peer engagement (Allen & Loeb, 2015; Laursen & Collins, 2009). Parent-adolescent relationships that are characterized by greater hostility might reflect greater difficulty in the transition from hierarchical to parallel relationship dynamics, and thus might decrease adolescents' abilities to display autonomous and independent behaviors with peers (Allen & Loeb, 2015).

However, consistent with a developmental psychopathology perspective, it also is important to consider that adult caregivers also might also be sources of positive

influence. For example, research has found that teacher support is an important factor in reducing school misconduct (Demant & Van Houtte, 2012) and adolescents increasingly look to parents to dissuade antisocial behavior (Cook, Buehler, & Henson, 2009). Thus, this study also considers how teacher support and effective parent-adolescent conflict resolution moderate transmission processes through adolescent compliance to peers. Specifically, this study examines whether (a) teacher support moderates the association between adolescent loneliness and adolescent compliance to peers, and whether (b) effective parent-adolescent conflict resolution moderates the association between parent-adolescent hostility and adolescent compliance to peers.

### **Comorbid Depressive Symptoms**

Studies have shown that adolescent social anxiety and depression, either in diagnostic or symptomatic forms, are highly comorbid (Cummings, Caporino, & Kendall, 2014; Viana, Rabian, & Beidel, 2008), with some studies finding that 28% to 41% of youth with social anxiety disorders also experience concurrent clinical depressive disorders (Chavira, Stein, Bailey, & Stein, 2004; Ranta et al., 2009). It is important to note, however, that social anxiety and depressive symptoms are related, but distinct, aspects of internalized distress. Correlations between self-reports of social anxiety and depression among clinical and non-clinical samples have ranged from 0.40 to 0.70 (King, Ollendick, & Gullone 1991), indicating overlap between these constructs. However, the conceptualizations and clinical categorizations of social anxiety and depression are dissimilar. Depressive symptoms are characterized by sadness, low energy, and loss of concentration and among clinical studies are categorized as components of mood disorders. In contrast, the essential features of social anxiety symptoms include fears of social situations, performance situations, and negative

evaluations which reinforce social avoidance (Epkins & Heckler, 2011). In clinical terms, social anxiety is categorized as an anxiety disorder.

The development of adolescent depressive symptoms are not the focus of this study, but taking into account the comorbidity of depressive and social anxiety symptoms by including adolescent depressive symptoms as an additional outcome in this study is crucial. In addition to the overlap between social anxiety and depressive symptoms, studies also have shown that there is substantial overlap in the correlates of adolescent social anxiety and depression (Epkins & Heckler, 2011). However, given that few studies have taken into account comorbid symptoms, it is unclear whether (a) observed associations remain after taking into account comorbidity, and (b) whether risk factors are unique to or shared between social anxiety and depressive symptoms. For example, some studies have found that significant associations between risk factors and social anxiety symptoms *do not hold* after taking into account comorbid depressive symptoms. Likewise, some findings indicate that significant associations between risk factors and depressive symptoms *do not hold* after taking into account comorbid social anxiety symptoms (Starr & Davila, 2008).

The inclusion of comorbid depressive symptoms as an outcome is necessary for identifying specific and unique risk factors, interactions, and processes related to the development of social anxiety symptoms. Moreover, greater specificity is needed for the development of more accurate and effective prevention and intervention efforts. By taking into account comorbid depressive symptoms, this study contributes substantively to the development of more specific models of social anxiety and the specificity and effectiveness of prevention and intervention efforts.

## **The Importance of Parent and Adolescent Gender**

This study utilizes a sample of two-parent families, which allows for the examination of both mother-adolescent and father-adolescent hostility and effective conflict resolution. This study makes an important contribution to existing research by examining both mother-adolescent and father-adolescent hostility and effective conflict resolution as they relate to changes in adolescent social anxiety symptoms. More specifically, few studies have examined father-adolescent hostility or effective conflict resolution, and thus the current study will contribute to this body of research. The examination of fathers and mothers is important because some studies have shown that father-adolescent hostility is uniquely associated with indicators of adolescent maladjustment, including internalizing problems (El-Sheikh & Elmore-Staton, 2004) and problem behaviors (Hakvoort, Bos, Van Balen, & Hermanns, 2010). Likewise, in terms of adolescent social anxiety, Starr and Davila (2008) found that higher conflict with fathers, but not with mothers, was associated with higher social anxiety symptoms among girls.

This study examines mother-adolescent hostility and effective conflict resolution, and father-adolescent hostility and effective conflict resolution in separate models. This decision was made rather than (a) examining an aggregate of mother- and father-adolescent hostility or conflict resolution, or (b) examining mother- and father-adolescent hostility or conflict resolution in the same model, but as separate mother-adolescent and father-adolescent constructs. Studies have shown that the correlation between mother- and father adolescent hostility is high (i.e.,  $r > .50$ ) (e.g., Hakvoort et al., 2010). However, research also has shown that mother- and father-adolescent hostility are uniquely associated with some indicators of adolescent well-being (Adams & Laursen, 2007). As such, the aggregation of mother- and father-adolescent hostility or conflict resolution into

parental constructs might obscure the unique effects related to these relationships. Likewise, due to the high correlation between mother- and father-adolescent hostility, examining mother- and father-adolescent hostility or conflict resolution separately but in the same model might obscure associations which, if examined in separate models, would be significant and shared by mother- and father-adolescent dyads.

This study also assesses adolescent gender differences in structural paths. Studies that have used community samples of youth of all ages have found that social anxiety disorders are approximately twice more common among girls than among boys (Demir et al., 2013; DeWit et al., 2005; De Graaf et al., 2002; Merikangas et al., 2011; Ruscio et al., 2008). Studies suggest that subclinical social anxiety symptoms also are higher among girls than boys (Aune & Stiles, 2009; La Greca, 1999). However, mean differences in symptoms do not speak to whether differences exist in associations leading to changes in social anxiety symptoms over time. Relatively few studies, however, have demonstrated whether processes and interactions predicting changes in social anxiety symptoms over time are similar or different across girls and boys. Findings from this study will further help the specificity of prevention and intervention efforts by demonstrating whether processes contribute changes in social anxiety symptoms similarly or differently among adolescent girls versus adolescent boys.

### **The Conceptual Model**

The hypothesized conceptual model of this study is presented in Figure 1. The model examines how teacher support and parent-adolescent conflict resolution moderate associations among adolescent loneliness, parent-adolescent hostility and changes in adolescent social anxiety symptoms. Specifically, this study examines a moderated mediation model, and proposes that teacher support moderates direct



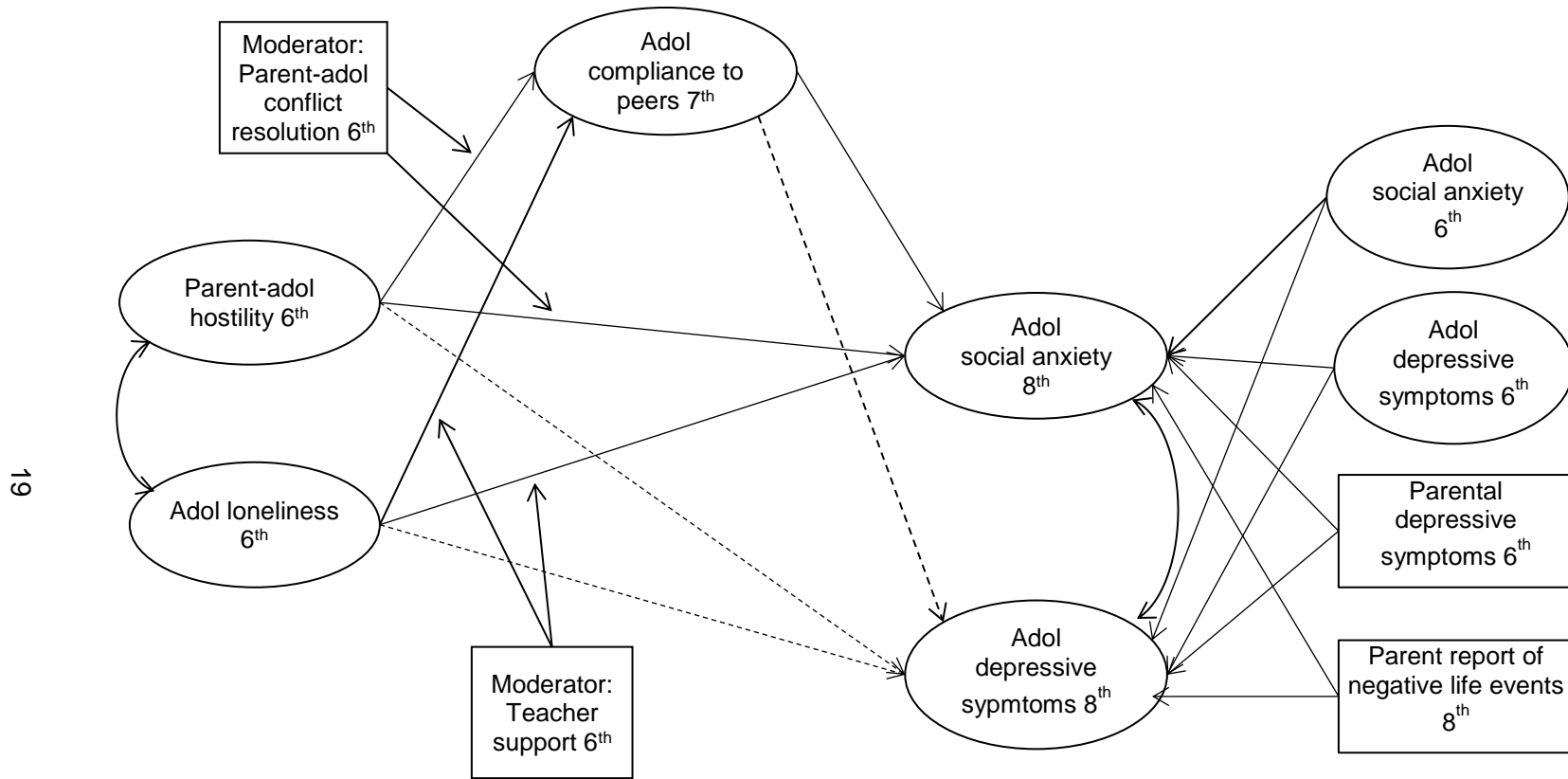
associations between adolescent loneliness and changes in social anxiety symptoms, as well as associations between adolescent loneliness and adolescent compliance to peers. Moreover, this study proposes that parent-adolescent conflict resolution moderates direct associations between parent-adolescent hostility and changes in adolescent social anxiety symptoms, as well as associations between parent-adolescent hostility and adolescent compliance to peers. Comorbid depressive symptoms also were considered in this model. Separate models for mother-adolescent and father-adolescent dyads were examined. Adolescent gender differences in the direct and mediating pathways were examined to illustrate potential differences in associations between genders.

In sum, this study makes several substantive contributions to existing literature on the development of social anxiety symptoms. First, this study integrates the multi-contextual correlates of social anxiety symptoms. This study examines how adolescent-, familial-, peer-, and teacher-related factors contribute to changes in adolescent social anxiety symptoms, and thus reflects that adolescents are situated within multiple contexts that each contribute to development and psychopathology. Second, this study moves beyond the examinations of main effects that dominates existing research. In comparison, this study examines interactions and processes related to changes in social anxiety symptoms. Specifically, this study examines teacher support and parent-adolescent conflict resolution as protective factors that might ameliorate both the direct effects of adolescent loneliness and parent-adolescent hostility on changes in social anxiety symptoms as well as the transmission processes through adolescent compliance to peers. Third, this study takes into account comorbid adolescent depressive symptoms, and thus improves the specificity of the model. Finally, this study takes into

account parent and adolescent gender. Few studies have examined associations among both mother-adolescent and father-adolescent dyads, which is important given that previous research has demonstrated some unique effects. Moreover, although studies have indicated mean differences between boys and girls in social anxiety disorders and symptoms, few studies have explicated whether differences exist in processes that lead to changes in social anxiety symptoms over time.

In addition to substantive contributions, this study has several methodological strengths. This study utilizes a three-wave, longitudinal design to examine changes in social anxiety symptoms during early adolescence (6<sup>th</sup> to 8<sup>th</sup> grades). Moreover, this study utilizes multiple informants and multiple methods to reduce threats of shared informant and shared method variance. The findings from this study will contribute to more specific, developmental models of social anxiety symptoms. This study will provide valuable information to prevention and intervention efforts about the multi-contextual risk factors, buffering factors, interactions, and processes that are specific to changes in social anxiety symptoms during early adolescence.

Figure 1. Hypothesized Model Predicting Changes in Adolescent Social Anxiety Symptoms.



Note. adol = adolescent.

## CHAPTER II

### THEORETICAL FRAMEWORKS

A developmental psychopathology approach is used to broadly frame this study. A developmental psychopathology perspective is concerned with how and why psychopathology occurs. In contrast to other fields that take a disease-oriented approach to mental health (such that mental health diagnoses are something that individuals do or do not have), this perspective posits that psychopathology is a response to patterns and processes that contribute to gradual deviations from typical, healthy development over time (Cummings et al., 2000). Thus, in line with this perspective, the current study focuses on adolescent social anxiety symptoms, rather than diagnoses, in order to capture the variability in symptoms that can occur across individuals and over time.

One specific assumption of a developmental psychopathology perspective is that psychopathology arises from the contribution and interplay of individual characteristics and the multiple contexts in which individuals are embedded (Cummings et al., 2000). Individual characteristics, as well as relationships with parents, teachers, and peers comprise major domains in which humans change, grow, and develop. Additionally, because this perspective suggests that psychopathology is the product of gradual deviations, longitudinal examinations are emphasized in order to capture changes in symptoms over time (Cummings et al., 2000). In line with this assumption, this study examines the contribution of adolescent characteristics and their relationships with

parents, teachers, and peers to changes in social anxiety symptoms during early adolescence.

Moreover, this approach is concerned with how risk and protective factors located within these multiple contexts contribute to human development and psychopathology (Cummings et al., 2000). As such, this study examines how adolescent loneliness and parent-adolescent hostility constitute risk for adolescent social anxiety, both directly and through greater adolescent compliance to peers. In addition, this study examines how teacher support and effective parent-adolescent conflict resolution are factors that might buffer both direct associations and transmission processes. Given the emphasis on the risk and protective influence of multiple contexts on development, a developmental psychopathology approach also emphasizes the utilization of multiple theories to inform specific hypotheses about the emergence of psychopathology (Cummings et al., 2000). As such, this study utilizes several theories and perspectives to inform specific hypotheses. The theories used to inform specific hypothesis in this study include: (a) an evolutionary model of loneliness (Cacioppo & Hawkley, 2003); (b) attachment theory (Bowlby, 1973); and (c) cognitive-behavioral (Clark & Wells, 1995) and evolutionary perspectives on social anxiety symptoms (Gilbert, 2000).

### **Direct Effects of Adolescent Loneliness and Parent-Adolescent Hostility**

The current study examines the direct effects of adolescent loneliness and parent-adolescent hostility on changes in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades. Cacioppo and Hawkley's (2003) evolutionary model of loneliness is used to guide the current examination of the direct association between adolescent loneliness and changes in social anxiety symptoms. Attachment theory is used to guide the

examination of the direct effect of parent-adolescent hostility on changes in social anxiety symptoms.

**Adolescent loneliness and adolescent social anxiety symptoms.** Cacioppo and Hawkley's (2003) model of loneliness is an evolutionary model with cognitive-behavioral elements. This model posits a self-reinforcing negative, cognitive-behavioral loop which ultimately culminates into heightened anxiety. Due to its evolutionary roots, this model assumes that individuals have an innate need to affiliate with others and maintain social bonds (Cacioppo et al., 2006). A major tenet of this model is that loneliness makes individuals feel unsafe, because loneliness is evolutionarily counterintuitive to the innate need to affiliate with others. Moreover, loneliness is posited to activate heightened sensitivity to and hypervigilance for social threat, which is an unconscious survival mechanism. Cacioppo and Hawkley's (2003) model suggests that social hypervigilance produces cognitive biases, such that lonely individuals process social interactions and settings as more threatening, have greater expectations of negative social interactions, and direct greater attention and memory to negative or threatening social inputs (Hawkley & Cacioppo, 2010). Thus, lonely individuals are described as being on the defensive. The negative cognitive biases about social interactions and settings perpetuate increasing fear and avoidance of social situations (Cacioppo et al., 2006), which are the essential components of social anxiety symptoms. Drawing on Cacioppo and Hawkley's (2003) model, the proposed model suggests that greater loneliness is directly associated with increases in social anxiety symptoms during early adolescence.

**Parent-adolescent hostility and adolescent social anxiety symptoms.**

Attachment theory serves as the framework for the direct association between parent-

adolescent hostility and adolescent social anxiety symptoms. Attachment theory suggests that children's relationships with caregivers are crucial to the quality and characterizations of other close relationships throughout development (Bowlby, 1973). Moreover, although attachment relationships are established during infancy, attachment is influenced by children's relationships with parents throughout their development (Ainsworth, 1989). Thus, parent-adolescent relationships during adolescence have important implications for adolescent well-being.

The current study draws on the concepts of a secure base and internal working models from attachment theory to guide the current proposition that greater parent-adolescent hostility contributes to increases in adolescent social anxiety symptoms over time. Attachment theory proposes that caregivers that act as a secure base provide children with protection from outside threats, particularly during infancy (Bowlby, 1973). As children develop, the presence of a secure base supports child exploration and navigation of outside contexts, including the peer domain (Groh et al., 2014). Specifically, a secure base provides children with a sense of security, such that a level of trust and support is established in the caregiver-child relationship. This trust promotes children's confidence that they can (a) independently navigate novel contexts, such as the peer domain, and/or (b) rely on the caregiver to warmly and consistently intervene if they need assistance (Ainsworth, 1989). Adolescent perceptions that their parents are a secure base might be especially important during the adolescent transition into middle school. During this time, adolescents strive for greater autonomy from parents (Laursen & Collins, 2009), and yet, adolescents also have to experience disrupted peer networks and navigate a new school and social environment (Kingery et al., 2011). Parent-adolescent hostility, characterized by parental yelling, screaming, name-calling and

contempt toward adolescents (as well as adolescents toward parents), might damage trust between parents and adolescents. Adolescents might not trust that they will garner support from their parents when they are in need. As such, adolescents might experience greater fear and anxiety in peer domains, and will ultimately avoid peer interactions, because they do not feel that they can depend on their parents to intervene if they need assistance.

Attachment theory also proposes that relationships with caregivers influence children's internal working models of themselves and relationships. Internal working models are conceptualized as the unconscious representations, expectations, and feelings that children have about themselves and their relationships with others (Bowlby, 1973). Attachment theory posits that internal working models guide and influence children's relationships with other individuals, such as peers (Ainsworth, 1989). Thus, the internal working models that adolescents develop within their relationships with parents will influence adolescents' representations of themselves as they interact with peers and their expectations about peer relationships (Dwyer et al., 2010; Sroufe, 2005). Parent-adolescent relationships that are characterized by greater hostility might alter adolescents' internal working models of self and relationships. Specifically, hostile parent-adolescent relationships may create uncertainty, fear, and heightened anxiety for adolescents about the caregiver-child relationship, and contribute to adolescent internal working models of the self and relationships that are characterized by more emotional and behavioral dysregulation (Kretschmer et al., 2015). As such, adolescents may enter the peer context with heightened fear, anxiety, and emotional dysregulation regarding peer relationships and adolescents might avoid peer interactions. The current study draws on the concepts of a secure base and internal working models from attachment



theory to propose that greater parent-adolescent hostility is associated with increases in adolescent social anxiety symptoms.

### **Mediation by Adolescent Compliance to Peers**

Cognitive behavioral models (Clark & Wells, 1995) and evolutionary perspectives (Gilbert, 2000) on social anxiety symptoms are greatly overlapping perspectives.

