

ABSTRACT

Title of Dissertation: EARLY ADOLESCENT ROMANTIC EXPERIENCES: EARLY CHILDHOOD PREDICTORS AND CONCURRENT ASSOCIATIONS WITH PSYCHOPATHOLOGY

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Research has demonstrated that early adolescent romantic relationships are prevalent, and initiation of romantic relationships at younger ages bears important implications for youths' future development. Although earlier dating involvement may increase risk for negative outcomes, the majority of research on teen relationships focuses on older adolescents; a paucity of research explores the phenomenology of preteen romantic relationships. Further, a striking gap exists in the study of how early childhood factors may affect early adolescent romantic relationships.

In order to address these gaps, the current study aimed to elucidate the phenomenology and concurrent psychosocial correlates of preteen (age 12) romantic relationships and to delineate early childhood variables that predict involvement in and quality of preteen romantic relationships. In a longitudinal sample of 440 youth,

we examined concurrent associations between multiple dimensions of age 12 romantic relationships (dating experiences, risky dating, relationship discord, relationship closeness, sexual experience) and friendship competence, and age 12 psychopathology (anxiety, depression, attention-deficit hyperactivity disorder [ADHD], disruptive behavior disorder [DBD] symptoms) and psychosocial functioning. Given prior research indicating that pubertal status and child sex may also play a role in romantic relationship involvement, we examined these two variables as moderators in concurrent analyses. In addition, we examined how two salient dimensions of early childhood (temperament and parenting, assessed at age 3) predicted romantic relationship outcomes at age 12.

Results indicated that more frequent romantic experiences at age 12 were associated with increased psychosocial distress and poorer functioning; however, youth with higher quality romantic relationships evidenced lower levels of psychiatric symptoms and better psychosocial functioning. In addition, the associations between early adolescent romantic relationships and adjustment were complex and were moderated by child sex and pubertal status. Further, dimensions of age 3 childhood temperament and parenting differentially predicted dimensions of early adolescent romantic relationships and friendship competence. Importantly, our findings contribute to a growing body of literature on preteen romantic relationships, and are among the first data to examine early childhood predictors of age 12 romantic relationship outcomes. These findings hold important clinical implications for future early adolescent prevention and intervention programs.

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PREDICTORS AND CONCURRENT ASSOCIATIONS WITH
PSYCHOPATHOLOGY

by

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Chapter 1: Introduction

Adolescent romantic relationships comprise meaningful developmental milestones that play a role in identity development, peer relationships, academic performance, and emotional functioning in later adolescent and adult relationships (for reviews see Collins, 2003; Collins, Welsh, & Furman, 2009; Davila, Capaldi, & La Greca, 2016; Furman & Rose, 2015). High quality adolescent romantic relationships can be associated with positive outcomes such as high self-esteem, social competence, and positive affect (Connolly & Konarski, 1994; Masten et al., 1995; Zimmer-Gembeck, Siebenbruner, & Collins, 2001, 2004). However, adolescent romantic involvement can also be linked to increased psychosocial distress, negative emotions, internalizing and externalizing symptoms, eating pathology, drug use, and academic difficulties (Connolly, Pepler, Craig, & Taradash, 2000; Davila, Steinberg, Kachadourian, Cobb, & Fincham, 2004; Joyner & Udry, 2000; Kobus, 2003; La Greca & Harrison, 2005; Quatman, Sampson, Robinson, & Watson, 2001; Zimmer-Gembeck et al., 2001, 2004). Research has suggested that initiation of romantic relationships at younger ages increases risk for negative outcomes (Furman, Ho, & Low, 2007; Zimmer-Gembeck et al., 2004), which highlights a need for additional research on early adolescent dating experiences. Minimal research to date has examined the phenomenology and predictors of romantic experiences at the outset of adolescence. Illuminating the nature and determinants of problematic early adolescent romantic relationships can further our understanding of adolescent development and can help inform intervention efforts.