Together they provide a framework for how adolescent loneliness and parent-adolescent hostility also might lead to increases in social anxiety symptoms *through* greater adolescent compliance to peers. Gilbert's (2000) evolutionary perspective posits that social anxiety is preceded by heightened perceptions that the social realm is competitive and that individuals must compete with others to acquire needed resources from relationships. However, this perspective also posits that social anxiety occurs among individuals who greatly doubt their ability to compete effectively for relationships, have heightened, negative self-perceptions, and thus also have negative expectations of social interactions (Gilbert, 2014).

Evolutionary models of social anxiety suggest that individuals engage in submissive behaviors in response to higher perceptions that social contexts are competitive, greater negative expectations of social interaction, and greater anticipation of social failure (Gilbert, 2000). Cognitive-behavioral models also posit similar processes, but refer to these processes as "safety behaviors" (Clark & Wells, 1995). Specifically, safety behaviors are defined as "overt or covert acts intended to manage or avert a perceived threat and increase the person's sense of safety" (Alden, Regambal, & Plasencia, 2014, p. 167). The main difference between submissive behaviors in evolutionary models and safety behaviors in cognitive-behavioral models is their posited underlying purpose. Evolutionary models posit that submissive behaviors are an

adaptive response to threat. Submissive behaviors allow individuals to: (a) appease others that are higher in the social hierarchy and are competing for social resources, (b) maintain a neutral social position, and (c) avoid rejection (Wong, Gordon, & Heimberg, 2014). In contrast, from a cognitive-behavioral perspective, safety behaviors prevent disconfirmation of negative expectations and perceptions of social situations (Clark & Wells, 1995; Wong et al., 2014). This study conceptualizes greater compliance to peers as a type of safety behavior and a form of submissiveness in which adolescents conform their thoughts, beliefs, and behaviors to their peers in order to appease peers, make social connections while maintaining a neutral social position, and avoid peer rejection.

Cognitive-behavioral models suggest that safety behaviors have two consequences for the individuals that engage in them. Safety behaviors serve to reduce *state* social anxiety, such that individuals are more at ease in the moment about their social interactions and social position. Over time, however, engagement in safety behaviors increase *trait* social anxiety. Safety behaviors impede individuals from experiencing events that might disconfirm the perceived threat and competitiveness associated with social interactions, as well as individuals' negative self-perceptions and self-doubts regarding their social abilities (Wong et al., 2014). Thus, individuals continue to have negative expectations of social situations, engage in hypervigilance, experience social events in a negative way, and maintain negative self-perceptions of social performance, thus leading to increasing social anxiety symptoms.

Evolutionary models also explain how loneliness and parent-adolescent hostility might contribute to safety and submissive behaviors, such as greater adolescent compliance to peers. Evolutionary models posit that submissive behaviors are a response to unwanted inferiority in relationships (Gilbert, 2000). According to this

perspective, the social realm is organized into hierarchies. Individuals become categorized as low-ranked when they are perceived by the self and others as possessing socially unattractive characteristics which bring about disapproval from others and/or characteristics which are not valued or instrumental. Moreover, Gilbert (2000) suggests that lower social ranking leads individuals to feel inferior, more hypervigilant about social threats, and fearful that they will not be able to compete effectively for social resources. Thus, rather than try to compete for resources, low-ranked individuals adopt submissive, protective behaviors.

Adolescent loneliness is defined as a negative emotional experience in which individuals feel that their social network is lacking in both quantity and quality (Perlman & Peplau, 1981). Thus, lonely individuals feel that they are missing needed social resources, and loneliness might reflect poor social skills to others. Thus, lonely individuals might both feel and be perceived as lower rank and socially inferior, leading to greater engagement in submissive, safety behaviors, such as greater adolescent compliance to peers. Thus, this study proposes that adolescent compliance to peers partially mediates the association between adolescent loneliness and increases in adolescent social anxiety symptoms.

Evolutionary models also suggest that parental behaviors and parent-child interactions contribute to the development of safety and submissive behaviors among children. Similar to an attachment perspective, these models suggest that parental behaviors, including low warmth and high hostility are vulnerabilities for child development. Parental behaviors and parent-child relationships shape how children view their social environment including the level of threat that they associate with social interactions and the strategies that they use to navigate potentially threatening

interactions (Gilbert, 2014). An important developmental task during adolescence is the transition from hierarchical parent-child relationships to more parallel parent-adolescent relationships (Faber, 2002). During early adolescence, growing cognitive abilities also facilitate adolescent reflection about parents' social rules, expectations, and the hierarchical nature of parent-child relationships (Laursen & Collins, 2009). Parent-adolescent hostility might reflect parent-adolescent difficulties in readjusting the hierarchical nature of the relationship to accommodate adolescents' greater needs for autonomy and differentiation from parents. Thus, adolescents might feel that they are stuck in an unwanted, inferior position in parent-adolescent relationships. Theoretically, adolescents' feelings of inferiority contribute to adolescents' feelings of lower status, higher perceived threat, and submissive behaviors in relationships with peers (Gilbert, 2000; 2014), such as greater adolescent compliance to peers. Thus, this study proposes that adolescent compliance to peers partially mediates the association between parent-adolescent hostility and increases in adolescent social anxiety symptoms.

### **Teacher Support and Parent-Adolescent Conflict Resolution as Moderators**

Attachment theory also provides a framework for suggesting how adolescents' relationships with parents and teachers might buffer associations leading directly to social anxiety symptoms as well as processes through adolescent compliance to peers. Greater teacher support and more effective parent-adolescent conflict resolution are constructs within teacher and parent-child relationships that might be reflective of greater attachment security in these relationships. School represents an important context for adolescents as both a context in which they spend a great proportion of their time and a context in which they engage in heightened amounts of interaction with peers (Kingery et al., 2011). As such, adolescents' relationships with teachers might have important

implications for their relationships with peers (De Wit et al., 2011). Teachers who are supportive might act as a secure base for adolescents in the school context such that adolescents feel more comfortable to explore relationships with peers (Bowlby, 1973). Adolescents might experience less fear and avoidance among peers under conditions where they know that teachers will protect them and assist them if necessary. Moreover, greater teacher support might influence adolescents' working models of relationships. Greater teacher support might facilitate more effective adolescent emotion regulation in a new and stressful school context (Hughes, 2012). Moreover, greater teacher support might shape adolescent working models such that adolescents will expect fairly positive interactions with peers (Bowlby, 1973). Thus, adolescents might feel less of a need to conform to peers as a protective strategy to avoid rejection. Based on this theoretical framework, the current study proposes that greater teacher support ameliorates the direct association between greater adolescent loneliness and increases in adolescent social anxiety symptoms, as well as processes through adolescent compliance to peers.

Adolescents' relationship with parents also has important implications for their relationships with peers (Groh et al., 2014). Importantly, this study distinguishes the affective nature of conflict from how the conflict is resolved. More effective parent-adolescent conflict resolution might act to reduce the negative effect of parent-adolescent hostility on both changes in adolescent social anxiety symptoms and adolescent compliance to peers. Specifically, even in the context of parent-adolescent hostility, effective conflict resolution might show adolescents that they can trust their parents to resolve disputes with them and that parents are consistent participants in adolescents' lives. Thus, effective parent-adolescent conflict resolution might increase adolescents' feelings that parents will be supportive and consistent as they explore the

peer domain (Bowlby, 1973). Moreover, effective parent-adolescent conflict resolution might affect adolescents' internal working models of relationships, especially in the context of parent-adolescent hostility. Based on their experience with parents, adolescents might form expectations about peers that involve less fear (Sroufe, 2005). Specifically, adolescents might expect that even in tense interactions of disagreements with peers, it is possible to reach an agreement with each other in which both relationship partners are recognized and feel satisfied with the outcome. As such, effective parent-adolescent conflict resolution might make adolescents feel more comfortable about disagreeing with or not conforming to peers. Thus, this study proposes that more effective parent-adolescent conflict resolution ameliorates the direct association between greater parent-adolescent hostility and increases in adolescent social anxiety symptoms, as well as processes through adolescent compliance to peers.

## CHAPTER III

### REVIEW OF LITERATURE

Social anxiety is among one of the most prevalent mental health disorders, and symptoms are likely to culminate into clinically disordered levels during mid-adolescence (Ollendick & Benoit, 2012). Existing research has identified a plethora of correlates of social anxiety symptoms and disorders that span multiple environmental contexts. Limited studies, however, have examined these correlates in integrated models, and even fewer studies have examined interactions and processes related to changes in social anxiety symptoms during early adolescence. This study extends previous research and examines the contribution of adolescent-, familial-, peer-, and teacher-related factors to changes in adolescent social anxiety symptoms. Specifically, this study examines the direct effects of adolescent loneliness and parent-adolescent hostility, the mediating effect of adolescent compliance to peers, and the buffering effects of teacher support and effective parent-adolescent conflict resolution. Moreover, these associations are examined while also taking into account comorbid adolescent depressive symptoms. The following sections review the literature on the key constructs and associations proposed in the current study.

#### **Direct Effects between Adolescent Loneliness and Adolescent Social Anxiety Symptoms**

Early adolescence is characterized by multiple changes and transitions, including the transition into middle school. With the transition into middle school, many adolescents face the challenge of moving from small elementary schools to larger

middle schools (Eccles, Lord, & Midgley, 1991) in which students must navigate novel, and larger social networks and make new friends (Kingery et al., 2011). This transition, which can result in the disruption of social networks, is one factor that has been linked to an increase in adolescent loneliness during early adolescence (Kingery et al., 2011). Likewise, studies have demonstrated that loneliness peaks during early adolescence (Heinrich & Gullone, 2006). Theoretically, loneliness is an important predictor of other psychopathology, such that loneliness produces sensitivity to and greater anxiety in social interactions and settings (Hawkley & Cacioppo, 2010). Thus, adolescent loneliness is an important risk factor to consider in the development of adolescent social anxiety symptoms.

Although research is not extensive, cross-sectional studies have substantiated positive associations between loneliness and social anxiety among adolescents (Crick & Ladd, 1993; Goossens & Marcoen, 1999). However, these studies did not control for comorbid depressive symptoms, and thus the influence that adolescent depressive symptoms had on associations cannot be ascertained. In contrast, utilizing a sample of 100 mother-daughter dyads, Hutcherson and Epkins (2009) controlled for comorbid depressive symptoms and found that loneliness was positively associated with adolescent girls' social anxiety symptoms. Greater loneliness also was significantly associated with greater adolescent depressive symptoms (while controlling for social anxiety); however, effect estimates were larger for associations with social anxiety symptoms. Thus, this study suggests that adolescent loneliness might not be uniquely associated with adolescent social anxiety symptoms, but there is evidence of stronger associations with social anxiety symptoms than with depressive symptoms. However,



only child report was used to measure these constructs, thus, one or both associations could have been inflated due to shared method variance.

Two studies have used multiple reporters across variables, and the results are inconsistent. Stednitz and Epkins (2006) utilized a sample of mother-daughter dyads, and found that adolescent girls' loneliness was associated positively with adolescent reports of their own social anxiety symptoms. However, the association was not significant for mother reports of their daughters' social anxiety symptoms. In contrast, among a sample of adolescent girls, Starr and Davila (2008) examined associations between adolescent-reported loneliness and adolescent social anxiety symptoms as reported by adolescents and clinical interviews. Controlling for several peer and family related variables, such as peer exclusion and parent communication, findings indicated that there was a positive partial correlation. Thus, the results of these studies suggest that, at least for adolescent girls, associations between adolescent loneliness and adolescent social anxiety symptoms might depend on the reporter of adolescent social anxiety symptoms.

Only two studies, to my knowledge, have examined associations between adolescent loneliness and social anxiety symptoms over time. Prinstein and La Greca (2002) found that adolescent loneliness was positively correlated with social anxiety symptoms assessed six years later. However, the prospective nature of this study does not discern whether loneliness was associated with subsequent social anxiety symptoms over and above previous levels. Improving over this study, Cavanaugh and Buehler (2015) found that adolescent loneliness was associated with *increases in* social anxiety symptoms over two years. An important limitation of these studies is that they do not account for comorbid depressive symptoms; thus, it is unclear whether associations

would hold and/or be unique to social anxiety while accounting for comorbid depression. The current study is an improvement over prior research in that it will account for comorbid depressive symptoms. Based on the review of existing findings and theory, I hypothesize that adolescent loneliness is associated with increases in adolescent social anxiety symptoms.

It is important to note that some studies suggest that adolescent social anxiety symptoms might also precede adolescent loneliness (Weeks, Copland, & Kingsbury, 2009), thus a possible transactional relationship might occur between these constructs over time. However, empirical support for the effect of adolescent social anxiety symptoms on adolescent loneliness during the 6<sup>th</sup> to 8<sup>th</sup> grade period is inconsistent (Cavanaugh & Buehler, 2015). The current study posits that the disruption of social networks that occurs with the transition into middle school and its links to increased adolescent loneliness (Kingery et al., 2011) as well as the evidence that early to mid-adolescence is heightened risk period for increasing social anxiety symptoms (Wittchen & Fehm, 2001), provide support the direction and timing of effects examined in the current study.

### **Direct Effects between Parent-Adolescent Hostility and Adolescent Social Anxiety**

Research has examined how parents and parenting behavior contribute to adolescent social anxiety symptoms and disorders (Epkins & Heckler, 2011). However, few studies have examined how features of the dyadic parent-adolescent relationship affect changes in adolescent social anxiety symptoms. Developmentally, adolescence is a time of multiple life changes for adolescents and parents which have implications their relationship. For example, adolescents transition into middle school (Holas & Huston, 2012) and experience pubertal maturation (Rudolph, 2014). Concurrently, parents

experience changes in physical and cognitive functioning due to aging (Lachman, 2004). These individual changes and transitions have the potential to create stress in parent-adolescent relationships (McCubbin & Patterson, 1983) which has important implications for adolescent well-being.

Likewise, a meta-analysis of parent-adolescent conflict found that parent-adolescent hostility increases from early to middle adolescence (Laursen, Coy, & Collins, 1998), and several studies have linked parent-adolescent hostility to various indicators of adolescent well-being including greater anxiety (Pasch et al., 2006) and depression (El-Sheikh & Elmore-Staton, 2004). Thus, parent-adolescent hostility also might have important implications for adolescent social anxiety symptoms. Theoretically, heightened parent-adolescent hostility might alter adolescents' working models of relationships which contributes to adolescent emotional dysregulation in social contexts (Bowlby, 1973). The current study makes an important contribution to the literature by examining parent-adolescent hostility, a dyadic feature of parent-adolescent relationships, as a predictor of changes in adolescent social anxiety symptoms.

The current study examines mother- and father-adolescent hostility in separate models. Some studies have shown that father-adolescent hostility is uniquely associated with indicators of adolescent maladjustment, including internalizing problems (El-Sheikh & Elmore-Staton, 2004) and problem behaviors (Hakvoort et al., 2010). However, few studies have examined both mothers and fathers in relation to adolescent social anxiety symptoms. Findings from this study contribute to this literature by demonstrating whether associations are similar or different across mother-adolescent and father-adolescent relationships; however, it should be noted that findings can only demonstrate whether there are differences in the overall significance of pathways and findings do not speak to

whether there are differences between mother-adolescent and father-adolescent models in the strength of associations.

Although several studies have linked greater mother-adolescent and father-adolescent hostility to various indicators of adolescent maladjustment (Weymouth, Buehler, Zhou, & Henson, 2016) including general anxiety symptoms (El-Sheikh & Elmore-Staton, 2004), few studies have examined associations between mother-adolescent and father-adolescent hostility and specifically adolescent social anxiety symptoms. Only one cross-sectional study has examined associations between mother-adolescent and father-adolescent *conflict* and adolescent social anxiety symptoms. Utilizing partial correlations which included a control for comorbid adolescent depressive symptoms, Starr and Davila (2008) found that higher conflict with fathers, but not with mothers, and lower clarity in parental (mother or father) communication with adolescents were associated with higher, interviewer-reported social anxiety symptoms among girls (boys were not assessed in this study). However, associations were not significant when using adolescent report of their own anxiety symptoms. Results also indicated that father-adolescent conflict was significantly associated with girls' depressive symptoms, after taking into account comorbid social anxiety symptoms. Thus, these results provide some support that father-adolescent hostility is associated with adolescent social anxiety symptoms, and these results also suggest that the association might not be unique to social anxiety symptoms. However, it is important to emphasize that this study examined conflict and did not disaggregate parent-adolescent disagreement from expressed hostility.

Other parallel research has substantiated similar associations. Studies by Garcia-Lopez and colleagues (2009; 2014) have examined the contribution of parental

(mothers or fathers) levels of expressed emotion, conceptualized as greater parental over involvement, criticism, and hostility, to adolescent social anxiety symptoms. Among a small sample of adolescents diagnosed with a social anxiety disorder ( $N = 16$ ), Garcia-Lopez et al. (2009) found that, with treatment, there was a significantly larger decrease in social anxiety symptoms among adolescents whose parents had low emotional expressiveness than among adolescents whose parents had high emotional expressiveness. Similarly, Garcia-Lopez et al. (2014) tested a treatment program among a clinical sample of adolescents ( $N = 54$ ) with social anxiety diagnoses. In this study, some parents also completed training to reduce their levels of emotional expressiveness. In one group, adolescents received treatment and parents completed the emotional expressiveness training. In the other group, only adolescents received treatment. The two groups were compared. Results indicated that social anxiety symptoms decreased significantly among adolescents whose parents completed the emotional expressiveness training program, and particularly among those that changed from high to low expressed emotion. Moreover, group comparisons revealed that decreases in social anxiety symptoms were significantly greater among adolescents whose parents' completed the emotional training than adolescents whose parents did not complete the emotional expressiveness training.

The results from studies by Garcia-Lopez and colleagues (2009; 2014) are important as they suggest that hostility is an important contributor to changes in adolescent social anxiety symptoms. Moreover, although these studies only examined parental hostility, they suggest that the contribution of adolescents *and* parents to adolescent social anxiety symptoms are greater than the adolescents' contribution alone. Thus, it is important to examine dyadic, parent and adolescent hostility; however,

no studies, to my knowledge, have examined the contribution of both parent and adolescent relationship partners to changes in adolescent social anxiety symptoms. Additionally, although studies by Garcia-Lopez and colleagues (2009; 2014) utilized samples that included mothers or fathers, they did not examine mothers and fathers separately. Thus it is unclear whether results would be different among mother-adolescent versus father-adolescent dyads. Moreover, an important limitation of these studies is that they do not take into account comorbid depressive symptoms and/or depressive disorders. The current study will make an important contribution by examining dyadic, mother-adolescent and father-adolescent hostility, thus capturing the influence of both parents and adolescents on changes in social anxiety. Moreover, this study will account for comorbid adolescent depressive symptoms, thus allowing for interpretation of whether associations are unique or shared with adolescent depressive symptoms. Based on the available findings, I hypothesize that greater mother-adolescent and father-adolescent hostility are associated with increases in adolescent social anxiety symptoms.

### **Adolescent Compliance to Peers as a Mechanism**

Social anxiety is inherently an interpersonal construct that is situated within individuals' experiences with peers, friends, and nonfamilial individuals (Ollendick & Hirshfeld-Beck, 2002). Thus, adolescents' experiences with peers are a crucial factor to consider when examining social anxiety symptoms and disorders. Although several peer factors have been found to contribute to social anxiety symptoms and disorders (for a review, see Epkins & Heckler, 2011), such as poor friendship quality (La Greca & Harrison, 2005) and low peer acceptance (Teachman & Allen, 2007), adolescents' level of compliance to peers is a peer-related factor that might be especially pertinent to

increases in social anxiety symptoms, but has rarely been examined. Specifically, studies have found that a hallmark of early adolescence is increases in the importance that children place on peer relationships (Brown, 2004). Moreover, adolescents experience heightened proneness to peer opinions and influence (Steinberg & Monahan, 2007).

Scholars have highlighted the inherently comparative nature of peer socialization (Rubin & Burgess, 2001), and theoretically, social anxiety is posited to be preceded by greater perceptions that social contexts are competitive (Gilbert, 2014). Social competition involves a comparison of self-to-other behavior, and can lead to greater negative self-perceptions and self-doubts (Stiles & Kaplan, 2004). Theoretically, greater compliance to peers might be a safety behavior which serves to protect adolescents from social threats. However, conforming to peer thoughts, beliefs, and behaviors also reduces exposure experiences that might disconfirm negative cognitions about social interactions and perceptions of threat, leading to maintenance and/or increases in fear, avoidance, and social anxiety symptoms (Clark & Wells, 1995).

To my knowledge, no studies have examined adolescent compliance to peers as a mediator of the association between parent-adolescent hostility and adolescent social anxiety symptoms nor the association between adolescent loneliness and adolescent social anxiety symptoms. However, some studies have examined direct effects among these constructs, and thus are reviewed in the current study. First, I review literature supporting the salience of examining adolescent compliance to peers as a contributor to changes in adolescent social anxiety symptoms. Then, I review how adolescent loneliness and parent-adolescent hostility contribute to adolescent compliance to peers.

### **Adolescent compliance to peers and adolescent social anxiety symptoms.**

Only a few studies have examined associations between adolescent compliance to peers and social anxiety. Latent class analyses have found that adolescents who are categorized as more susceptible to conforming to the behavior of their friends experienced heightened social anxiety symptoms (Kosten, Scheier, & Grenard, 2013). Other studies have found that adolescents' perceived ability to be assertive in their expression of opinions and desires was negatively correlated with social anxiety symptoms (Muris, 2002). Likewise, studies have found that greater observed submissiveness in interpersonal interactions is correlated with greater social anxiety symptoms (Weeks, Heimberg, & Heuer, 2011). However, these studies are limited to correlational, cross-sectional designs, and it remains unclear whether adolescent compliance to peers is associated with increases in adolescent social anxiety symptoms.

**Adolescent loneliness and adolescent compliance to peers.** To date, no studies have examined the association between adolescent loneliness and adolescent compliance to peers (that I know of). However, tangential research has examined loneliness and lower feelings of belonging with respect to related concepts, including assertiveness, behavioral imitation, and values placed on peer approval. Studies of group comparisons have found that lonely individuals are less assertive (Brennan, 1982; Jones, 1981) and are more easily influenced by other people (Hansson & Jones, 1981) than are non-lonely individuals. However, although these group comparisons provide preliminary evidence regarding the risks of loneliness, these studies do not explicate specific associations between variables.

More recent research utilizing qualitative interviews of adolescents has revealed that adolescents cite a fear of being alone as motivation to conform to peer behaviors



(Lashbrook, 2000). Likewise, among a sample of 756 Turkish adolescents, Uruk and Demir (2003) found that adolescent reported loneliness was positively correlated with perceived peer influence. Lakin, Chartrand, and Arkin (2008) conducted a study that examined feelings of belonging and behavioral mimicry. Participants engaged in two tasks. The first task was a group game, after which participants rated the extent to which they felt like they belonged to the group during the game. In the second task, participants interacted with a confederate, and the extent to which the participant physically mimicked the confederate was recorded. Results indicated that lower feelings of belonging were associated with greater mimicry of confederate behavior. However, the results of this study are not specifically reflective of interactions with peers.

More research needs to examine the association between adolescent loneliness and adolescent compliance to peers specifically. This is important given the developmental significance and documented increases of both adolescent loneliness, especially during the middle school transition (Kingery et al., 2011), and adolescent compliance to peers (Steinberg & Monahan, 2007). Thus, this study examines adolescent compliance to peers as a mediator of the association between adolescent loneliness and changes in adolescent social anxiety symptoms. I hypothesize that adolescent compliance to peers will partially mediate the positive association between adolescent social anxiety symptoms and increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades.

**Parent-adolescent hostility and compliance to peers.** Scholars suggest that adolescent skills and strategies for navigating the peer domain are often developed and practiced in parent-adolescent relationships and interactions (Laursen & Collins, 2009). As such, lower quality interactions, such as greater parent-adolescent hostility, increase

the risk that adolescents will have poor relationships and interactions with peers, such as greater adolescent compliance to peers. No studies, however, have specifically examined the associations between parent-adolescent hostility and adolescent compliance to peers, and generally, little research has examined the influence that dyadic features of parent-adolescent relationships have on adolescents' experiences in the peer domain. However, parallel research exists that has utilized more general measures of parenting, parent-adolescent relationship quality, and/or more general measures of peer competence which provide some support for the hypothesized associations in this study.

Some studies have solely examined parental behaviors. Among a sample of 550 Chinese students, Chan and Chan (2011) found that higher maternal psychological control was associated with adolescent conformity to levels of peer involvement, school involvement, and family involvement as well as peer norms and peer misconduct. In terms of parental hostility, Cook, Buehler, and Fletcher (2012) found that higher observed parental hostility was associated with lower adolescent friendship competence through its effect on adolescents' feelings of lower emotional security with parents.

Other studies have examined features of dyadic, parent-adolescent relationships. Drew, Berg, and Wiebe (2010) examined associations between mother-adolescent and father-adolescent relationships and adolescent peer orientation among adolescents with diabetes. Results indicated that lower mother- and father-adolescent relationship quality, as indicated by lower quality communication, lower independence granting, and poorer attachment quality, were associated with greater, negative peer orientation. Specifically, in the context of more negative mother-adolescent and father-relationships, adolescents were more willing to put the opinions of their peers and their need for peer acceptance

above their own well-being (i.e., adherence to healthy and doctor recommended diabetes management). In contrast, Summers, Forehand, Armistead, and Tannenbaum (1998) utilized a prospective design and specifically examined mother-adolescent and father-adolescent hostility as predictors of youth social competence assessed six years later during young adulthood. Importantly, the measure of social competence included a subscale assessing adolescents' abilities to communicate that they disagreed with the actions of their friend. The results indicated that neither mother- nor father-adolescent hostility were associated with young adult social competence; however, it is unclear whether significant associations would be substantiated if the scale was disaggregated and specific subscales were assessed.

Thus, these studies overall demonstrate the importance of parent-adolescent relationships and parental behaviors for adolescents' relationships with peers. However, clearly more research needs to focus on dyadic features of parent-adolescent relationships, such as parent-adolescent hostility, as well as adolescent compliance to peers as a specific and salient feature of adolescents' experiences with peers. This is especially important given the demonstrated increases in these constructs during adolescence (Laursen et al., 1998; Steinberg & Monahan, 2007). Thus, the current study also examines adolescent compliance to peers as a mediator of the association between mother-adolescent and father-adolescent hostility and changes in adolescent social anxiety symptoms. I hypothesize that adolescent compliance to peers will partially mediate the positive association between mother-adolescent and father-adolescent hostility and increases in adolescent social anxiety symptoms.

## **The Moderating Role of Teacher Support**

Youths' experiences in school represent a salient context to consider with regard to adolescent social anxiety symptoms and compliance to peers. Teachers are an important adult in the school context who can provide adolescents with a sense of security in the school setting (Hughes, 2012). Supportive teachers can help youth navigate their peer relationships and social interactions (Wang & Dishion, 2012) and might buffer against behavioral and emotional problems (Pössel, Rudasill, Sawyer, Spence, & Bjerg, 2013; Tennant et al., 2014). However, most of the research within school contexts has focused on the negative role of peers in heightening peer pressure and social anxiety symptoms, with very few studies focusing on the role of teacher behaviors or student-teacher relationships (as risk or protective factors). With regard to social anxiety symptoms, utilizing a large ( $N = 2,616$ ) sample of adolescents, De Wit et al. (2011) found that greater teacher support in 9<sup>th</sup> grade was associated with decreases in adolescent social anxiety symptoms one year later. This result was substantiated while controlling for several factors, including the level of family support. Thus, these results highlight the saliency of teachers over time as an additional context of support, which have influence over and above support within families. In contrast, Cavanaugh and Buehler (2015) did not find a significant association between teacher support and changes in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades.

The difference in these results could be explained by the age of adolescents, such that it is possible that the buffering effect of teacher support on adolescent social anxiety symptoms is stronger when adolescents are in high school versus middle school. This might be due to the "connectedness slump," which describes findings that students' feelings of connectedness to school drops significantly from 7<sup>th</sup> grade to 10<sup>th</sup> grade

(Whitlock, 2006). Thus, in the context of lower feelings of school connectedness during high school, teacher support might be more salient for adolescent well-being. Alternatively, a comparison of these results suggests that teacher support might have short-term effects on changes in social anxiety symptoms, but teacher support might not have longer term impacts on adolescent social anxiety symptoms. The results of the current study will help clarify these findings. Other tangential studies also find support for the buffering effect of teacher support on adolescent emotional difficulties. For example, studies have found that greater teacher support is associated with lower, generalized internalizing problems (Stewart & Suldo, 2011) and heightened well-being (Chu, Saucier, & Hafner, 2010).

With regard to adolescent compliance to peers, only one study has examined the impact of teacher support. Erikson, Crosnoe, and Dornbusch (2000) found that greater teacher support was associated with lower adolescent compliance to peers, such that adolescents were less likely to report that they would conform to their peers' negative behaviors. However, this study is specific to adolescent compliance to *deviant* peer behaviors, such as substance abuse, and does not reflect more benign behaviors such as changes of ideas or opinions to conform to peers that also are measured in the current study.

Findings from parallel research, however, also provide support for the protective influence of teachers on adolescents within peer contexts. Barber and Olsen (2004) highlighted the importance of teacher support during middle school and found that adolescent perceptions of increases in teacher support from 6<sup>th</sup> to 7<sup>th</sup> grades were associated with increases in adolescents' social initiative from 6<sup>th</sup> to 7<sup>th</sup> grades, such that adolescents were more willing to reach out to peers and share their feelings and

opinions with peers. Cross-sectional studies also have found that greater teacher support is associated with spending less time with friends (Walsh, Harel-Fisch, & Fogel-Grinveld, 2010) and fewer goals related to being popular among peers (Kiefer et al., 2013). Thus, the results from these studies might indirectly suggest that teachers who are warm, available, and respectful of students' needs and feelings might reduce the salience of peers for adolescents' self-concepts, such that adolescents are more willing to share opinions with peers (Barber & Olsen, 2004), do not feel pressure to spend excessive time with peers (Walsh et al., 2010), and do not feel a need to compete in the social context for peer recognition and popularity (Kiefer et al., 2013).

### **The Moderating Role of Effective Parent-Adolescent Conflict Resolution**

Studies have found that during adolescence parent-adolescent hostility increases from early to middle adolescence (Laursen et al., 1998). However, other studies have found that adolescence also is characterized by increases in effective parent-adolescent conflict resolution (Van Doorn et al., 2011). Thus, it is possible that in some families, parent-adolescent hostility might co-occur with effective parent-adolescent conflict resolution. As noted above, the current study makes an important distinction between parent-adolescent conflict resolution and parent-adolescent hostility. This study conceptualizes parent-adolescent conflict resolution as describing the way in which the conflict is ended. In contrast, parent-adolescent hostility describes a way in which conflict is expressed. It is important to note that the conceptualization of parent-adolescent conflict resolution has been inconsistent across studies, with most examining the way conflict is acted-out or expressed (e.g., withdrawal, negotiation, hostility) and only a select few examining how conflicts are actually concluded. Thus, few studies have examined associations between effective parent-adolescent conflict resolution (as

conceptualized in the current study) and adolescent outcomes. Moreover, no studies have examined effective parent-adolescent conflict resolution with regard to social anxiety symptoms or adolescent compliance to peers.

Parallel research has demonstrated that effective parent-adolescent conflict resolution has important implications for other indicators of adolescent well-being. Tucker, McHale, and Crouter (2003) examined direct associations among effective mother-adolescent and father-adolescent conflict resolution, conflict *frequency*, and adolescent self-esteem, depression, and risky behavior. Results indicated more effective conflict resolution in mother- and father-adolescent dyads was associated with higher self-esteem, lower depression, and fewer risky behaviors. More frequent mother- and father-adolescent conflict was only associated with lower adolescent self-esteem. The authors also examined interactions between effective mother-adolescent and father-adolescent conflict resolution and the frequency of mother-adolescent and father-adolescent conflict. A significant interaction was found between mother-adolescent conflict frequency and effective conflict resolution in predicting adolescent depressive symptoms. Interactions were not significant when examining father-adolescent relationships. Follow-up analyses examined conflict frequency (rather than resolution) as a moderator of the association, and results indicated that the negative association between effective conflict resolution and adolescent depression was stronger when conflict frequency was low. However, the results from Tucker et al. (2003) do not clarify whether effective parent-adolescent conflict resolution mitigates the effects of conflict on adolescent problems.

In contrast, Branje, van Doorn, van der Valk, and Meeus (2009) examined effective conflict resolution as a moderator of the association between parent-adolescent

conflict frequency and adolescent internalizing and externalizing problems. Conflict resolution and frequency were not distinguished across mother-adolescent and father-adolescent dyads in this study. Results indicated that the positive association between parent-adolescent conflict frequency and adolescent internalizing and externalizing was stronger under conditions of less effective conflict resolution. Although these results are not specific to parent-adolescent hostility, this study highlights the importance of examining interactions between different facets of parent-adolescent conflict. Moreover, these results provide some evidence of the potentially protective effect of effective parent-adolescent conflict resolution for adolescent internalizing symptoms (which include anxiety) in the context of parent-adolescent conflict.

With regard to adolescent compliance to peers, studies have not examined the impact of effective parent-adolescent conflict resolution. However, studies do provide evidence that higher quality parent-adolescent interactions influence the ways in which adolescents engage with their peer groups. For example, studies have found that greater parent-adolescent engagement in problem solving, as indicated by greater listening and compromise, is associated with more adolescent problem-solving with friends (Van Doorn et al., 2011) and romantic partners (Reese-Weber & Bartle-Haring, 1998). The results from these studies suggest that the ways in which parents and adolescents engage with each other, communicate, and solve problems will likely be reflected or mirrored in adolescents' relationships outside of the family context. More positive parent-adolescent interactions will increase adolescents' comfort in expressing their feelings and opinions with others, even if they are not positive opinions and feelings. These studies provide some support for the hypothesis that effective parent-adolescent conflict resolution might buffer against greater adolescent compliance to



peers. However, empirical studies are needed that specifically examine the potential buffering effects of effective of parent-adolescent conflict resolution on associations among parent-adolescent hostility, adolescent compliance to peers, and social anxiety symptoms. Moreover, longitudinal studies are needed to examine effects over time. The current study examines the moderating effect of effective parent-adolescent conflict resolution on the associations among parent-adolescent hostility, adolescent compliance to peers, and adolescent social anxiety symptoms over time.

### **Accounting for Adolescents' Comorbid Depressive Symptoms**

Social anxiety and depression, both in clinical and symptomatic forms, are highly comorbid (Cummings et al., 2014; Viana et al., 2008). However, most of the empirical literature on correlates of social anxiety has not considered depression, and most empirical literature on depression has not considered social anxiety. Thus, existing research findings largely do not elucidate whether the correlates of social anxiety and depression are specific to one of these internalizing problems or whether they are common to both.

The lack of clarity regarding whether correlates are unique to or shared between social anxiety and depressive symptoms also extend to interpersonal theories of depression and social anxiety. Specifically, interpersonal theories of depression and social anxiety contain similar interpersonal risk and protective factors across models, and models have been developed separately. Moreover, the discussion of these models contain little, if any, clarification regarding if and how proposed risk factors are considered unique to the specific disorder of interest (i.e., social anxiety or depression). For example, Kearney's (2005) and Rapee and Spence's (2004) models of social anxiety disorder examine the contribution of genetics, parental psychopathology, child

temperament, parenting practices such as warmth and rejection, parent-child attachment, and peer relationships such as peer rejection. Similar to these models of social anxiety, Rudolph, Flynn, and Abaied (2008) also posit that parental psychopathology, low parental warmth and support, parental over control, insecure parent-child attachment, family conflict, and problems with peers such as peer rejection, are salient risk factors for depression. Thus, examinations and comparisons of models of social anxiety and depression offer little direction for hypotheses regarding whether risk and protect factors are unique to the development of adolescent social anxiety and depressive symptoms or disorders.

Cognitive theories, which focus on the ways in which individuals focus on, process, and interpret stimuli, offer some support for differential correlates of social anxiety and depressive symptoms and/or disorders. Cognitive theorists suggest that information processing biases confer risk for developmental psychopathology and that the characterization of biases differentiate the development of some disorders over others (Hankin, Gibb, Abela, & Flory, 2010). Specifically, information-processing biases that are characterized by greater attentiveness and behavioral response to fear- and threat-inducing stimuli are theorized to confer risk for anxiety symptoms and disorders. In contrast, information-processing biases that are characterized by greater attentiveness and behavioral response to sadness and loss-inducing stimuli are theorized to confer risk for depressive symptoms and disorders. Thus, threat- and fear-inducing stimuli are most relevant to the development of social anxiety symptoms, and sadness- and loss-inducing stimuli are the more relevant to the development of depressive symptoms (Clark, Beck, & Alford, 1999). Empirically, research has demonstrated support of these propositions. For example, using clinical samples of

individuals with anxiety and depressive disorders, Hankin et al. (2010) found that individuals with depression preferentially attended to sad faces, whereas individuals with anxiety demonstrated preferential attendance to angry faces (i.e., threat-inducing). A meta-analysis also found that attention bias towards threat is strongly associated with anxiety (Bar-Haim et al., 2007). Guided by cognitive theories of depression and anxiety, as well as evolutionary theories of loneliness and social anxiety that were discussed previously, the current study hypothesizes that the direct effects of adolescent loneliness and parent-adolescent hostility, and mediation through adolescent compliance to peers, will be unique to changes in adolescent social anxiety symptoms.

In addition to associations with social anxiety, studies have found that adolescent loneliness also is associated with greater depressive symptoms (Prinstein & La Greca, 2002) and increases in depressive symptoms (Qualter, Brown, Munn, & Rotenberg, 2010). However, most studies have not taken into account comorbid adolescent social anxiety symptoms. With exception, Starr and Davila (2008) did take into account the comorbidity of depressive and social anxiety symptoms and found that loneliness was significantly associated with both types of internalizing problems. However, this study was cross-sectional, and thus the direction of associations cannot be ascertained from these results. Evolutionary theories of loneliness characterize loneliness as a threat- and fear-inducing stimulus which produces greater hypervigilance in social contexts because loneliness is counterintuitive to the innate need for individuals to affiliate with others as a safety and survival mechanism (Hawkey & Cacioppo, 2010). Thus, according to the cognitive theories which suggest that threat and fear-inducing stimuli are relevant to anxiety symptoms and disorders (Clark et al., 1999), adolescent loneliness should predict changes in adolescent social anxiety, but not depressive symptoms.

In terms of association between parent-adolescent hostility and adolescent depressive symptoms, only one study has examined associations (El-Shiekh & Elmore-Staton, 2004). Although a significant association was substantiated, this study did not take into account the role of comorbid social anxiety symptoms. In contrast, Starr and Davila (2008) examined the contribution of parent-adolescent conflict to adolescent social anxiety and depressive symptoms while taking into account their comorbidity. Results indicated that father-adolescent conflict was associated with greater social anxiety and depressive symptoms. However, this study was cross-sectional and did not specifically examine hostility. Thus, there is little evidence linking parent-adolescent hostility to changes in adolescent depressive symptoms.