Developmental Timing of Adolescent Romantic Relationships

Theories on the initiation and trajectory of adolescent romantic relationships encompass interpersonal, biosocial, and ecological perspectives (for a review, see Collins et al., 2009).

Much of the research in this area has been informed by developmental-contextual theory, which focuses on the impact of an individual's social systems, including peers, family, and larger sociocultural influences (Connolly & McIsaac, 2011). Developmental-contextual theory derives from Urie Bronfenbrenner's classic proposal that people are impacted by numerous social layers (Bronfenbrenner, 1979): direct peer group and family experiences interact with broader cultural conceptions of love, appropriate dating age, and gender roles to influence the development of adolescent romantic relationships. In line with this theory, Connolly and colleagues (1999, 2004, 2011) hypothesized that needs for intimacy and identity motivate romantic involvement. As puberty begins and sexual feelings arise, youth realize that parents and peers no longer fully meet these needs and thus seek out romantic partners.

Consistent with developmental-contextual theory, research supports a view that normative adolescent experience with romantic relationships occurs across a sequence of three stages: (1) initial experience of romantic attraction and early relationship formation (early adolescence; age 11-13 years), (2) exploration of romantic relationships (middle adolescence; age 14-16 years) and (3) forming stronger romantic bonds (late adolescence; age 16-18 years) (Connolly & McIsaac, 2011). In the first stage, early adolescents are increasingly fascinated by the subject of romance (Connolly & McIsaac, 2011; Tuval-Mashiach, Walsh, Harel, & Shulman, 2008), and over 80% of middle-school aged youth participate in mixed-sex group activities such as attending movies, sporting events, and parties (Connolly, Craig, Goldberg, & Pepler, 2004; Connolly & McIsaac, 2011; Meier & Allen, 2009). In the second stage, middle adolescents begin casually dating (Connolly & McIsaac, 2011; Feiring, 1996; Seiffge-Krenke, 2003) and "dating in groups" (Connolly et al., 2000; Kuttler, La Greca, & Prinstein, 1999), with higher status peers more likely to engage in dating than lower status peers (Franzoi, Davis, & Vasquez-Suson,

1994). In the third stage, late adolescents engage in dyadic relationships of longer duration (one year or more), involving deeper emotional commitment, and appearing more similar to adult relationships (Connolly & Johnson, 1996; Connolly & McIsaac, 2011; Furman & Buhrmester, 1992; Seiffge-Krenke, 2003; Shulman & Scharf, 2000). Importantly, although stage theory seeks to define a normative trajectory of romantic development, romantic relationship involvement varies between youth of the same age in terms of both timing and nature of activities (Collins, 2003; Connolly & McIsaac, 2011). It is likely that youth who deviate from this developmental pathway (e.g., are overinvolved in romantic relationships at an earlier age) are at increased risk for negative outcomes. Thus, it is important to identify which youth are more likely to be “early starters.”

Phenomenology of Early Adolescent Romantic Experiences and Relationships

Large-scale studies have been helpful in establishing the prevalence of early adolescent romantic relationships. The National Longitudinal Study of Adolescent Health (Add Health) reported that at age 12 ($N=313$), 25.7% of males and 26.9% of females in the United States identified as having had a “special romantic relationship” in the past 18 months; by age 13 ($N=1543$), this number increases to 37.4% of males and 34.2% of females (Carver, Joyner, & Udry, 2003). In a sample of Canadian young adolescents ages 9 to 14, 21% endorsed having a current boyfriend/girlfriend, 27% endorsed going out in mixed-sex groups, and 24% endorsed going on dates in a group (Connolly et al., 2004). Early adolescent romantic relationships also typically provide the setting for the initiation of sexual behavior (Furman & Shaffer, 2003); while “light” sexual activities (i.e., hugging, holding hands, kissing) are typical at this age (12 to 13), “heavy” sexual activities (i.e., petting, sexual intercourse) are less common (Williams, Connolly, & Cribbie, 2008). The Add Health study reported that 27.8% of adolescents under age