Similar to other cognitive theorists, Pollak's (2003) theory of affective learning and risk for psychopathology focuses on the role of cognitive and attention biases in the development of psychopathology. Specifically, Pollak (2003) theorizes that parental displays of anger might also be threat-inducing stimuli for children. In terms of dyadic, parent-adolescent hostility and displays of anger, the threat signals that are produced by parental anger are theorized to facilitate adaptive defensive responses among children, which might include adolescent anger and hostility toward the parent (Pollak, 2003). Empirically, studies have found that adolescent attention biases for threat stimuli (angry faces) mediates the association between parental anger and adolescent social anxiety disorders (Gulley, Oppenheimer, & Hankin, 2014). Given the lack of research linking parent-adolescent hostility to depressive symptoms, and theoretical and empirical evidence for parent-adolescent hostility as a threat-stimulus, the current study proposes that parent-adolescent hostility should contribute uniquely to adolescent social anxiety symptoms.

Studies that have examined associations between adolescent compliance to peers and adolescent depressive symptoms also are scarce. Two longitudinal studies have examined associations and found conflicting results. Bandura et al. (2003) found a significant cross-sectional association between greater compliance to peers and greater adolescent depressive symptoms; however, a significant longitudinal association was not substantiated. In contrast, Allen et al. (2006) found that greater compliance to peers was associated with increases in adolescent depressive symptoms one year later. The difference in results could be due to age differences in the sample. The sample in Bandura's et al. (2003) study was several years older (mean age = 16 years) than the sample in Allen's et al. (2006) (mean age = 13 years old). Thus, the association between compliance to peers and adolescent well-being might be more relevant for the early adolescent sample utilized in the current study. However, it is also important to note that these studies did not account for comorbid adolescent social anxiety symptoms. Thus, the demonstrated cross-sectional and longitudinal associations could be attributed to comorbid social anxiety symptoms.

Adolescent compliance to peers is conceptualized as a type of safety behavior which, theoretically, occurs in response to social threat and fear (Gilbert, 2000). However, compliance to peers also is theorized to contribute to the perpetuation of social hypervigilance. Specifically, engagement in protective, safety behaviors does not allow for social experiences that might disconfirm negative beliefs about social situations (Wong et al., 2014). As such, greater compliance to peers is both a response to threat and a factor that contributes to perpetual proneness to social threat. Thus, the current study suggests that adolescent compliance to peers is a threat-inducing factor. According to cognitive theorists (i.e., Clark et al., 1999), and given the scarce and

conflicting research on the associations between adolescent compliance to peers and adolescent depressive symptoms, adolescent compliance to peers should be uniquely associated with increases in adolescent social anxiety symptoms. As such, the current study also proposes that the mediating processes through compliance to peers that are examined in the current study also are unique to adolescent social anxiety symptoms.

### **Moderation by Adolescent Gender**

Studies suggest that subclinical levels of social anxiety symptoms are higher among girls than boys (Aune & Stiles, 2009; La Greca, 1999). However, mean differences in symptoms do not speak to whether differences exist in associations leading to changes in social anxiety symptoms over time. Theoretically, scholars suggest that the ways in which girls and boys engage in relationships differ. Scholars posit that girls are more oriented by communion beliefs, characterized by appeasement, closeness, and harmony maintenance behaviors, than are boys (Davies & Lindsey, 2004), such that girls are more likely than boys to try to appease others through repression of their own thoughts and feelings (Rosenfield, Vertefuille, & McAlpine 2000). In contrast, boys may be more assertive than girls in relationships (Rosenfield et al., 2000). As such, the associations among adolescent loneliness, parent-adolescent hostility, and changes in adolescent social anxiety symptoms, as well as mediation through adolescent compliance to peers may differ across adolescent girls and boys. Specifically, it is possible that the ways in which boys navigate relationships and conflict may buffer some of associations among adolescent loneliness, parent-adolescent hostility, compliance to peers, and changes in social anxiety symptoms. Boys' tendency to engage in more assertiveness in relationships might reduce their feelings of fear and insecurity in response to adolescent loneliness and parent-adolescent hostility, and thus

boys might be less likely to avoid social interactions or conform to peers in response to loneliness and parent-adolescent hostility.

Empirically, little research is available that has examined gender differences in associations among adolescent loneliness, parent-adolescent hostility, adolescent compliance with peers, and adolescent social anxiety symptoms. In terms of adolescent loneliness, Cavanaugh and Buehler (2015) did not find adolescent gender differences in the positive association between adolescent loneliness and increases in adolescent social anxiety symptoms. In terms of parent-adolescent hostility, tangential research has found that parent-adolescent hostility is associated with higher internalizing among daughters but not sons (Stevens et al., 2007). With regard to adolescent compliance to peers, studies have shown that boys engage in greater compliance to peers (Kosten et al., 2013; Steinberg & Monahan, 2007); however, few studies exist that have examined gender differences in associations. Given the paucity of studies that have that has examined adolescent gender differences in associations among adolescent loneliness, parent-adolescent hostility, adolescent compliance with peers, and adolescent social anxiety symptoms, specific hypotheses regarding adolescent gender differences were not formulated in this study.

### **Covariates**

In addition to accounting for the role of comorbid adolescent depressive symptoms, this study also includes several important covariates. First, this study controlled for the influence of *parental depressive symptoms* on adolescent social anxiety symptoms and depressive symptoms. This is important, as studies have found that adolescents whose parents experience heightened depressive symptoms have a significantly increased risk of experiencing social anxiety symptoms just below the

disorder threshold (Knappe et al., 2009). Likewise, studies have found that adolescents with a clinically depressed parent are three times more likely to develop a social anxiety disorder than adolescents whose parents do not experience clinical depression (Lieb et al., 2000). In terms of adolescent depressive symptoms as an outcome, Bureau et al. (2009) found that mother depressive symptoms when their children were infants was associated with greater depressive symptoms among children during middle-childhood and adolescence. As such, parental depressive symptoms might have influences on adolescent depression over time. By controlling for parental depressive symptoms, the findings from the current study demonstrate whether the influence of other adolescent and contextual factors contribute to social anxiety symptoms over and above the influence of parental depressive symptoms.

Second, this study controlled for the influence of *adolescent depressive symptoms during 6<sup>th</sup> grade* on changes in adolescent social anxiety symptoms during 8<sup>th</sup> grade, as well as the influence of *adolescent social anxiety symptoms during 6<sup>th</sup> grade* on changes in adolescent depressive symptoms during 8<sup>th</sup> grade. Among a sample of middle school students in 6<sup>th</sup> to 8<sup>th</sup> grades, Aune and Stiles (2009) found that social anxiety symptoms were associated with increases in adolescent depressive symptoms over one year. Aune and Stiles also found that depressive symptoms were not significantly associated with changes in social anxiety symptoms. However, some scholars have found that the onset of social anxiety disorders is preceded by other psychological disorders, including depression (Neufeld, Swart, Bienvenu, Eaton, & Cai, 1999).

Third, this study controlled for the effect of concurrent *negative life events* in order to demonstrate that potential changes in social anxiety are due to the examined



predictors and are not due to other life circumstances that potentially create stress for adolescents. Negative life events include factors such as parental divorce, financial hardship, and deaths in the family. The inclusion of this covariate is important, as studies have found that negative life events are associated positively with adolescent anxiety symptoms (Lewis, Byrd, & Ollendick, 2012) and adolescent social anxiety symptoms specifically (Aune & Stiles, 2009).

### **Hypotheses**

Previous research has identified numerous correlates of social anxiety symptoms and disorders that span multiple contexts. However, few studies have integrated these findings and examined the interactions and processes among multiple contexts that contribute to and buffer against increases in social anxiety symptoms during early adolescence. Through a careful selection of risk, protective, and mediating factors that are both developmentally and theoretically salient, the current study builds on this research. This study proposes that adolescent loneliness and parent-adolescent hostility contribute to increases in adolescent social anxiety symptoms, both directly and through adolescent compliance to peers. Moreover, this study proposes that teacher support and effective parent-adolescent conflict resolution moderate associations. I hypothesize that:

1. Greater adolescent loneliness (6<sup>th</sup> grade) and greater parent-adolescent hostility are associated with increases in adolescent social anxiety symptoms (6<sup>th</sup> to 8<sup>th</sup> grades).

2. Adolescent compliance to peers partially mediates the positive associations among adolescent loneliness, parent-adolescent hostility, and increases in adolescent social anxiety symptoms.

3. Teacher support moderates associations between adolescent loneliness and increases in adolescent social anxiety symptoms. Specifically, the positive association between adolescent loneliness and increases in adolescent social anxiety symptoms will be weaker under conditions of greater teacher support and stronger under conditions of lower teacher support.

4. Effective parent-adolescent conflict resolution moderates associations between parent-adolescent hostility and increases in adolescent social anxiety symptoms. Specifically, the positive association between parent-adolescent hostility and increases in adolescent social anxiety symptoms will be weaker under conditions of more effective parent-adolescent conflict resolution and stronger under conditions of less effective parent-adolescent conflict resolution.

5. Teacher support moderates the positive association between adolescent loneliness and adolescent compliance to peers. Specifically, the positive association between adolescent loneliness and adolescent compliance to peers will be weaker under conditions of greater teacher support and stronger under conditions of lower teacher support.

6. Effective parent-adolescent conflict resolution moderates the positive association between parent-adolescent hostility and adolescent compliance to peers. Specifically, the positive association between parent-adolescent hostility and adolescent compliance to peers will be weaker under conditions of more effective parent-adolescent conflict resolution and stronger under conditions of less effective parent-adolescent conflict resolution.

7. After accounting for comorbid adolescent depressive symptoms, associations will be unique to adolescent social anxiety symptoms.

## CHAPTER IV

### METHOD

#### **Sampling Procedures and Characteristics**

This study utilized a sample that was selected from a larger project that examined family life during youth's transition into adolescence (Buehler, 2006). Adolescents from 13 middle schools in a southeastern United States county (and their families) were recruited through 6<sup>th</sup> grade homeroom classrooms. Of the 71% of families that returned consent forms within three contacts, 80% agreed to participate in the study. The resulting sample was reasonably representative of the county in terms of race, parents' marital status, and family poverty status.

Families were eligible to participate in the longitudinal study if parents were married or long-term cohabitants and there were no step-children in the family. There were 1,131 families that fulfilled the study requirements and were invited to participate. Of those eligible, 37% (416 families) agreed to join the longitudinal study. Using survey data from the larger, cross-sectional part of the study, eligible participating families were similar to eligible nonparticipating families on all study variables (Buehler, 2006).

Participating adolescents were 11 to 14 years old and in 6<sup>th</sup> grade at Wave 1 (W1) ( $M = 11.86$ ,  $SD = 0.69$ ). Girls comprised 51% of the youth ( $n = 211$ ). Participating families were 91% European American and 3% African American. African American participation was different than the percentage of married African American couples with children younger than 18 years old in the county (5%) and in the United States (7.8%; U.S. Census Bureau, 2000a, Table PCT27 of SF4). On average, parents had earned an

associate degree, which was similar to county education statistics of European American adults over 24 years of age (U.S. Census Bureau, 2000b, Table P148A of SF4). The median household income for families in this study was about \$70,000, which was higher than the county-level median income (\$59,548) for European American families (U.S. Census Bureau, 2000c, Table PCT40 of SF3; \$64,689 inflation-adjusted dollars through 2001).

### **Data Collection Procedures**

Data were collected via questionnaires and observations. Participants were asked to complete questionnaires and participate in observations once a year for three years. The first data collection was when adolescents were in 6<sup>th</sup> grade (W1).

Questionnaires and observational tasks were completed again one year later when adolescents were in 7<sup>th</sup> grade (W2) and again in 8<sup>th</sup> grade (W3). Informed consent and assent were obtained at each data collection session.

During W1 of data collection, adolescents completed questionnaires at school and were compensated with a pizza party. Additional questionnaires were mailed to parents and adolescents to complete independently. During a yearly home visit, completed questionnaires were collected, and parents and adolescents completed another set of questionnaires. During the home visit, families also participated in several observed interaction tasks.

In addition to questionnaire data, this study utilized observational data from a 20-minute problem-solving activity that included the mother, father, and adolescent. For the problem-solving task, mothers, fathers, and adolescents each independently completed the 28-item Issues Checklist (IC; Conger et al., 1992). Based on family member responses, home visitors selected eight issues for discussion. Participants were asked

to elaborate an issue, identify who was usually involved, and suggest possible solutions during their discussion. Families were instructed that they did not need to get through all of the discussion cards (i.e., issues) and to discuss issues at their own pace. The interaction from this task was videotaped and later coded by trained observers using the Iowa Family Interaction Rating Scales (IFIRS; Melby & Conger, 2001). Each family member's behaviors were coded. Coders were trained in concordance the Iowa State Observational Laboratory procedures and criteria. Coders-in-training passed written exams (score of 90% or higher) and a viewing exam (score of 80% or higher within 1 rating point on a 9-point scale of the Iowa criterion scores). Monthly training checks also were conducted to minimize coder drift.

Families were compensated \$100 for their participation at W1, \$120 at W2, and \$135 at W3. There was some attrition: 416 families participated at W1, 366 families participated at W2, 340 families at W3 (82% retention of W1 families). Analyses revealed, however, that there were no significant differences between retained families and families lost to attrition on any study variables (Buehler, 2006).

## **Measures**

For ease of presentation, see Table 1 for a summary of the latent variables and their manifest indicators.

**Adolescent social anxiety symptoms (6<sup>th</sup> and 8<sup>th</sup> grades).** Symptoms were measured at W1 and W3 using adolescent reports on the Social Anxiety Scale for Children-Revised (SASC-R; La Greca & Stone, 1993). Adolescent social anxiety symptoms is a latent variable with two manifest indicators. The first manifest indicator was the 5-item fear of negative evaluation subscale from the SASC-R. The second manifest indicator was the 9-item social avoidance subscale from the SASC-R. For both

subscales, adolescents indicated the frequency of social experiences using a 5-point response format (1 = *not at all* to 5 = *all the time*). A sample item for the fear of negative evaluation subscale was “I worry about what other kids think of me.” A sample item for the social avoidance subscale was “I feel shy around kids I don’t know.” Cronbach’s alphas for the fear of negative evaluation and social avoidance subscales at W1 and W3 ranged from .83 to .91. Higher scores indicated greater adolescent social anxiety symptoms.

**Adolescent loneliness (6<sup>th</sup> grade).** Loneliness is a latent construct with three manifest indicators. Adolescents completed the 8-item UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978). Adolescents indicated the frequency of lonely social experiences using 4-point response format (1 = *never* to 4 = *a lot*). A sample item was “I lack companionship.” Two parcels were created from this scale by randomly assigning four items to each parcel (Coffman & MacCallum, 2005). Each parcel was a manifest indicator. The utilization of parcels lends to more parsimonious models, better parameter estimates, and less bias due to measurement error (Coffman & MacCallum, 2005; Little, Rhemtulla, Gibson, & Schoemann, 2013). Cronbach’s alphas for parcels were .70 and .69. Loneliness also was measured using teacher report on a single item, “complains of loneliness” from the Teacher Report Form completed at W1 (Achenbach, 1991). Teachers responded to this item on a 3-point response format (0 = *not true* to 2 = *very true or often true*). Teacher report of adolescent loneliness was the third manifest indicator.

**Parent-adolescent hostility (6<sup>th</sup> grade).** Parent-adolescent hostility is a latent variable with three manifest indicators. Mother-adolescent and father-adolescent hostility

were examined in separate models and were measured using adolescent, mother or father, and observer report.

Adolescent, mother, and father reports of parent-adolescent hostility were measured using the 7-item hostility subscale of the Iowa Youth and Families assessment protocol (Conger, Ge, Elder, Lorenz, & Simons, 1994). Adolescents reported on their own and their mothers' and fathers' hostility. Mothers and fathers reported on their own and their adolescents' hostility. Hostile behaviors were rated on a 7-point response format (1 = *always* to 7 = *never*, reverse coded). Sample items were "Shout at him/her because you were upset with him/her" and "Call you bad names." Cronbach's alphas for adolescent, mother, and father report of their own and each other's expressed hostility ranged from .83 to .88 for W1 measures. Adolescents' and mothers' or fathers' reports of hostility toward adolescents were averaged into one score. Adolescents' and mothers' or fathers' reports of adolescents' hostility toward mothers or fathers were averaged into one score. Higher scores indicated more hostility. The two composites were each used as a manifest indicator of mother-adolescent or father-adolescent hostility.

Observer reports of mother- and father-adolescent expressed hostility were measured using 12 ratings of hostility, angry coercion, and antisocial behavior from the IFIRS (Melby & Conger, 2001). Hostility was indicated by verbal instances of anger, contempt, and critical comments directed toward the other person. Angry coercion was indicated by participants' attempts to control the other person through hostile behavior. Antisocial behavior was indicated by egocentric behavior that demonstrated resistance and insensitive remarks and behaviors toward others. Trained coders rated mother-to-

adolescent, adolescent-to-mother, father-to-adolescent, and adolescent-to-father behaviors on a 9-point scale (1 = *not characteristic* to 9 = *mainly characteristic*).

To assess interrater reliability, 20% of the interaction tasks in this study were coded by two coders. The average level of agreement between the two coders (within one rating point) was 72% for the mother-adolescent ratings and 73% for the father-adolescent ratings. Inconsistencies in codes were resolved through discussion and consensus coding. Intraclass correlations were .51 for the mother-adolescent ratings and .48 for the father-adolescent ratings (Buehler, 2006). Cronbach's alpha for mother-adolescent and father-adolescent and observational composites at W1 were .81 and .78, respectively.

Observer ratings of adolescents' and mothers' hostility, angry coercion, and antisocial behavior toward each other were aggregated and averaged into one score of mother-adolescent hostility. Observer ratings of adolescents' and fathers' hostility, angry coercion, and antisocial behavior toward each other were aggregated and averaged into one score of father-adolescent hostility. The composite of observational ratings was the third manifest indicator in the mother-adolescent and father-adolescent models.

**Adolescent compliance to peers (7<sup>th</sup> grade).** Adolescent compliance to peers is a latent variable with three manifest indicators. Adolescents, mothers, fathers, and teachers reported on 11 items from the Resistance to Peer Influence Scale (Steinberg & Monahan, 2007). The scale was adapted to a 4-point response format in which respondents reported the extent to which behaviors with peers described adolescents (1 = *not like me* to 4 = *a lot like me*). A sample item was "I go along with my friends just to keep them happy." Cronbach's alphas for adolescent, mother, father, and teacher report at W2 ranged from .77 to .87. Higher scores indicated greater adolescent compliance to



peers. Fathers' and mothers' reports of adolescent compliance to peers were aggregated and averaged into one score of parents' report on adolescent compliance to peers.

**Teacher support (6<sup>th</sup> grade).** Teacher support is a manifest variable.

Adolescents reported on the four item Teacher Support and Satisfaction scale (Bowen & Richman, 1997). Adolescents indicated the number of teachers that engaged in supportive behaviors on a 5-point response scale (1 = *none* to 5 = *all*). A sample item was "How many of your teachers believe you can do well in school?" Cronbach's alpha for adolescent report at W1 was .77. Teacher support also was measured using teacher report on two items from the Social Initiative Scale (Barber & Erikson, 2001) which assessed adolescents' comfort in interacting with teachers on a 5-point response format (1 = *never* to 5 = *always*). The items were "talks to teachers and staff about other things than class" and "asks questions in class when he/she doesn't understand the material." Higher scores indicated greater teacher support. Adolescent and teacher reports were standardized and averaged into a composite score of teacher support.

**Effective parent-adolescent conflict resolution (6<sup>th</sup> grade).** Effective parent-adolescent conflict resolution is a manifest variable. Effective parent-adolescent conflict resolution was measured using adolescent and mother or father report on the 6-item poor resolution subscale from the Children's Perceptions of Parent-Child Conflict scale (CPPCC) (Harold, 1999, personal communication). This measure was adapted from the resolution subscale from the Children's Perception of Interparental Conflict (Grych, Seid, & Fincham, 1992). Sample items included "When my Dad and I have an argument, we usually work it out" and "Even after my Dad and I have stopped arguing, we stay annoyed with each other." Participants responded to items on a 5-point response format

(1 = *strongly agree* to 5 = *strongly disagree*). Items were reverse coded so that higher scores indicated more effective conflict resolution. Cronbach's alphas for adolescents', mothers', and fathers' reports at W1 ranged from .72 to .86. Adolescent and mother or father reports were averaged into a composite score of effective parent-adolescent conflict resolution.

**Adolescent depressive symptoms (6<sup>th</sup> and 8<sup>th</sup> grades).** Adolescent depressive symptoms is a latent variable with two manifest indicators. Adolescents completed the 10-item Children's Depression Inventory (Kovacs, 1992). For each item, adolescents were presented with three statements and chose the statement that best described their feelings in the past two weeks. A sample item was "I am sad once in a while," "I am sad many times," "I am sad all the time" (0 = *once in a while* to 2 = *all the time*). Higher scores indicated greater depressive symptoms. Two parcels were created by randomly assigning five items to each parcel. Cronbach's alphas for the parcels at W1 and W3 ranged from .65 to .79.

**Parental depressive symptoms (6<sup>th</sup> grade).** Parental depressive symptoms is a manifest variable. Mothers and fathers completed the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) on a 4-item response format ranging from (0 = *rarely or none of the time* to 3 = *most or all of the time*). A sample item was "I felt depressed." Higher scores indicate greater depressive symptoms. Cronbach's alphas at W1 were .89 and .85 for mothers and fathers, respectively. Mothers' and fathers' reports on their depressive symptoms were aggregated and averaged to create a composite score of parental depressive symptoms.

**Negative life events (8<sup>th</sup> grade).** Negative life events is a manifest variable. Mothers and fathers completed the 30-item Sources of Stress Inventory (Chandler,

1981; Coddington, 1972). Respondents indicated the time period that 30 life events occurred on a three-point scale (1 = *never happened* to 3 = *happened in last 6 months*) Samples items included “parental divorce”, “change in financial status”, and “death of a family member.” Scores for mothers and fathers were summed and then aggregated and averaged to form of composite score of parent report on negative life events.

Table 1. Latent and Manifest Variables and Factor Loadings

Latent and Manifest Variables	SEM Factor Loadings	
	Direct M-Y/F-Y	Mediation M-Y/F-Y
Adolescent social anxiety symptoms 8 <sup>th</sup> grade		
<i>YR fear of negative evaluation subscale</i>	.98/.98	.98/.93
<i>YR social avoidance subscale</i>	.79/.79	.77/.76
Adolescent loneliness 6 <sup>th</sup> grade		
<i>YR Parcel 1 UCLA Loneliness scale</i>	.86/.86	.86/.86
<i>YR Parcel 2 UCLA Loneliness scale</i>	.88/.89	.89/.89
<i>TR on 2 items</i>	.14/.13	.14/.13
Parent-adolescent hostility 6 <sup>th</sup> grade		
<i>YR &amp; MR or FR on hostility toward adolescent</i>	.79/.92	.79/.91
<i>YR &amp; MR or FR on adolescent hostility</i>	.87/.85	.87/.86
<i>OB mother-adolescent or father-adolescent hostility</i>	.34/.28	.34/.28
Adolescent compliance to peers 7 <sup>th</sup> grade		
<i>YR on adolescent compliance</i>		.49/.43
<i>MR &amp; FR on adolescent compliance (composite)</i>		.60/.68
<i>TR on adolescent compliance</i>		.30/.28
Teacher support 6 <sup>th</sup> grade (composite of YR and TR)		
Effective conflict resolution (composite of YR and MR or FR)		
Adolescent social anxiety symptoms 6 <sup>th</sup> grade		
<i>YR fear of negative evaluation subscale</i>	.92/.93	.92/.99
<i>YR social avoidance subscale</i>	.77/.76	.77/.77
Adolescent depressive symptoms 6 <sup>th</sup> grade		
<i>YR Parcel 1 Children's Depression Inventory</i>	.75/.74	.75/.76
<i>YR Parcel 2 Children's depression Inventory</i>	.89/.91	.90/.93
Parental depressive symptoms 6 <sup>th</sup> grade (composite of MR & FR)		
Negative life events 8 <sup>th</sup> grade (composite of MR & FR)		

**Note.** Factor loadings are standardized values. The first factor loading is for mother-adolescent models. The second factor loading is for father-adolescent models. YR = youth report. MR = mother report. FR = father report. TR = teacher report. OB = observed.

## **Analytic Procedures**

Descriptive statistics were calculated using SPSS (version 20). Hypotheses were tested using structural equation modeling in AMOS, version 20. Separate mother-adolescent and father-adolescent models were estimated. Three fit indices were used to assess the acceptability of each analytic model: the chi-square statistic, comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). A nonsignificant chi-square statistic indicated good model fit. However, due to the large sample size, a significant chi-square was expected for most models. Therefore, other fit indices also were examined (Byrne, 2001). Adequate model fit was indicated by CFI values of .90 to .95 (Byrne, 2001; Hu & Bentler, 1999) and RMSEA values ranging from .06 to .08 (Browne & Cudeck, 1993; Byrne, 2001). Good model fit was indicated by CFI values greater than .95 and RMSEA values less than .05 (Browne & Cudeck, 1993; Byrne, 2001; Hu & Bentler, 1999). The significance level for all estimates was set at  $p < .05$ . Missing values were addressed using full information maximum likelihood estimation methods, a preferred technique for producing estimates with minimal bias (Schlomer, Bauman, & Card, 2010).

**Mediation.** I first tested a model examining the direct effect of adolescent loneliness and parent-adolescent hostility on changes in adolescent social anxiety and depressive symptoms. I then added the mediator, adolescent compliance to peers, to the model. Partial or full mediation were considered if the following conditions were met: (a) there was a direct association between adolescent loneliness or parent-adolescent hostility and adolescent social anxiety symptoms during 8<sup>th</sup> grade; (b) the association between adolescent compliance to peers during 7<sup>th</sup> grade and adolescent social during 8<sup>th</sup> grade was significant; (c) the association between adolescent loneliness or parent-

adolescent hostility and adolescent compliance to peers was significant; and (d) significant direct associations between adolescent loneliness or parent-adolescent hostility and adolescent social anxiety symptoms during 8<sup>th</sup> grade were attenuated when adolescent compliance to peers was entered into the model. Full mediation was indicated if the direct associations became nonsignificant when the mediator was entered into to the model, and if Sobel's test for the significance of indirect effects was significant. Partial mediation was indicated if the size of the direct association was significantly reduced when the mediator was entered into the model (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), and if Sobel's test for the significance of indirect effects was significant. If direct associations were not significant in the direct model, but the mediator was significantly associated with both the adolescent social anxiety symptoms during 8<sup>th</sup> grade and the independent variable of interest, then the significance of the indirect pathway was tested using Sobel's test (MacKinnon & Fairchild, 2009). An indirect pathway was indicated if Sobel's test was significant.

**Moderation.** The moderating effects of teacher support and effective parent-adolescent conflict resolution were tested one at a time. To test the moderating hypotheses for teacher support, I mean-centered adolescent loneliness and the moderator of teacher support in SPSS (version 20) (Proulx, Buehler, & Helms, 2009). I created interaction terms between the centered adolescent loneliness scores and the centered teacher support scores (Proulx et al., 2009). The interaction term was added to the model as a manifest indicator. A significant association among the manifest interaction term, W2 adolescent compliance to peers, and W3 youth social anxiety symptoms was used to indicate that teacher support moderated both the direct and mediating pathway. In regard to examining effective parent-adolescent conflict resolution

as a moderator, I created an interaction term between centered parent-adolescent hostility scores and centered effective parent-adolescent conflict resolution scores. The interaction term was added to the model as a manifest indicator.

Significant interactions were probed using multi-group SEM analyses (Byrne, 2001). The sample was divided into the top and bottom third of scores on teacher support and/or effective parent-adolescent conflict resolution (Kiesner & Pastore, 2005). I compared associations between the high and low score groups. Two models were generated and compared. The first model constrained all parameters to be equal across groups. The second model allowed structural parameters to vary across the two groups. A significant change in chi-square indicated that there were differences in the unconstrained structural paths between the high and low score groups. In order to specify group differences, critical ratios were examined. Critical ratios greater than 1.96 ( $p < .05$ ) indicated potential differences in the associations. Multiple-group SEM analysis also was used to test for adolescent gender differences in the model pathways.

## CHAPTER V

### RESULTS

Descriptive statistics, including correlations among variable indicators are presented in Table 2. All correlations were in the expected directions. For ease of presentation, factor loadings for latent variables in the direct and mediating models are presented in Table 1.

#### **Direct Models: Adolescent Loneliness and Parent-Adolescent Hostility to Changes in Adolescent Social Anxiety Symptoms**

To test the first hypothesis, the direct effects of adolescent loneliness and parent-adolescent hostility on changes in adolescent social anxiety symptoms were examined. Separate mother-adolescent (Figure 2) and father-adolescent models (Figure 3) were tested. Model fit for the direct mother-adolescent model was good ( $\chi^2(59) = 182.38, p = .00, CFI = .96, RMSEA = .05$ ). Results partially supported my hypothesis. Contrary to my hypothesis, adolescent loneliness during 6<sup>th</sup> grade was not associated with increased adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades ( $b = .17, \beta = .06, p = .24$ ). Consistent with my hypothesis, mother-adolescent hostility during 6<sup>th</sup> grade was significantly associated with increases in adolescent social anxiety symptoms ( $b = .30, \beta = .13, p = .02$ ). Model fit for the direct father-adolescent model was good ( $\chi^2(59) = 110.34, p = .00, CFI = .97, RMSEA = .05$ ). Contrary to my hypothesis, neither adolescent loneliness ( $b = .16, \beta = .08, p = .31$ ) nor father-adolescent hostility ( $b = .04, \beta = .02, p = .78$ ) were significantly associated with increases in adolescent social anxiety symptoms from 6<sup>th</sup> the 8<sup>th</sup> grades.



Mother-adolescent and father-adolescent models were examined across sons and daughters using multi-group SEM analysis. These analyses were exploratory and no hypotheses were made. Associations did not differ across sons and daughters in the mother-adolescent ( $\Delta\chi^2(6) = 11.41, p = .08$ ) nor father-adolescent models ( $\Delta\chi^2(6) = 10.97, p = .09$ ).

### **Mediating Models: Adolescent Compliance to Peers as a Mediator**

Adolescent compliance to peers was entered into the models as a mediator to test the hypothesis that adolescent compliance to peers partially mediates the associations among adolescent loneliness, parent-adolescent hostility, and increases in adolescent social anxiety symptoms (hypothesis 2). Model fit for the mediated mother-adolescent model was good ( $[\chi^2(98) = 195.42, p = .00, CFI = .95, RMSEA = .05]$ ; see Figure 4). Greater adolescent loneliness during 6<sup>th</sup> grade was marginally associated with greater adolescent compliance to peers during 7<sup>th</sup> grade ( $b = .08, \beta = .16, p = .06$ ). Greater mother-adolescent hostility during 6<sup>th</sup> grade was associated with greater adolescent compliance to peers during 7<sup>th</sup> grade ( $b = .22, \beta = .44, p < .001$ ). Greater adolescent compliance to peers during 7<sup>th</sup> grade was significantly associated with increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades ( $b = .91, \beta = .22, p = .02$ ). Sobel's test was not significant for the indirect pathway from 6<sup>th</sup> grade adolescent loneliness to adolescent social anxiety symptoms during 8<sup>th</sup> grade through adolescent compliance to peers during 7<sup>th</sup> grade ( $z = 1.47, p = .14$ ). Sobel's test indicated a significant mediating effect between mother-adolescent hostility during 6<sup>th</sup> grade and adolescent social anxiety symptoms during 8<sup>th</sup> grade through greater adolescent compliance to peers during 7<sup>th</sup> grade ( $z = 2.03, p = .04$ ). The direct association between mother-adolescent hostility during 6<sup>th</sup> grade and adolescent social

anxiety symptoms during 8<sup>th</sup> grade was reduced to non-significance when 7<sup>th</sup> grade adolescent compliance to peers was included in the model, suggesting full mediation.

Model fit for the father-adolescent model was good ( $\chi^2(97) = 182.49, p = .00, CFI = .96, RMSEA = .05$ ]; see Figure 5). Adolescent loneliness during 6<sup>th</sup> grade was not significantly associated with 7<sup>th</sup> grade adolescent compliance to peers ( $b = .05, \beta = .12, p = .13$ ). In contrast, greater father-adolescent hostility during 6<sup>th</sup> grade was significantly associated with greater adolescent compliance to peers during 7<sup>th</sup> grade ( $b = .25, \beta = .49, p < .001$ ). Greater adolescent compliance to peers during 7<sup>th</sup> grade was associated with increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades ( $b = 1.08, \beta = .23, p = .02$ ). Although father-adolescent hostility during 6<sup>th</sup> grade was not directly associated with increases in adolescent social anxiety symptoms, Sobel's test indicated a significant indirect pathway linking father-adolescent hostility during 6<sup>th</sup> grade to increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades through greater adolescent compliance to peers during 7<sup>th</sup> grade ( $z = 2.10, p = .03$ ).

Multi-group analyses indicated that the mother-adolescent model differed for sons and daughters ( $\Delta\chi^2(9) = 21.64, p = .01$ ). Examination of critical ratios revealed that the association between adolescent compliance to peers during 7<sup>th</sup> grade and increases in adolescent social anxiety symptoms was significant for daughters ( $b = 1.95, \beta = .47, p < .001$ ) but not for sons ( $b = .22, \beta = .07, p = .62$ ). Likewise, multi-group analyses indicated that the father-adolescent model also differed for sons and daughters ( $\Delta\chi^2(9) = 17.91, p = .04$ ). Examination of critical ratios also revealed that the association between adolescent compliance to peers during 7<sup>th</sup> grade and increases in adolescent social anxiety symptoms was significant for daughters ( $b = 2.14, \beta = .46, p < .001$ ) but not for sons ( $b = .34, \beta = .08, p = .51$ ).

## **Moderation by Teacher Support and Effective Parent-Adolescent Conflict**

### **Resolution**

Moderation by teacher support and effective parent-adolescent conflict resolution were tested one at a time. First, I tested the hypothesis that teacher support moderates the association between adolescent loneliness and increases in adolescent social anxiety symptoms (hypothesis 3). Second, I tested the hypothesis that teacher support moderates the positive association between adolescent loneliness and adolescent compliance to peers (hypothesis 5). To test these hypotheses, the main effect of teacher support and an interaction term between adolescent loneliness and teacher support were added as manifest indicators to the mediating models.

The mother-adolescent model ( $\chi^2(116) = 219.96, p = .00, CFI = .95, RMSEA = .05$ ) and father-adolescent model ( $\chi^2(116) = 221.32, p = .00, CFI = .95, RMSEA = .05$ ) fit the data well. Contrary to my hypothesis, the structural path from the interaction between adolescent loneliness and teacher support during 6<sup>th</sup> grade to adolescent social anxiety symptoms during 8<sup>th</sup> grade was not significant in the mother-adolescent model ( $b = -.10, \beta = -.09, p = .15$ ) or the father-adolescent model ( $b = -.08, \beta = -.06, p = .26$ ). Also contrary to my hypothesis, the structural path from the interaction between adolescent loneliness and teacher support during 6<sup>th</sup> grade to adolescent compliance to peers during 7<sup>th</sup> grade was not significant in the mother-adolescent model ( $b = .01, \beta = .04, p = .55$ ) or the father-adolescent model ( $b = -.02, \beta = -.05, p = .48$ ). Although not hypothesized, there was a main effect of teacher support during 6<sup>th</sup> grade for adolescent compliance to peers during 7<sup>th</sup> grade in the mother-adolescent and father-adolescent models, such that greater teacher support during 6<sup>th</sup> grade was associated with lower

adolescent compliance to peers during 7<sup>th</sup> grade in the mother-adolescent model ( $b = -.10$ ,  $\beta = -.28$ ,  $p < .001$ ) and the father-adolescent model ( $b = -.08$ ,  $\beta = -.25$ ,  $p = .001$ ).

I also tested the hypotheses that effective parent-adolescent conflict resolution moderates the association between parent-adolescent hostility and increases in adolescent social anxiety symptoms (hypothesis 4) and that effective parent-adolescent conflict resolution moderates the positive association between parent-adolescent hostility and adolescent compliance to peers (hypothesis 6). To test these hypotheses, the main effect of effective parent-adolescent conflict resolution and an interaction term between effective parent-adolescent conflict resolution and parent-adolescent hostility were added as manifest indicators to the mediating models. The mother-adolescent model ( $\chi^2(116) = 232.54$ ,  $p = .00$ , CFI = .95, RMSEA = .05) and father-adolescent model ( $\chi^2(115) = 207.19$ ,  $p = .00$ , CFI = .96, RMSEA = .04) fit the data well. Contrary to my hypothesis, the structural path from the interaction between effective mother-adolescent conflict resolution and mother-adolescent hostility during 6<sup>th</sup> grade to adolescent social anxiety symptoms during 8<sup>th</sup> grade was not significant in the mother-adolescent model ( $b = -.09$ ,  $\beta = -.04$ ,  $p = .43$ ). Likewise, the structural path from the interaction between effective father-adolescent conflict resolution and father-adolescent hostility during 6<sup>th</sup> grade to adolescent social anxiety symptoms during 8<sup>th</sup> grade was not significant in the father-adolescent model ( $b = .01$ ,  $\beta = .01$ ,  $p = .91$ ). Also contrary to my hypothesis, the structural path from the interaction between effective mother-adolescent conflict resolution and mother-adolescent hostility during 6<sup>th</sup> grade to adolescent compliance to peers during 7<sup>th</sup> grade was not significant in the mother-adolescent model ( $b = .05$ ,  $\beta = .10$ ,  $p = .20$ ). The structural path from the interaction between effective father-adolescent conflict resolution and father-adolescent hostility during 6<sup>th</sup> grade to adolescent

compliance to peers during 7<sup>th</sup> grade also was not significant in the father-adolescent model ( $b = .03$ ,  $\beta = .07$ ,  $p = .36$ ). Although not hypothesized, there was a main effect of effective mother-adolescent conflict resolution during 6<sup>th</sup> grade for adolescent compliance to peers during 7<sup>th</sup> grade in the mother-adolescent model ( $b = -.07$ ,  $\beta = -.19$ ,  $p = .04$ ), such that more effective mother-adolescent conflict resolution during 6<sup>th</sup> grade was associated with lower adolescent compliance to peers during 7<sup>th</sup> grade. A main effect of father-adolescent conflict resolution was not substantiated.

### **Controlling for Comorbid Adolescent Depressive Symptoms**

To test the hypothesis that associations will be unique to adolescent social anxiety symptoms after accounting for comorbid depressive symptoms (hypothesis 7), adolescent depressive symptoms during 8<sup>th</sup> grade were added as an additional outcome variable in the direct, mediating, and moderated mediation models. Consistent with my hypothesis, in the direct models, adolescent loneliness and parent-adolescent hostility during 6<sup>th</sup> grade were not significantly associated with changes in adolescent depressive symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades. In the mediating models, adolescent compliance to peers during 7<sup>th</sup> grade was not significantly associated with changes in adolescent depressive symptoms; thus, there were no significant mediating effects or indirect pathways with regard to changes in adolescent depressive symptoms. Additionally, multi-group analyses did not reveal any differences across sons and daughters with respect to associations among adolescent loneliness, parent-adolescent hostility, adolescent compliance to peers, and adolescent depressive symptoms. Moreover, the results did not change in any of the models with respect to changes in social anxiety symptoms after controlling for comorbid depressive symptoms.