14 ($n = 182$) had touched each other under clothing, 19.9% had touched each other's genitals, and 7.6% had engaged in sexual intercourse (Carver et al., 2003). The National Youth Risk Behavior Survey reports that 5.6% of youth nationwide engaged in sexual intercourse prior to age 13; the prevalence was higher among males (8.3%) as compared to females (3.1%) (Kann et al., 2014). Findings from the Canadian National Longitudinal Survey of Children and Youth (NLSCY) study of adolescents ages 12-13 found that 38% had participated in "light" sexual activity (hugging, holding hands, kissing) whereas 24% had participated in "heavy" (petting, sexual intercourse) sexual activity (Williams et al., 2008).

Within a developmental-contextual framework, it is important to consider how social norms influence early adolescent dating and sexual experiences. A recent study in the United States examined seven large, nationally representative samples of adolescents from 1976-2016 between 13 and 19 years of age ($N = 8.44$ million). The research found that in recent years, fewer youth have participated in "adult" romantic activities (including dating and having intercourse) as compared to adolescents prior to the year 2000 (Twenge & Park, 2017). For example, 12th graders in the early 2010's engaged in dating approximately as frequently as 10th graders in the early 1990's, and the number of high schoolers (9th to 12th graders) having sex decreased from 54% in 1991 to 41% in 2015. Of note, the biggest decrease was seen in earlier adolescence: the percentage of 9th graders who had engaged in intercourse decreased from 38% in 1990-1994 to 29% in 2010-2016. This research suggests that the developmental movement through adolescence into adulthood has slowed down for teens in the United States, and this effect is most salient for 13-year-olds (the youngest age assessed in this project) (Twenge & Park, 2017). The authors suggest that greater parental involvement may play a role in this postponement of adult activities, which highlights the need to examine childhood variables such as the early

family environment that may be predictive of early adolescent romantic activities.

Early Adolescent Peer Relationships and Romantic Involvement

Peer relationships provide the primary context for the emergence of adolescent romantic relationships (Collins et al., 2009).¹ Previous research on adolescents has demonstrated that having more friends of the opposite sex and being well-liked by peers are associated with increased likelihood of current and future romantic involvement (Connolly, Furman, & Konarski, 2000; Kuttler & La Greca, 2004). Adolescents typically associate having a romantic partner with “fitting in” and higher status within a peer group (Connolly, Craig, Goldberg, & Pepler, 1999). The links between peer relationships and romantic relationships are likely bidirectional: early romantic relationship involvement facilitates association with other high-status peers, and affiliation with higher status peer groups enables early romantic relationships (Collins, 2003; Connolly et al., 2000; Furman & Shaffer, 2003). In early adolescence, the primary relationship focus shifts from family to peers, and then from peer friendships to romantic attachments. Friendships with same- and opposite-sex peers offer a “trial run” for handling positive and negative emotions in a close relationship outside of the family context (Connolly et al., 2004). Indeed, higher friendship quality and peer acceptance at ages 12 to 13 years have been shown to predict earlier initiation of romantic relationships (reported retrospectively) and greater sexual involvement at age 19 (Zimmer-Gembeck et al., 2004). Research on older youth (ages 16-19 years) has found that cognitive working models of friendship and perceived relationship quality are significantly concurrently linked to quality of romantic relationship interactions (Furman, Simon, Shaffer, & Bouchev, 2002). Taken together, the association between early adolescent

¹Note: The research reviewed here focuses on the typical developmental trajectory for heterosexual relationships only, since the majority of research has been done in this area. The need for more work on adolescent relationships in sexual minority youth is noted in the Discussion section.

peer status and early romantic involvement appears complicated and requires further elucidation: elevated peer status in early adolescence may potentiate earlier involvement in romantic relationships, with their attendant risks; however, by providing a beneficial “proxy” for handling difficulties in relationships, early adolescent friendship competence may also set the stage for later positive relationship quality.