## CHAPTER VI

### DISCUSSION

Existing research has identified a plethora of correlates of social anxiety symptoms and disorders that span multiple environmental contexts. Limited studies, however, have examined these correlates in cohesive models, and even fewer studies have examined processes and interactions related to increases in social anxiety symptoms during early adolescence. The goal of this study was to examine the contribution of multi-contextual processes and interactions to increases in adolescent social anxiety symptoms during early adolescence. Using a 3-wave, longitudinal design I examined: (a) the direct effects of adolescent loneliness and parent-adolescent hostility on changes in adolescent social anxiety symptoms; (b) the role of adolescent compliance to peers as a mechanism of influence; (c) if and how teacher support and effective parent-adolescent conflict resolution moderated direct effects and transmission processes; and (d) if associations were specific and unique to social anxiety symptoms while taking into account comorbid depressive symptoms. I also examined differences in associations based on parent and adolescent gender. Overall, the results from this study substantially contribute to the literature on changes in social anxiety symptoms during early adolescence by demonstrating the important connections between adolescents' experiences with parents and peers in predicting increases in adolescent social anxiety symptoms. This study also adds important specificity to models of social anxiety by demonstrating that associations are similar and different by parent and adolescent

gender and are unique to adolescent social anxiety symptoms while controlling for comorbid adolescent depressive symptoms.

### **Summary and Interpretation of Results**

#### **Direct effects of adolescent loneliness and parent-adolescent hostility.**

Results from the direct model provided partial support for the hypothesis that greater adolescent loneliness and parent-adolescent hostility during 6<sup>th</sup> grade are associated with increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades. Consistent with my hypothesis, greater mother-adolescent hostility during 6<sup>th</sup> grade was associated with increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades. Significant, direct associations were not substantiated in the father-adolescent model. Few studies have considered how adolescents' interactions with mothers and fathers contribute to changes in adolescent social anxiety symptoms. These findings make a substantive contribution to the research on adolescent social anxiety symptoms by demonstrating that levels of mother-adolescent hostility during early adolescence represents a salient component of adolescents' experiences with mothers that might affect adolescents' working models of themselves in other social contexts and their relationships with peers (Bowlby, 1978). From an attachment perspective, greater hostility among mother-adolescent dyads might damage adolescents' trust that mothers will provide support and safety for exploration and navigation of peer contexts. Moreover, greater mother-adolescent hostility might influence adolescent expectations that other close relationships, including peer relationships, also will be characterized by negative, hostile interactions and emotional dysregulation (Dwyer et al., 2010; Sroufe, 2005). As such, the results of the current study indicate that adolescents' experiences of heightened mother-

adolescent hostility influence adolescent increases in social fear and avoidance that characterize social anxiety symptoms.

The findings from this study also add important specificity to models of social anxiety symptoms by demonstrating that direct associations are specific to mother-adolescent relationships. Differences between mother-adolescent and father-adolescent dyads in the effect of hostility on changes in adolescent social anxiety symptoms might be due to differences in the quantity of time that mothers and fathers spend with their adolescent children, as well as the salience of negative mother-adolescent interactions versus negative father-adolescent interactions for adolescent social anxiety symptoms. Some studies suggest that mothers spend more time with their children than do fathers (Craig, 2006). This greater amount of time spent together might impact and reflect findings which suggest that mother-adolescent relationships are more intimate than are father-adolescent relationships (Steinberg & Silk, 2002). In the context of greater time spent together and greater intimacy that is posited to exist in mother-adolescent dyads, the current results suggest that engagement in mother-adolescent hostility might feel more detrimental than father-adolescent hostility to adolescents' feelings of safety and security in this relationship. Thus, mother-adolescent hostility might have stronger implications than father-adolescent hostility for what adolescents grow to expect from themselves and extra-familial close relationships.

Contrary to my hypothesis, greater adolescent loneliness during 6<sup>th</sup> grade was not associated with increases in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grade. Associations were not significant in the mother-adolescent or father-adolescent models. These findings are contrary to previous cross-sectional (Hutcherson & Epkins,



2009) and longitudinal (Cavanaugh & Buehler, 2015) studies that have found that adolescent loneliness is associated with adolescent social anxiety symptoms.

Cacioppo and Hawkley's (2003) model of loneliness suggests that experiences of loneliness activate hypervigilance for social threat which leads to greater fear and avoidance of social situations. However, the results from the current study suggest that adolescent experiences of loneliness during 6<sup>th</sup> grade do not propagate increases in social anxiety symptoms over two years during early adolescence. Given that this study found significant and positive within wave correlations, consistent with previous research (Hutcherson & Epkins, 2009) it is possible that loneliness exerts short-term, rather than long-term, effects on adolescent social anxiety symptoms. Thus, adolescent loneliness might have important implications for more state-level experiences of social anxiety, but do not impact trait experiences of social anxiety symptoms that increase over two years. Additionally, it is possible that loneliness measured during 6<sup>th</sup> grade might reflect more temporary perturbations in social connections due to changes in school environments and social networks that come with the transition into middle school (Kingery et al., 2011). Temporary experiences of heightened loneliness during this transition period might influence social anxiety symptoms in the short term, but are not salient enough across adolescents' middle school experiences to lead to increases in adolescent social anxiety symptoms. Moreover, it is possible that during this transition period, greater loneliness might actually motivate adolescents to affiliate with others rather than avoid social situations. Given the scarce studies that have examined adolescent loneliness as a predictor of changing social anxiety symptoms over time, more longitudinal studies are needed to clarify these findings. Moreover, the variety of possible explanations for the current results have implications for the utility of latent profile growth analyses which

could highlight the possible individual variation that exist in associations between adolescent loneliness and changes in or trajectories of adolescent social anxiety symptoms. Additionally, it will be pertinent for future research to consider whether the timing at which adolescent loneliness is measured might impact longitudinal associations between adolescent loneliness and changes in adolescent social anxiety symptoms.

**Adolescent compliance to peers as a mechanism.** This study also considered whether adolescent compliance to peers during 7<sup>th</sup> grade partially mediated the associations among adolescent loneliness, parent-adolescent hostility, and changes in adolescent social anxiety symptoms. Contrary to my hypothesis, adolescent loneliness during 6<sup>th</sup> grade was not directly associated with increases in adolescent social anxiety symptoms and thus partial mediation was not possible. Results also indicated that adolescent loneliness during 6<sup>th</sup> grade was not significantly associated with 7<sup>th</sup> grade adolescent compliance to peers and thus adolescent loneliness also was not indirectly associated with changes in adolescent social anxiety symptoms. It is important to note, however, that adolescent compliance to peers during 7<sup>th</sup> grade predicted increases in adolescent social anxiety symptoms.

Theoretically, adolescent compliance to peers might represent a safety behavior, such that engagement in compliance allows adolescents to engage with peers while feeling protected from social threats. However, over the long term, greater engagement in peer compliance might make adolescents miss peer experiences that might disconfirm their anticipated social threats (Wong et al., 2014). Thus, their fears are perpetuated and social anxiety increases. This result is consistent with previous reviews of social anxiety symptoms which have emphasized the important role of adolescents' peer experiences in predicting adolescent social anxiety symptoms. However, most research has focused

on adolescents' experiences with peers in terms of how adolescents are treated by peers, such as peer victimization and peer rejection (for a review see Epkins & Heckler, 2011). The finding from this study makes a substantial contribution to previous research because it demonstrates that adolescent social anxiety symptoms are not only predicted by how adolescents are treated by peers, but also by the methods in which adolescents engage and interact with peers. To my knowledge, no studies have examined adolescent compliance to peers as a predictor of changes in social anxiety symptoms during early adolescence.

In contrast to findings for adolescent loneliness, results indicated that adolescent compliance to peers during 7<sup>th</sup> grade fully mediated associations between 6<sup>th</sup> grade mother-adolescent hostility and increases in adolescent social anxiety symptoms. In the father-adolescent model, there was a significant indirect pathway between father-adolescent hostility during 6<sup>th</sup> grade and increases in adolescent social anxiety symptoms through greater adolescent compliance to peers during 7<sup>th</sup> grade. Greater parent-adolescent hostility might reflect that parents and adolescents are experiencing difficulty in transitioning from more hierarchical to more egalitarian parent-adolescent relationships. Theoretically, the shouting and name-calling that describes parent-adolescent hostility challenges adolescents' greater needs for differentiation from parents in parent-adolescent relationships and keeps adolescents in an unwanted, inferior position. Greater parent-adolescent hostility shapes adolescents' working models of themselves and close relationships such that adolescents grow to expect that others will not listen or respect their opinions and that close relationships are characterized by threat and fear (Dwyer et al., 2010; Sroufe, 2005). Moreover, parent-adolescent hostility does not allow adolescents to practice and adopt the skills that are necessary to

effectively approach differences of opinions that might occur in close relationships. As such, adolescents' are socialized to view peer relationships as competitive and approach them with feelings of threat and self-doubt that they can navigate challenges successfully (Gilbert, 2000). Within peer relationships, greater compliance with peers is a protective strategy to avoid negative interactions with peers. As discussed previously, although greater compliance with peers is protective in the short term, the results of this study suggest that compliance to peers perpetuates increases in social anxiety symptoms over time (Wong et al., 2014).

The significant mediating and indirect pathways through adolescent compliance to peers that were found in this study contribute substantially to the research on adolescent social anxiety symptoms by going beyond main effects. The findings from this study illustrate that nuanced social processes which originate in adolescents' interactions with parents predict increases in social anxiety symptoms during early adolescence. The results of this study suggest that parent-adolescent interactions shape the strategies that adolescents use to engage and interact with peers and navigate potentially threatening peer interactions (Gilbert, 2014). Moreover, the results are consistent with previous research which has suggested that adolescent skills and strategies for navigating the peer domain are often developed and practiced in parent-adolescent relationships and interactions (Laursen & Collins, 2009).

#### **Teacher support and parent-adolescent conflict resolution as moderators.**

This study also examined the roles of teacher support and effective parent-adolescent conflict resolution in buffering direct and mediated/indirect associations. First, I examined whether teacher support moderated direct associations between adolescent loneliness and changes in social anxiety symptoms, as well as associations between adolescent

loneliness and adolescent compliance to peers. Contrary to my hypotheses, results indicated that neither the direct nor mediated/indirect pathways were significantly moderated by teacher influence. These results suggest that teacher support during the transition into middle school does not alter the association between adolescents' feelings of loneliness and changes in social anxiety symptoms, nor does teacher support alter the pathways through adolescent compliance to peers. These findings are similar to research that has found that teacher support in 6<sup>th</sup> grade was not significantly associated with changes in adolescent social anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades (Cavanaugh & Buehler, 2015).

The lack of findings might be due to the amount of time between measurements as well as the developmental timing. For example, De Wit et al. (2011) found that greater teacher support in 9<sup>th</sup> grade was associated with decreases in adolescent social anxiety symptoms one year later. It is possible that teacher support might exert buffering effects on adolescent social anxiety symptoms over a shorter period of time. Likewise, it is possible that the age of adolescents is important to consider. Research has found adolescents' feelings of school connectedness drop from 7<sup>th</sup> to 10<sup>th</sup> grades (Whitlock, 2006). As such, levels of teacher support that occur later in adolescence might be more salient and exert greater protective features because later adolescence might be a time when adolescents feel little connection to their school environment.

Although significant moderating effects of teacher support were not demonstrated, this study did find that the main effect of teacher support was negatively associated with adolescent compliance to peers, such that greater teacher support during 6<sup>th</sup> grade predicted lower adolescent compliance to peers during 7<sup>th</sup> grade. This result has important implications for the role of teachers during the transition into middle

school and suggests that the level of teacher support in 6<sup>th</sup> grade has implications for the types of relationships that adolescents establish with peers one year later. Taken together, these results suggest that rather than buffering associations, teacher support may exert its own independent effects on adolescents' experiences with peers that lead to increases in social anxiety symptoms. Theoretically, teacher support might be an important factor which shapes adolescents' working models of close relationships (Bowlby, 1973), such that when adolescents experience greater teacher support they feel less of a need to comply to peer opinions and behaviors. Previous cross-sectional research has found that greater teacher support is associated with lower compliance to negative peer behaviors (Erikson et al., 2000); however this is the first study to my knowledge to demonstrate that greater teacher support is prospectively associated with less adolescent compliance to more benign peer experiences, such as conforming to a peer opinions which likely occur at a higher frequency.

Second, I examined whether effective parent-adolescent conflict resolution moderated direct associations between parent-adolescent hostility and changes in adolescent social anxiety symptoms, as well as associations between parent-adolescent hostility and adolescent compliance to peers. Also contrary to my hypotheses, results indicated that neither the direct nor mediated pathways were significantly moderated by effective parent-adolescent conflict resolution. Although hostility and effective conflict resolution might co-occur in relationships, the findings suggest that effective parent-adolescent conflict resolution in parent-adolescent relationships does not attenuate the harmful effects that parent-adolescent hostility has for adolescent social anxiety symptoms, either directly or indirectly through adolescent compliance to peers.

Previous, tangential cross-sectional research has found that parent-adolescent disagreement is less strongly associated with adolescent internalizing symptoms under conditions of more effective parent-adolescent conflict resolution (Branje et al., 2009). The differences between the findings of this study and Branje et al. (2009) might be due important conceptual differences between conflicts that are characterized by disagreement versus hostility. Branje et al. (2009) examined disagreement, which was defined as a difference in opinion. It is possible that effective parent-adolescent conflict resolution attenuates the negative effects of frequent disagreement on adolescent adjustment, including social anxiety symptoms. However the results from this study indicate that effective parent-adolescent conflict resolution does not buffer the effects of conflict on adolescent social anxiety symptoms when it is expressed through hostile interactions.

It also is important to note that this study found that the main effect of effective mother-adolescent conflict resolution during 6<sup>th</sup> grade was negatively associated with adolescent compliance to peers during 7<sup>th</sup> grade. The main effect was not significant in the father-adolescent model. As such, these results indicate that although effective parent-adolescent conflict resolution does not buffer against the effects of parent-adolescent hostility on levels of compliance to peers, both mother-adolescent hostility and effective mother-adolescent conflict resolution during 6<sup>th</sup> grade play shared, yet independent roles, in predicting adolescents' levels of peer compliance during 7<sup>th</sup> grade. More effective mother-adolescent conflict resolution might impact adolescents' working modeling of relationships, such that experiences with mothers that are characterized by mutual and satisfactory conflict resolution shape adolescents' expectations regarding potential tension in peer relationships. Adolescent who can resolve conflicts with

mothers' might garner greater expectations and confidence that they can manage differences of opinions and conflicts with peers, and thus they engage in less compliance to peers. The results of this study are important, as they suggest that both the way conflict is discussed and the way that conflict is resolved among mother-adolescent dyads have important implications for how adolescents engage with peers.

**Adolescent gender differences.** Results indicated one gender difference in associations, such that the association between adolescent compliance to peers in 7<sup>th</sup> grade and increases in adolescent social anxiety symptoms was significant for girls but not for boys. As such, mediated effects (in the mother-adolescent model) and indirect effects (in the father-adolescent model) from parent-adolescent hostility to increases in adolescent social anxiety symptoms were significant for girls but not boys. This result was substantiated in both the mother-adolescent and father-adolescent models. Overall, research that has examined gender differences with regard to social anxiety symptoms has been limited to establishing whether mean differences in social anxiety symptoms exist across boys and girls. The findings of this study make a substantial contribution to the research on adolescent social anxiety symptoms by going beyond mean gender differences and demonstrating that the pathways leading to increases in social anxiety symptoms during early adolescence differ for girls and boys. These findings will contribute to the specificity of prevention and intervention efforts, as well as models of social anxiety.

The specific ways in which boys and girls are socialized to engage in relationships and express problems are important to consider with respect to the results of this study. Although scholars suggest that girls are more concerned with appeasing others in relationships than are boys (Davies & Lindsey, 2004), studies have repeatedly



shown that girls are less susceptible to peer influence and are more self-reliant (Steinberg & Silverberg, 1986). Overall, boys are more likely to comply to peer influences (Steinberg & Monahan, 2007). As such, greater compliance to peers among girls, although protective, might also be especially unattractive in female peer groups. In contrast, among male peer groups, adolescent boys' engagement in compliance to peers might represent adherence to social norms. As such, greater engagement in compliance to peers leads to increases in social anxiety symptoms among girls, but not boys. Alternatively, studies have found that social anxiety symptoms are both more prevalent and more socially accepted among girls than among boys (Bruch & Cheek, 1995). Thus, it is possible that boys do not respond to greater compliance to peers with socially anxious behaviors because it is a less socially acceptable response. More research is needed to deconstruct these gender differences with attention to the ways in which girls and boys might be differentially socialized and how gendered socialization impacts adolescents' responses to peer experiences.

**Adolescent comorbid depressive symptoms.** Adolescent social anxiety symptoms and depressive symptoms are likely to co-occur (Viana et al., 2008). However, few studies on the emergence of social anxiety symptoms have taken into account co-occurring depressive symptoms, and thus little is known about whether contextual risk factors, processes, and interactions are unique to social anxiety symptoms or shared with depressive symptoms. The results from this study indicated that associations were unique to adolescent social anxiety symptoms during 8<sup>th</sup> grade after accounting for co-occurring depressive symptoms during 8<sup>th</sup> grade. Specifically, parent-adolescent hostility during 6<sup>th</sup> grade, as well as adolescent compliance to peers in 7<sup>th</sup> grade, were significantly and uniquely associated with increases in adolescent social

anxiety symptoms from 6<sup>th</sup> to 8<sup>th</sup> grades after accounting for co-occurring depressive symptoms during 8<sup>th</sup> grade.

These results are important, as they are contrary to previous findings and scholars which suggest that characteristics of familial environments are more strongly associated with adolescent depressive symptoms than with social anxiety symptoms (Hutcherson & Epkins, 2009; Johnson et al., 2005). In contrast, the current study found that mother-adolescent hostility was directly associated with increases in social anxiety symptoms, and mother- and father-adolescent hostility also were associated with increases in adolescent social anxiety symptoms through adolescent compliance to peers after accounting for co-occurring depressive symptoms. There are a few possible explanations for these results. First, the majority of previous studies that have accounted for co-occurring depressive and social anxiety symptoms have been cross-sectional. As such, it is possible that parent-adolescent hostility might have implications over the short term for adolescent depressive symptoms. Likewise, results from this study indicated significant correlations between parent-adolescent hostility during 6<sup>th</sup> grade and adolescent depressive symptoms during 6<sup>th</sup> grade. However, over the long term, parent-adolescent hostility has implications for increases in adolescent social anxiety symptoms but not depressive symptoms. Previous studies have found that parent-adolescent hostility is associated longitudinally with depressive symptoms (El-Shiekh & Elmore-Staton, 2004). The results of the current study contribute substantively to this literature by suggesting that the results of previous studies that found significant associations between parent-adolescent hostility and depressive symptoms might be due to unmeasured social anxiety symptoms.

Second, the results of this study suggest that the type of stimulus that characterizes family-related predictors of social anxiety symptoms or depressive symptoms might be important to consider. Social-cognitive models of anxiety and depression suggest that anxiety is a response to fear invoking stimuli, whereas depression is a response to sadness invoking stimuli (Clark et al., 1999). Consistent with social-cognitive models of anxiety, the yelling and name-calling that characterizes parent-adolescent hostility might be a fear invoking stimuli for adolescents, and thus this experience is predicts adolescent social anxiety symptoms but not depressive symptoms. Hostile parent-adolescent interactions threaten adolescents' feelings of security in the parent-adolescent relationship and make them more susceptible to avoiding and fearing social interactions with peers.

Likewise, the results of the current study are contrary to previous studies that have found that greater adolescent compliance to peers is cross-sectionally (Bandura et al., 2003) and longitudinally (Allen et al., 2006) associated with adolescent depressive symptoms. The results of the current study raise into question the results of previous research which did not account for co-occurring social anxiety symptoms. The results from this study are consistent with social-cognitive theories that compliance to peers is a response to threat as well as behavior that perpetuates hypervigilance and fear in social situations. Specifically, when adolescents engage in greater compliance to peers they are not engaging in behaviors that might disconfirm their fears of social interactions which encourages adolescents to fear social situations and withdraw.