Adolescent Romantic Experiences and Youth Well-Being

Romantic experiences are associated with both positive and negative psychosocial outcomes for adolescents. Adolescent romantic relationships have been linked to positive feelings of self-worth, confidence, and social competence in high schoolers (Connolly & Konarski, 1994; Zimmer-Gembeck et al., 2001, 2004). However, romantic relationships are also frequently linked to increased psychosocial distress and impairment. One consistent finding in the literature is that adolescents (especially girls) who are in a romantic relationship have higher levels of depressive symptoms as compared to adolescents who are not romantically involved (Davila et al., 2009, 2004; Joyner & Udry, 2000). The earlier timing of romantic relationships may increase distress surrounding these relationships: girls who are involved in romantic relationships at an earlier age (i.e., prior to age 13) have increased depressive symptoms (Compian, Gowen, & Hayward, 2004), body dissatisfaction, and disordered eating attitudes (Smolak, Levine, & Gralen, 1993). When coupled with other transitions (e.g., middle school, puberty), early dating has been linked to lower self-esteem (Simmons, Burgeson, Carlton-Ford, & Blyth, 1987). As suggested by Compian and colleagues (2004), early adolescents may be particularly sensitive to misinterpretations and become easily upset due to the novel, exciting, and unfamiliar nature of dating. Individual characteristics and expectations for romantic relationships likely also play a role in psychosocial distress; for example, Davila and colleagues

(2004) found that romantic involvement was linked to greater depressive symptoms in both early and late adolescents, and that this association was most salient for youth with a preoccupied relational style (i.e., an insecure relationship pattern associated with low self-worth and lack of trust in others). Research has also revealed a link between early dating and externalizing problems: the combination of pubertal maturation, peer delinquency, and peer dating predicted increases in early dating for a group of adolescents ages 10 to 13 (Friedlander, Connolly, Pepler, & Craig, 2007), and early overinvolvement in dating was linked to increased delinquent behavioral problems from age 12 to age 16 years (Zimmer-Gembeck et al., 2001). Importantly, it is likely that the association between psychological well-being and romantic involvement is bidirectional. For example, in a study of adolescent females (age 13 years), Davila and colleagues (2009) found that greater depressive symptoms were linked to increased romantic involvement and sexual activity one year later. In addition, other factors, such as family experiences and relationships, may exacerbate emotional and psychological distress prior to entering romantic relationships, thus increasing risk for distress within the relationship.

Early sexual debut has been linked to poorer psychosocial development and problem behaviors (Bingham & Crockett, 1996), in addition to heightened risk for teen pregnancy or sexually transmitted diseases (Coley & Chase-Lansdale, 1998; Resnick et al., 1997; Tubman, Windle, & Windle, 1996). In a study of youth ages 14 to 21, kissing and sexual desire were associated with satisfaction and commitment at all ages, while frequency of intercourse was associated with lower relationship quality for younger adolescents and higher relationship commitment in older adolescents (Welsh, Haugen, Widman, Darling, & Grello, 2005). Sexual experiences in older adolescence are not associated with problem behaviors or increased distress (Grello, Welsh, Harper, & Dickson, 2003; Welsh et al., 2005), suggesting that in late

adolescence, heavy sexual behaviors are a normative part of intimacy but in early adolescence, they but may be a sign of social pressures or desire to maintain a romantic relationship (O'Sullivan & Meyer-Bahlburg, 2003). Youth have likely developed greater socio-emotional maturity by older adolescence, and thus intercourse is more likely to be a mutual, physical expression of intimacy associated with more positive outcomes (Welsh et al., 2005); in contrast, younger adolescents likely do not yet have sufficient emotional maturity, social problem solving skills, and emotion regulation skills to successfully engage in adult romantic activities such as intercourse.

Research with older adolescents has demonstrated that the quality of romantic relationships likely plays a significant role in the positive or negative impact of romantic relationships on psychosocial functioning. Broadly speaking, high quality relationships are characterized by supportiveness and intimacy, whereas low quality relationships are defined by annoyance, frustration, criticism, and conflict (Collins et al., 2009). Ongoing negative interactions between romantic partners likely increase distress for adolescents and adults alike, and this may be even more salient for teens who are inexperienced daters (Connolly & McIsaac, 2011). Indeed, maladaptive interactions in romantic relationships have been linked to depressive symptoms for adolescent boys and girls ages 13 and older (Galliher, Rostosky, Welsh, & Kawaguchi, 1999; Ha, Overbeek, Cillessen, & Engels, 2012; La Greca & Harrison, 2005). Quality of relationship has also been shown to set the stage for later relationships: higher quality romantic relationships in late adolescence (age 17) predict greater closeness and commitment in young adult relationships (age 21) (Seiffge-Krenke, 2003), while lower romantic competence in early adolescent girls (age 13) is linked to riskier sexual experiences and self-reported predictions of being unlikely to marry (Davila et al., 2009). Such findings highlight the crucial

importance of assessing not only the presence or absence of a romantic relationship, but also the quality of romantic relationships (Collins, 2003); however, few studies on early adolescent romantic relationships have assessed relationship quality.

The Moderating Role of Pubertal Status

One factor that likely acts in concert with early romantic relationship involvement to predict psychosocial outcomes is pubertal maturation. The link between pubertal maturation and the emergence of dating and sexual behaviors has been well-documented (Capaldi, Crosby, & Stoolmiller, 1996; Cavanagh, 2004; Ellis & Garber, 2000; French & Dishion, 2003; Magnusson, Stattin, & Allen, 1985; Phinney, Jensen, Olsen, & Cundick, 1990; Udry, 1990; Udry & Billy, 1987). In addition, early pubertal timing has been linked to increased psychopathology and poorer functioning for girls (e.g., depressive symptoms, disruptive behavior problems, academic difficulties, increased substance use, poorer perceived social support, more suicide attempts, disordered eating) (Graber, Lewinsohn, Seeley, & Brooks-Gunn, 1997; Stice, Presnell, & Bearman, 2001) and both early and late pubertal timing have been linked to poorer outcomes for boys (e.g., depressive symptoms, greater emotional reliance on others) (Graber et al., 1997). During puberty, adolescents undergo physical and hormonal changes (Brooks-Gunn & Furstenberg, 1989), become more attracted to peers, and become curious about romantic experiences (Miller & Benson, 1999; Udry, 1988). Early pubertal maturation is associated with increased likelihood of dating, such that adolescents at a more advanced stage of puberty have a greater likelihood of engaging in early sexual behavior and dating experiences (Capaldi et al., 1996; Collins et al., 2009; Friedlander et al., 2007; Ivanova, Veenstra, & Mills, 2012; Phinney et al., 1990; Udry, 1979; Williams et al., 2008; Zimmer-Gembeck et al., 2001). For example, more sexually mature girls are more likely to be romantically involved with boys (Compian et al.,

2004) and physical maturity in adolescence is positively linked with progression toward romantic involvement (Zimmer-Gembeck et al., 2001). A positive link between puberty and dating has also been identified for males (Kim & Smith, 1999; Lam, Shi, Ho, Stewart, & Fan, 2002); however, several studies have not consistently identified an association between pubertal maturation and romantic involvement for both boys (e.g., Susman et al., 1985) and girls (Friedlander et al., 2007). Thus, more research is needed examining the potential moderating role of pubertal maturation in the link between romantic involvement and psychological outcomes.

The Moderating Role of Child Sex

Previous research suggests that the pattern of associations between romantic relationships and psychosocial functioning may be different for girls and boys (e.g., Susman et al., 1985). For example, in early adolescence, the prevalence of boys in a current romantic relationship is higher than for girls (e.g., Connolly et al., 2004), whereas in mid to late adolescence the pattern shifts such that the prevalence of girls in a romantic relationship is higher than for boys (Carver et al., 2003). Some research has supported that the pattern of association between adolescent relationship involvement and depressive symptoms is more salient for girls (Joyner & Udry, 2000) and as a result much of the research on romantic relationships and depression has focused on girls only. Sex differences also exist in terms of social influences on youths' sexual experiences: whereas girls who are sexually active outside of a romantic relationship may face disparagement from peers (O'Sullivan & Meyer-Bahlburg, 2003), males who are sexually active tend to experience heightened social standing (Tolman, Spencer, Harmon, Rosen-Reynoso, & Striepe, 2004). Thus, it is possible that child sex moderates links between romantic involvement and psychiatric and psychosocial outcomes.