### **Limitations and Future Directions**

This study makes several important contributions to the research on predicting changes in adolescent social anxiety symptoms during early adolescence. Moreover, the

findings are supported by the methodological strengths of this study which include: (a) a three-wave, longitudinal design which examines changes in social anxiety symptoms during early adolescence, and (b) the utilization of multiple informants and multiple methods to reduce threats of shared informant and shared method variance. However, this study also includes limitations that need to be addressed and there are several improvements that can be made in future research.

First, although this study aimed to control for important covariates that might affect associations, this study did not control for parental anxiety symptoms. Data on parental anxiety symptoms were not available. This is an important limitation as studies have found that parental anxiety is arguably one of the most consistent predictors of child or adolescent anxiety (Kessler et al., 2005). As such, it is possible that the findings in this study might be explained by unmeasured anxiety among the parents, and it is important for future research to account for the effects of parental anxiety on adolescent social anxiety symptoms. Studies suggest that there is likely a genetic component to the transfer of anxiety between parents and children (Epkins & Heckler, 2011).

However, in addition to controlling for parental anxiety symptoms, future research should consider how parental anxiety symptoms might affect adolescent social anxiety symptoms through its effects on how adolescents engage in social interactions. Parental anxiety has important socializing influences on children and adolescents such that parents with anxiety might engage in and model behaviors that deter children's development of positive social relationships (Borelli, Margolin, & Rasmussen, 2015). For example, studies suggest that greater parental anxiety models fear in ambiguous situations and greater avoidance. Moreover, anxious parents are less supportive and encouraging regarding social interactions (Ollendick & Benoit, 2012). As such, it is

possible that parental anxiety symptoms might also predict increases in adolescent social anxiety symptoms by encouraging adolescents to engage in greater compliance to peers.

Second, the characteristics of the sample that was utilized in this study might limit the generalizability of the findings. The sample utilized in this study comprised of two-parent families who were primarily European American. No studies to my knowledge have examined how family structure impacts changes in adolescent social anxiety symptoms; however tangential research offers some evidence for how family structure may affect the findings of this study. A meta-analysis on the association between parent-adolescent conflict and adolescent maladjustment found that negative associations between parent-adolescent conflict and adolescent internalizing problems did not differ by family structure (Weymouth et al., 2016). To its strength, the current study did control for the effect of negative life events, which included an item assessing if a divorced occurred. However, it is possible that the changes and transitions that occur with divorce, repartnering, or single parenthood (Demo & Fine, 2010) might place additional strains on parent-adolescent relationships and might strengthen the impact of parent-adolescent hostility on adolescent social anxiety symptoms.

In addition to limitations due to family structure, the European American sample utilized in this study might limit the generalizability of the findings to samples of other racial and ethnic backgrounds. This is important, as some studies suggest that rates of social anxiety vary according to ethnicity and nationality. For example, studies have found that rates of social anxiety disorders using the Diagnostic Statistical Manual (DSM) are approximately 12 percent in U.S. samples (Kessler et al., 2005), 7 percent in European samples (Fehm, Pelissolo, Furmark, & Wittchen, 2005), and 1 percent in East-

Asian samples (Lee et al., 2005). Within U.S. samples, studies have found that rates of social anxiety disorders are lower among African Americans, Hispanic Americans, and Asian Americans than among European Americans (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010).

However, it is important for future research to take a more nuanced approach to examining differences in social anxiety symptoms across racial and ethnic groups. Studies need to consider how verbal and behavioral social norms, values, expectations, practices, and experiences within social contexts might explain differences across racial and ethnic groups in the assessment and rates of social anxiety and the factors which contribute to symptomatic increases over time. For example, although studies have found differences across ethnic groups in the rate of social anxiety, studies suggest that rates across ethnic groups become more similar when culture specific conceptualizations of social anxiety are employed in assessments (Nagata et al., 2013). Likewise, to my knowledge studies have not considered: (a) if there is potential overlap between fears of negative evaluation/social withdrawal and fears and reactions to racism and discrimination among adolescents of color, and (b) how this overlap might affect assessment and measurement of social anxiety symptoms. This is an important avenue for future research.

In terms of predicting changes in social anxiety symptoms over time, parent-adolescent-hostility and adolescent compliance to peers might be perceived differently in other cultural contexts in comparison to European-American families. Culturally-bound perceptions might affect the pattern of associations demonstrated in this study. For example, studies have found that Mexican-American adolescents are less likely than European-American adolescents to endorse open disagreement with their parents

(Phinney, Kim-Jo, Osorio, & Vilhjaldsdottir, 2005). In this context, parent-adolescent hostility might be a less normative experience and thus might be more threatening to adolescents and more strongly associated with adolescent social anxiety symptoms. Additionally, the interdependence that often characterizes collectivist cultures might encourage adolescents to comply with peers (Meidlinger & Hope, 2014), and among adolescents from collectivist cultures greater compliance with peers might be associated with decreases (rather than increases) in social anxiety symptoms over time.

Moreover, it is important for future research to consider that for adolescents of color, other socialization experiences might be more proximal or salient for changes in social anxiety symptoms than the variables examined in the current study. For example, among adolescents of color, experiences of discrimination are important to consider as they might foster greater expectations of social threat and social anxiety symptoms (Chao, Longo, Wang, Dasgupta, & Fear, 2014). With respect to the role of experiences with parents, parental engagement in racial socialization and preparation for bias might be characteristics within adolescents' experiences with parents that are more proximal or salient (Elmore & Gaylord-Harden, 2013) to the emergence of social anxiety symptoms than are more generalized parent-adolescent interactions, such as dyadic hostility or conflict resolution.

The results from this study also suggest that future research should reconsider the conclusion that adolescent depressive symptoms are more susceptible to adolescents' experiences within families than are adolescent social anxiety symptoms (see Epkins & Heckler, 2011). The results of this study indicate that at least one experience within families (i.e., parent-adolescent hostility), is predictive of increases in social anxiety symptoms but not depressive symptoms, both directly and through greater

adolescent compliance to peers. It will be important for future research to continue to account for adolescent depressive symptoms in their models of adolescent social anxiety symptoms in order to add important specificity to findings. Moreover, future research should consider social-cognitive theories (Clark et al., 1999) and take a more nuanced perspective when hypothesizing about the influence that adolescents' experiences within families might have on their social anxiety symptoms. Social-cognitive theories suggest that anxiety is characterized by greater attentiveness and behavioral responses to threat inducing stimuli, whereas depression is characterized by greater attentiveness and behavioral responses to sadness inducing stimuli (Clark et al., 1999). In line with this perspective, future research should consider whether there are experiences within families that can be conceptualized as threatening to adolescents' sense of safety and thus will be particularly salient to increases in adolescent social anxiety symptoms after accounting for co-occurring depressive symptoms.

## **Conclusion**

The findings from this study contribute substantially to the research on adolescent social anxiety symptoms by demonstrating that parent-adolescent hostility predicts increases in adolescent social anxiety symptoms directly and through its effects on adolescent compliance to peers. Importantly, these effects were unique to adolescent social anxiety symptoms while accounting for co-occurring depressive symptoms. These findings are crucial, as they challenge suggestions that familial experiences are more salient for depressive symptoms than social anxiety symptoms. Moreover, the findings from this study extend previous research on how adolescent peer experiences influence adolescent social anxiety symptoms. The results highlight that social anxiety is preceded by the methods in which adolescents use to engage with peers (and not just how



adolescents are treated by peers), and illustrate that methods of peer engagement are shaped by parent-adolescent interactions during early adolescence. Important differences between girls and boys in associations also were demonstrated.

The findings from this study have the potential to inform intervention and prevention efforts. Prevention efforts might want to focus on reducing parent-adolescent hostility as a method for both reducing adolescent social anxiety symptoms directly (especially in mother-adolescent relationships) as well as method for changing the strategies that adolescents use to engage with peers, which constitutes an important risk for increases in adolescent girls' social anxiety symptoms. Moreover, the results from this study suggest that promoting better mother-adolescent conflict resolution and promoting greater teacher support during 6<sup>th</sup> grade might reduce adolescent strategies for engaging in peers that lead to increases in social anxiety symptoms during early adolescence. It will be important for future research to continue to extend this work to samples of adolescents from various racial and ethnic groups. Special consideration should be given to how the assessment of social anxiety might need to be changed and the other factors within adolescents' social and familial experiences that might be more salient and proximal to changes in social anxiety symptoms during early adolescence among adolescents of color.

Table 2. Descriptive Statistics and Intercorrelations between Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. YR FNE W3	1	.77 <sup>c</sup>	.44 <sup>c</sup>	.40 <sup>c</sup>	.34 <sup>c</sup>	.32 <sup>c</sup>	.10	.03	.16 <sup>b</sup>	.17 <sup>b</sup>	-.17 <sup>b</sup>	-.10	.00	-.16 <sup>b</sup>	-.10	.31 <sup>c</sup>	.17 <sup>b</sup>	.00	.46 <sup>c</sup>	.42 <sup>c</sup>	.21 <sup>c</sup>	.27 <sup>c</sup>	.04	.10	-.14 <sup>b</sup>
2. YR SA W3	.77 <sup>c</sup>	1	.36 <sup>c</sup>	.30 <sup>c</sup>	.26 <sup>c</sup>	.24 <sup>c</sup>	.03	-.05	.06	.05	-.10	-.11	-.02	-.14 <sup>b</sup>	-.09	.26 <sup>c</sup>	.13 <sup>a</sup>	-.03	.34 <sup>c</sup>	.45 <sup>c</sup>	.12 <sup>a</sup>	.20 <sup>c</sup>	-.01	.03	-.04
3. YR dep parcel 1 W3	.44 <sup>c</sup>	.36 <sup>c</sup>	1	.77 <sup>c</sup>	.21 <sup>c</sup>	.23 <sup>c</sup>	-.04	.09	.15 <sup>b</sup>	.16 <sup>b</sup>	-.17 <sup>b</sup>	-.02	-.07	-.16 <sup>b</sup>	-.12 <sup>a</sup>	.15 <sup>b</sup>	.05	.13 <sup>a</sup>	.21 <sup>c</sup>	.12 <sup>a</sup>	.25 <sup>c</sup>	.28 <sup>c</sup>	.14 <sup>a</sup>	.23 <sup>c</sup>	-.04
4. YR dep parcel 2 W3	.40 <sup>c</sup>	.30 <sup>c</sup>	.77 <sup>c</sup>	1	.23 <sup>c</sup>	.27 <sup>c</sup>	.01	.08	.14 <sup>a</sup>	.16 <sup>b</sup>	-.17 <sup>b</sup>	-.03	-.05	-.16 <sup>b</sup>	-.15 <sup>b</sup>	.21 <sup>c</sup>	.10	.17 <sup>b</sup>	.25 <sup>c</sup>	.14 <sup>a</sup>	.26 <sup>c</sup>	.33 <sup>c</sup>	.12 <sup>a</sup>	.18 <sup>c</sup>	-.05
5. YR lone parcel 1 W1	.34 <sup>c</sup>	.26 <sup>c</sup>	.21 <sup>c</sup>	.23 <sup>c</sup>	1	.76 <sup>c</sup>	.10 <sup>a</sup>	.07	.22 <sup>c</sup>	.24 <sup>c</sup>	-.26 <sup>c</sup>	-.04	-.03	-.21 <sup>c</sup>	-.12 <sup>a</sup>	.23 <sup>c</sup>	.13 <sup>a</sup>	-.08	.48 <sup>c</sup>	.37 <sup>c</sup>	.31 <sup>c</sup>	.37 <sup>c</sup>	.09	.03	-.03
6. YR lone parcel 2 W1	.32 <sup>c</sup>	.24 <sup>c</sup>	.23 <sup>c</sup>	.27 <sup>c</sup>	.76 <sup>c</sup>	1	.11 <sup>a</sup>	.06	.23 <sup>c</sup>	.26 <sup>c</sup>	-.33 <sup>c</sup>	-.07	-.09	-.23 <sup>c</sup>	-.15 <sup>b</sup>	.25 <sup>c</sup>	.11 <sup>a</sup>	-.04	.47 <sup>c</sup>	.36 <sup>c</sup>	.39 <sup>c</sup>	.42 <sup>c</sup>	.06	.00	.01
7. TR lone W1	.10	.03	-.04	.01	.10 <sup>a</sup>	.11 <sup>a</sup>	1	.14 <sup>b</sup>	.05	.09	-.07	-.01	.00	-.02	-.04	.03	.11 <sup>a</sup>	.11 <sup>a</sup>	.08	.03	.22 <sup>c</sup>	.12 <sup>a</sup>	.08	.00	.00
8. Ob PA hos W1	.11 <sup>a</sup>	.05	.11	.10	.11 <sup>a</sup>	.07	.12 <sup>a</sup>	.66 <sup>c</sup>	.24 <sup>c</sup>	.25 <sup>c</sup>	-.08	-.11 <sup>a</sup>	-.17 <sup>c</sup>	-.10	-.09	-.01	.13 <sup>a</sup>	.12 <sup>a</sup>	.07	.01	.07	.05	.11 <sup>a</sup>	.16 <sup>b</sup>	-.04
9. Youth hos W1	.22 <sup>c</sup>	.05	.16 <sup>b</sup>	.19 <sup>c</sup>	.27 <sup>c</sup>	.26 <sup>c</sup>	.19 <sup>c</sup>	.32 <sup>c</sup>	.65 <sup>c</sup>	.78 <sup>c</sup>	-.21 <sup>c</sup>	-.03	-.04	-.38 <sup>c</sup>	-.33 <sup>c</sup>	.12 <sup>a</sup>	.36 <sup>c</sup>	.08	.18 <sup>c</sup>	.14 <sup>b</sup>	.13 <sup>b</sup>	.13 <sup>b</sup>	.22 <sup>c</sup>	.21 <sup>c</sup>	.07
10. Par hos W1	.23 <sup>c</sup>	.07	.16 <sup>b</sup>	.18 <sup>c</sup>	.20 <sup>c</sup>	.22 <sup>c</sup>	.20 <sup>c</sup>	.22 <sup>c</sup>	.69 <sup>c</sup>	.47 <sup>c</sup>	-.26 <sup>c</sup>	-.02	-.05	-.40 <sup>c</sup>	-.37 <sup>c</sup>	.16 <sup>b</sup>	.34 <sup>c</sup>	.11 <sup>a</sup>	.23 <sup>c</sup>	.17 <sup>c</sup>	.11 <sup>a</sup>	.17 <sup>c</sup>	.23 <sup>c</sup>	.23 <sup>c</sup>	.15 <sup>b</sup>
11. YR tea sup W1	-.17 <sup>b</sup>	-.10	-.17 <sup>b</sup>	-.17 <sup>b</sup>	-.26 <sup>c</sup>	-.33 <sup>c</sup>	-.07	-.07	-.26 <sup>c</sup>	-.21 <sup>c</sup>	1	.04	.05	.19 <sup>c</sup>	.11 <sup>a</sup>	-.15 <sup>b</sup>	-.15 <sup>b</sup>	-.05	-.21 <sup>c</sup>	-.20 <sup>c</sup>	-.25 <sup>c</sup>	-.31 <sup>c</sup>	-.12 <sup>a</sup>	-.15 <sup>b</sup>	-.03
12. TR tea sup item 1 W1	-.10	-.11	-.02	-.03	-.04	-.07	-.01	-.08	-.07	-.05	.04	1	.57 <sup>c</sup>	.09	.10 <sup>a</sup>	-.15 <sup>b</sup>	-.11 <sup>a</sup>	-.08	-.08	-.14 <sup>b</sup>	-.01	-.08	-.01	-.04	-.06
13. TR tea sup item 2 W1	.00	-.02	-.07	-.05	-.03	-.09	.00	-.07	-.07	-.08	.05	.57 <sup>c</sup>	1	.04	.05	-.14 <sup>b</sup>	-.14 <sup>b</sup>	-.19 <sup>c</sup>	-.01	-.06	-.06	-.09	-.01	.00	-.10 <sup>a</sup>
14. YR conf res W1	-.16 <sup>b</sup>	-.14 <sup>b</sup>	-.16 <sup>b</sup>	-.16 <sup>b</sup>	-.21 <sup>c</sup>	-.23 <sup>c</sup>	-.02	-.04	-.33 <sup>c</sup>	-.36 <sup>c</sup>	.19 <sup>c</sup>	.09	.04	1	.25 <sup>c</sup>	-.21 <sup>c</sup>	-.15 <sup>b</sup>	-.02	-.17 <sup>c</sup>	-.21 <sup>c</sup>	-.07	-.14 <sup>b</sup>	-.13 <sup>b</sup>	-.07	-.12 <sup>a</sup>