Early Childhood Predictors of Adolescent Romantic Relationships: Parenting

Little research has examined the influence of early childhood factors on the development of early adolescent romantic relationships (Ivanova et al., 2012; Zimmer-Gembeck et al., 2001). Throughout childhood, a child's primary relationship is with his or her parent, creating a fundamental paradigm of dyadic relational process that influences future relationships (Ivanova et al., 2012). Interpersonal theories of romantic relationships, such as attachment theory, posit that early childhood experiences of sensitive parenting and close connections facilitate a smoother transition to adolescence (Allen & Land, 1999; Collins & Sroufe, 1999; Collins et al., 2009). Research consistently shows that high quality parent-child relationships are concurrently linked to positive functioning in adolescence (for a review see Steinberg, 2001). In addition, research has demonstrated that more positive parenting style in early to middle childhood is significantly prospectively linked to fewer behavior problems in early adolescence (Galambos, Barker, & Almeida, 2003; Pettit, Laird, Dodge, Bates, & Criss, 2001). A growing body of work has identified that early adolescent family relationships predict romantic relationship quality in mid- to late- adolescence and emerging adulthood (e.g., Collins, Cooper, Albino, & Allard, 2002; Roisman, Booth-LaForce, Cauffman, & Spieker, 2009; Scharf & Maysel, 2001; Seiffge-Krenke, 2003). For example, in a study of adolescents ages 13-14 years, family factors, which included marital conflict and authoritarian parenting, moderated the relation between steady dating and lower self-esteem and greater depressive symptoms, for girls only; thus, positive family relationships may serve as protective factors against the harmful effects of early dating on youth functioning (Doyle, Brendgen, Markiewicz, & Kamkar, 2003).

Parenting behaviors and facets of parent-child relationship quality (e.g., parental monitoring, perceived parental rejection) assessed in early adolescence have been linked to early dating (Friedlander et al., 2007; Ivanova et al., 2012). However, by early adolescence, the parent-

child relationship trajectory is long-established. Strikingly little research has yet explored the early developmental roots of these interactions and the ways in which early childhood relationships with parents might shape early adolescent romantic experiences. The preschool years represent a critical developmental period to examine parent-child interactions and child temperament, as children rely heavily on their primary caregiver for most basic needs and social learning, and regulatory skills are just starting to emerge. Previous research demonstrates that early parenting shows consistent associations with children's internalizing (McLeod, Weisz, & Wood, 2007) and externalizing (McKee, Colletti, Rakow, Jones, & Forehand, 2008) psychopathology and predicts mental and physical health problems into adulthood (Repetti, Taylor, & Seeman, 2002). One study to date, the Minnesota Longitudinal Study of Parents and Children, has examined early caregiving behaviors (ages 2-4 years) and romantic relationship outcomes at ages 16, 19, and 23 years (for a study overview, see Collins & van Dulmen, 2006). Findings suggest that higher quality caregiving during toddlerhood does not necessarily predict whether an individual will be involved in a romantic relationship at age 20-21, but may play a role in the quality of that relationship (Collins & van Dulmen, 2006) Importantly, no study to date has investigated how early parenting behaviors longitudinally affect romantic relationships at the onset of adolescence (i.e., age 12).