continued on next page

Table 2. continued

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
15. PR <u>conf</u> res W1	-.10	-.09	-.12 <sup>a</sup>	-.15 <sup>b</sup>	-.12 <sup>a</sup>	-.15 <sup>b</sup>	-.04	-.18 <sup>c</sup>	-.35 <sup>c</sup>	-.30 <sup>c</sup>	.11 <sup>a</sup>	.10 <sup>a</sup>	.05	.25 <sup>c</sup>	1	-.13 <sup>a</sup>	-.22 <sup>c</sup>	-.04	-.06	-.07	.00	-.10	-.15 <sup>b</sup>	-.22 <sup>c</sup>	.01
16. YR peer comp W2	.31 <sup>c</sup>	.26 <sup>c</sup>	.15 <sup>b</sup>	.21 <sup>c</sup>	.23 <sup>c</sup>	.25 <sup>c</sup>	.03	-.01	.14 <sup>b</sup>	.14 <sup>b</sup>	-.15 <sup>b</sup>	-.15 <sup>b</sup>	-.14 <sup>b</sup>	-.21 <sup>c</sup>	-.13 <sup>a</sup>	1	.27 <sup>c</sup>	.16 <sup>b</sup>	.24 <sup>c</sup>	.19 <sup>c</sup>	.10	.20 <sup>c</sup>	.01	.05	.22 <sup>c</sup>
17. PR peer comp W2	.17 <sup>b</sup>	.13 <sup>a</sup>	.05	.10	.13 <sup>a</sup>	.11 <sup>a</sup>	.11 <sup>a</sup>	.12 <sup>a</sup>	.30 <sup>c</sup>	.23 <sup>c</sup>	-.15 <sup>b</sup>	-.11 <sup>a</sup>	-.14 <sup>b</sup>	-.15 <sup>b</sup>	-.22 <sup>c</sup>	.27 <sup>c</sup>	1	.21 <sup>c</sup>	.14 <sup>b</sup>	.08	.10	.14 <sup>b</sup>	.15 <sup>b</sup>	.12 <sup>a</sup>	.04
18. TR peer comp W2	.00	-.03	.13 <sup>a</sup>	.17 <sup>b</sup>	-.08	-.04	.11 <sup>a</sup>	.06	.14 <sup>b</sup>	.12 <sup>a</sup>	-.05	-.08	-.19 <sup>c</sup>	-.02	-.04	.16 <sup>b</sup>	.21 <sup>c</sup>	1	-.10	-.11 <sup>a</sup>	-.02	-.01	.05	.06	.10
19. YR FNE W1	.46 <sup>c</sup>	.34 <sup>c</sup>	.21 <sup>c</sup>	.25 <sup>c</sup>	.48 <sup>c</sup>	.47 <sup>c</sup>	.08	.02	.18 <sup>c</sup>	.16 <sup>c</sup>	-.21 <sup>c</sup>	-.08	-.01	-.17 <sup>c</sup>	-.06	.24 <sup>c</sup>	.14 <sup>b</sup>	-.10	1	.71 <sup>c</sup>	.25 <sup>c</sup>	.32 <sup>c</sup>	.04	.05	-.05
20. YR SA W1	.42 <sup>c</sup>	.45 <sup>c</sup>	.12 <sup>a</sup>	.14 <sup>a</sup>	.37 <sup>c</sup>	.36 <sup>c</sup>	.03	.00	.13 <sup>b</sup>	.12 <sup>a</sup>	-.20 <sup>c</sup>	-.14 <sup>b</sup>	-.06	-.21 <sup>c</sup>	-.07	.19 <sup>c</sup>	.08	-.11 <sup>a</sup>	.71 <sup>c</sup>	1	.20 <sup>c</sup>	.26 <sup>c</sup>	.07	-.01	-.02
21. YR dep parcel 1 W1	.21 <sup>c</sup>	.12 <sup>a</sup>	.25 <sup>c</sup>	.26 <sup>c</sup>	.31 <sup>c</sup>	.39 <sup>c</sup>	.22 <sup>c</sup>	.09	.23 <sup>c</sup>	.25 <sup>c</sup>	-.25 <sup>c</sup>	-.01	-.06	-.07	.00	.10	.10	-.02	.25 <sup>c</sup>	.20 <sup>c</sup>	1	.67 <sup>c</sup>	.08	.05	.00
22. YR dep parcel 2 W1	.27 <sup>c</sup>	.20 <sup>c</sup>	.28 <sup>c</sup>	.33 <sup>c</sup>	.37 <sup>c</sup>	.42 <sup>c</sup>	.12 <sup>a</sup>	.07	.24 <sup>c</sup>	.32 <sup>c</sup>	-.31 <sup>c</sup>	-.08	-.09	-.14 <sup>b</sup>	-.10	.20 <sup>c</sup>	.14 <sup>b</sup>	-.01	.32 <sup>c</sup>	.26 <sup>c</sup>	.67 <sup>c</sup>	1	.18 <sup>c</sup>	.14 <sup>a</sup>	.01
23. Parent dep W1	.04	-.01	.14 <sup>a</sup>	.12 <sup>a</sup>	.09	.06	.08	.10 <sup>a</sup>	.28 <sup>c</sup>	.30 <sup>c</sup>	-.12 <sup>a</sup>	-.01	-.01	-.13 <sup>b</sup>	-.15 <sup>b</sup>	.01	.15 <sup>b</sup>	.05	.04	.07	.08	.18 <sup>c</sup>	1	.33 <sup>c</sup>	.02
24. PR <u>neg</u> life W3	.10	.03	.23 <sup>c</sup>	.18 <sup>c</sup>	.03	.00	.00	.13 <sup>a</sup>	.25 <sup>c</sup>	.22 <sup>c</sup>	-.15 <sup>b</sup>	-.04	.00	-.07	-.22 <sup>c</sup>	.05	.12 <sup>a</sup>	.06	.05	-.01	.05	.14 <sup>a</sup>	.33 <sup>c</sup>	1	.05
25. Adol gender	-.14 <sup>b</sup>	-.04	-.04	-.05	-.03	.01	.00	-.06	-.04	.00	-.03	-.06	-.10 <sup>a</sup>	-.12 <sup>a</sup>	.01	.22 <sup>c</sup>	.04	.10	-.05	-.02	.00	.01	.02	.05	1

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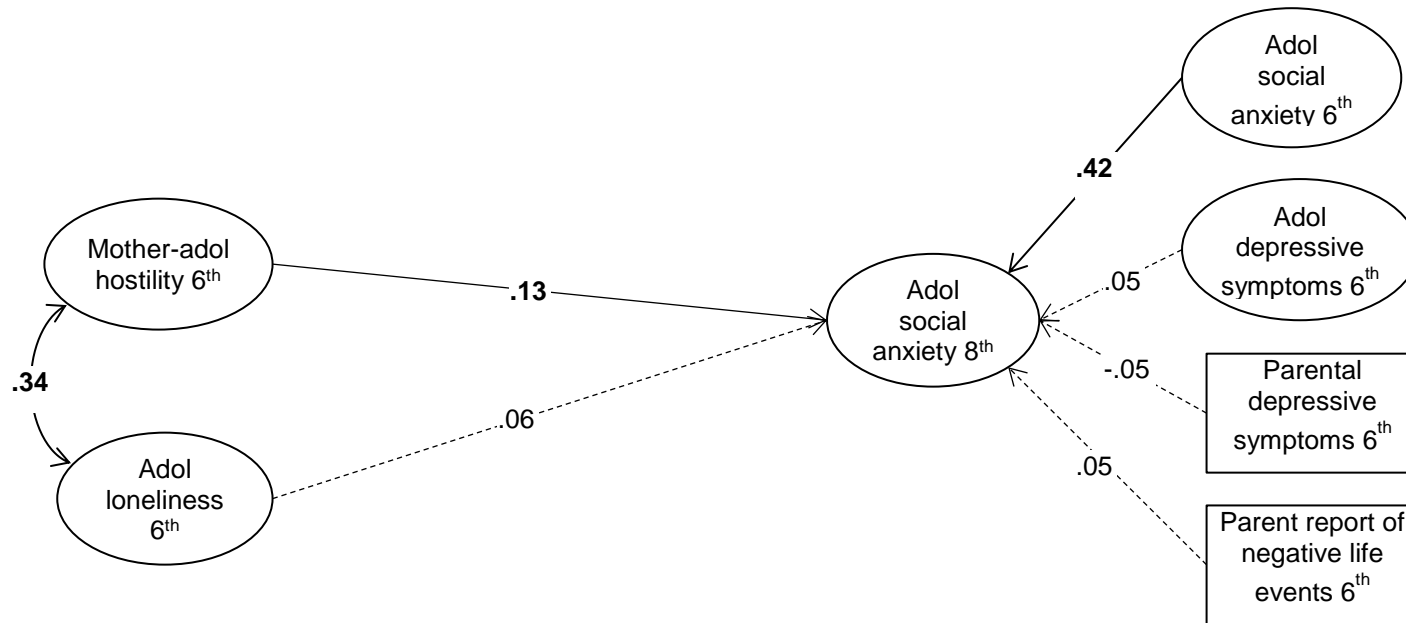
Table 2. continued

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
<i>M</i>	2.33	2.28	.13	.22	1.48	1.46	.02	3.00	1.79	1.75	4.49	3.27	3.42	3.62	3.53	1.80	1.77	1.90	2.30	2.33	.10	.17	6.77	14.30	.49
	2.33	2.28	.13	.22	1.48	1.46	.02	2.90	1.69	1.66	4.49	3.27	3.42	3.62	3.53	1.80	1.77	1.90	2.30	2.33	.10	.17	6.77	14.30	.49
<i>SD</i>	1.02	.90	.24	.33	.57	.50	.17	1.29	.55	.54	.59	1.07	1.14	.93	.72	.49	.41	.57	.98	.84	.22	.27	5.26	4.02	.50
	1.02	.90	.24	.33	.57	.50	.17	1.30	.48	.43	.59	1.07	1.14	.93	.72	.49	.41	.57	.98	.84	.22	.27	5.26	4.02	.50
<i>Min</i>	1.00	1.00	0	0	1.00	1.00	0	1.00	1.00	1.00	1.25	1.00	1.00	1.67	2.17	1.00	1.00	1.00	1.00	1.00	0	0	0	.50	0
	1.00	1.00	0	0	1.00	1.00	0	1.00	1.00	1.00	1.25	1.00	1.00	1.67	2.17	1.00	1.00	1.00	1.00	1.00	0	0	0	.50	0
<i>Max</i>	5.00	5.00	1.40	2.00	4.00	3.50	2.00	9.00	4.86	4.50	5.00	5.00	5.00	5.00	5.00	3.64	3.05	3.55	5.00	5.00	1.20	1.80	48.00	30.00	1.00
	5.00	5.00	1.40	2.00	4.00	3.50	2.00	9.00	3.93	3.15	5.00	5.00	5.00	5.00	5.00	3.64	3.05	3.55	5.00	5.00	1.20	1.80	48.00	30.00	1.00
<i>Skewness</i>	.67	.53	2.59	2.16	1.36	1.23	7.67	1.03	1.21	1.44	-1.92	-.10	-.32	-.03	.34	.78	.47	.57	.45	.38	3.13	2.38	2.19	.15	.03
	.67	.53	2.59	2.16	1.36	1.23	7.67	1.23	1.08	.82	-1.92	-.10	-.32	-.03	.34	.78	.47	.57	.45	.38	3.13	2.38	2.19	.15	.03
<i>Kurtosis</i>	.16	-.04	7.80	5.58	1.65	1.57	5.16	1.75	2.53	3.38	5.59	-.67	-.73	-1.21	-.85	.68	-.14	-.11	-.33	-.24	1.07	7.54	10.48	1.08	-2.01
	.16	-.04	7.80	5.58	1.65	1.57	5.16	2.50	1.92	.55	5.59	-.67	-.73	-1.21	-.85	.68	-.14	-.11	-.33	-.24	1.07	7.54	10.48	1.08	-2.01

*Note.* Correlations for the mother-adolescent model are depicted on the lower diagonal. Correlations for the father-adolescent model are depicted on the upper diagonal. Correlations along the diagonal are correlations between mothers and fathers. Descriptives for mothers are located in the first row. Descriptives for fathers are located in second row. YR = Youth report. PR = Parent report. OB = Observed. FNE= Fear of negative evaluation. SA = Social avoidance. PA = Parent-adolescent. dep = depressive symptoms. lone = loneliness. Par = parent. hos = Hostility. Adol = Adolescent. tea = teacher. sup = support. conf = conflict. res = resolution. comp = compliance. W1 = 6th grade, W2 = 7th grade, W3 = 8th grade.

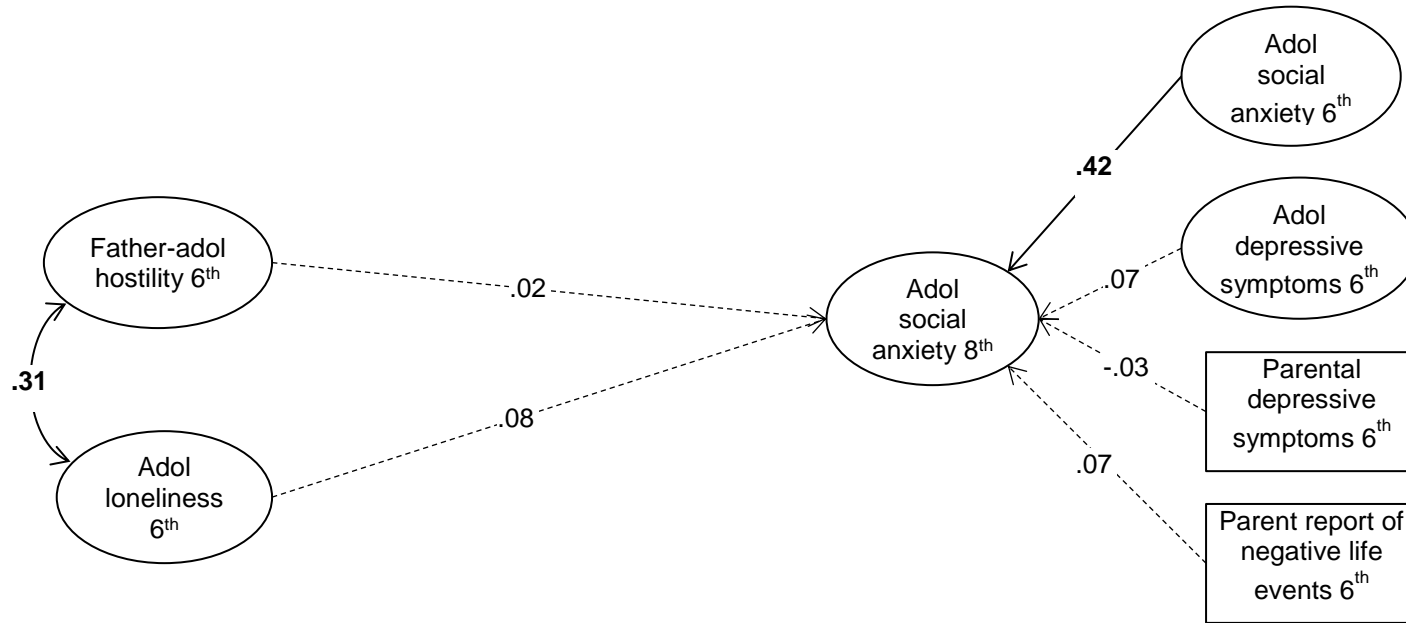
<sup>a</sup>p < .05, <sup>b</sup>p < .01, <sup>c</sup>p < .00

Figure 2. Direct Mother-Adolescent Model Predicting Changes in Adolescent Social Anxiety Symptoms.



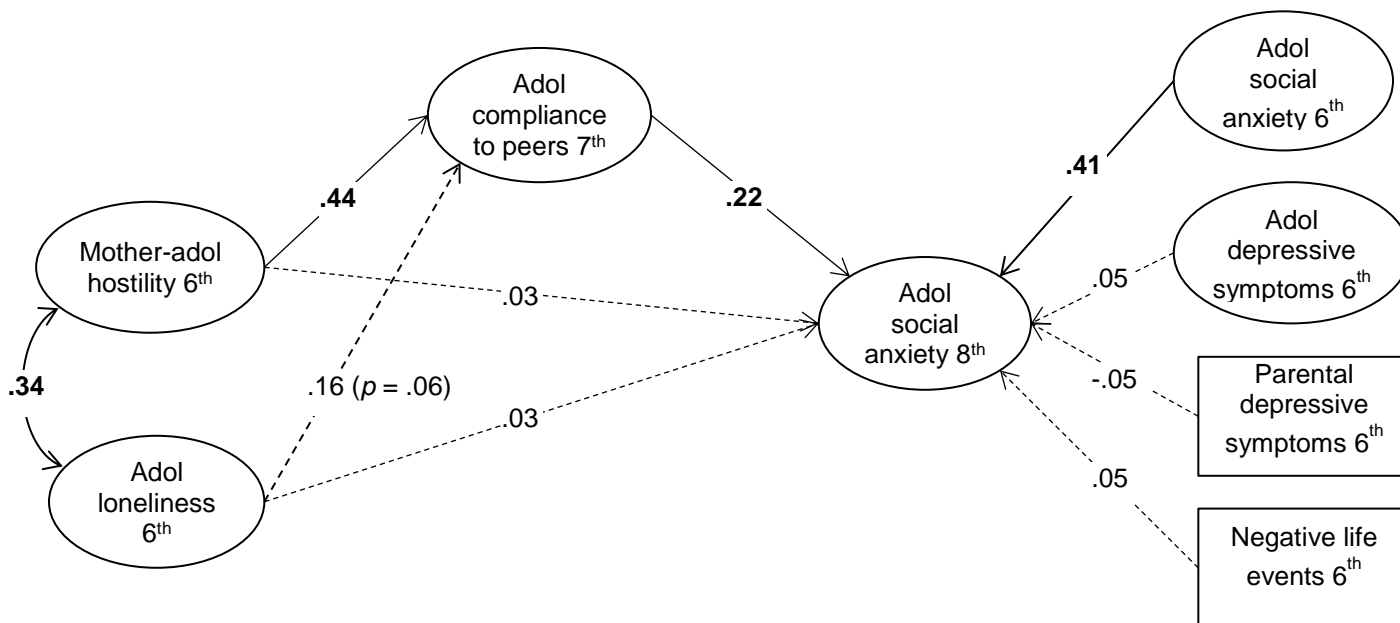
Note. adol = adolescent. Solid lines indicate significant ( $p < .05$ ) structural paths. Dashed lines indicate nonsignificant ( $p > .05$ ) structural paths. Coefficients are standardized beta coefficients. Correlations were estimated between all exogenous variables but are not shown in the model for clarity of presentation.

Figure 3. Direct Father-Adolescent Model Predicting Changes in Adolescent Social Anxiety Symptoms.



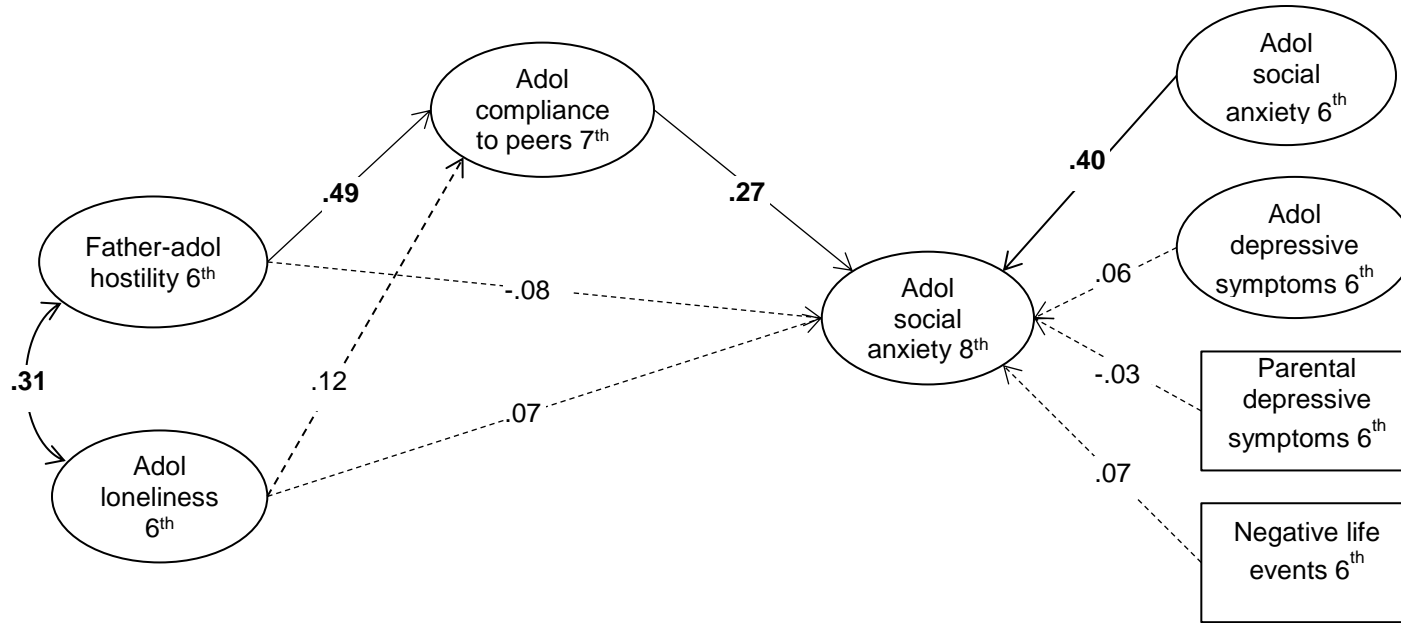
Note. adol = adolescent. Solid lines indicate significant ( $p < .05$ ) structural paths. Dashed lines indicate nonsignificant ( $p > .05$ ) structural paths. Coefficients are standardized beta coefficients. Correlations were estimated between all exogenous variables but are not shown in the model for clarity of presentation.

Figure 4. Mediated Mother-Adolescent Model Predicting Changes in Adolescent Social Anxiety Symptoms.



Note. adol = adolescent. Solid lines indicate significant ( $p < .05$ ) structural paths. Dashed lines indicate nonsignificant ( $p > .05$ ) structural paths. Coefficients are standardized beta coefficients. Correlations were estimated between all exogenous variables but are not shown in the model for clarity of presentation.

Figure 5. Mediated Father-Adolescent Model Predicting Changes in Adolescent Social Anxiety Symptoms.



Note. adol = adolescent. Solid lines indicate significant ( $p < .05$ ) structural paths. Dashed lines indicate nonsignificant ( $p > .05$ ) structural paths. Coefficients are standardized beta coefficients. Correlations were estimated between all exogenous variables but are not shown in the model for clarity of presentation.



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