Early Childhood Predictors of Adolescent Romantic Relationships: Child Temperament

It is also likely that individual characteristics, such as child temperament, impact romantic involvement in early adolescence (Collins & van Dulmen, 2006). Temperament is broadly defined as a set of relatively stable dispositional traits that influence an individual's susceptibility to context (Rothbart, Ahadi, & Evans, 2000). These tendencies are observable as early as infancy, and impact a child's social functioning through the propensity to initiate social

relationships or withdraw from peers (Buss & Plomin, 1984). A growing body of research has documented links between extreme temperamental traits and psychopathology: elevated approach behaviors have been linked to substance use and eating disorders whereas decreased approach behaviors have been linked to depression; in addition, high levels of withdrawal have been linked to anxiety, depression, alcoholism, and eating disorders (for a review, see Bijttebier & Roeyers, 2009). Temperament is also linked to positive outcomes and better psychosocial functioning; for example, children with greater inhibitory control have more positive prosocial behavior (Rothbart et al., 2000), and positive emotionality, sociability, and agreeableness are linked to better social competence (Rothbart & Bates, 1998). The influence of temperament can be particularly salient during key developmental transitions, such as the beginning of adolescence when youth undergo changes including middle school entry, increased time with mixed-sex friend groups, and the onset of puberty (Talwar, Nitz, & Lerner, 1990). The link between early child temperament and general adolescent social functioning has been well-established (for a review, see Sanson, Hemphill, & Smart, 2004). For example, a more inhibited temperament type in toddlerhood is linked to increased social anxiety in adolescence (Schwartz, Snidman, & Kagan, 1999), whereas self-regulation and sociability in toddlerhood and preschool have been linked to better social skills and higher social functioning in adolescence (Sanson et al., 2004).

Several studies have examined links between youth temperament and romantic experiences: One study revealed that youth higher in surgency (the need for high-intensity pleasure) at age 11 were more likely to have dating experience three years later, whereas adolescents higher in shyness were less likely to have later dating experience (Schwartz, Snidman, & Kagan, 1999). Other research has demonstrated that high schoolers with lower self-

reported restraint were more likely to be early (prior to age 15) initiators of sexual activity (Rosenthal, Smith, & De Visser, 1999), and that temperament variables (i.e., higher in domineering and maturity, lower in shyness) assessed at ages 9 to 11 were linked to age of first sexual intercourse for females (Udry, Kovenock, Morris, & van den Berg, 1995). In contrast, another study found that children higher in impulsivity at 30 months of age are significantly more likely to have later age of first romantic involvement (Zimmer-Gembeck et al., 2004). In addition, Newman and colleagues (1997) found that children who were more impulsive, overactive, and emotionally labile had low levels of relationship intimacy at age 21 (Newman, Caspi, Moffitt, & Silva, 1997). Of note, the majority of these studies have used a short follow-up period (i.e., both temperament and relationships assessed within the adolescent period) or have focused on older ages as the primary outcome period of interest (e.g., Zimmer-Gembeck et al., 2004). Assessing temperament in early childhood is particularly important, as early childhood temperament shows stability into adulthood (Roberts & DelVecchio, 2000), predicts later personality, psychiatric symptoms, and psychosocial functioning, and the structure of childhood temperament is largely consistent with later adult models of personality (Dyson, Olino, Durbin, Goldsmith, & Klein, 2012; Rothbart & Bates, 1998; Rothbart et al., 2000). Importantly, while temperamental dimensions are more variable in infancy, temperament begins to stabilize during the preschool years (Rothbart & Ahadi, 1994); preschool temperament demonstrates moderate stability over time and predicts adult psychopathology and personality (Caspi et al., 2003; Caspi, Moffitt, Newman, & Silva, 1998; Caspi, Roberts, & Shiner, 2005; Caspi & Silva, 1995; Newman et al., 1997). To our knowledge, no studies to date have used a prospective longitudinal method to assess temperament in early childhood and focus on multiple dimensions of early adolescent romantic relationships at age 12 as outcomes.

Summary and Key Gaps in the Literature

Engagement in romantic relationships comprises a hallmark of adolescent development and often begins in the preteen years. While romantic attachment is widely viewed as fundamental to adolescent and adult experience, it is only in the last few decades that adolescent romantic relationships have become a subject of scientific inquiry. To date, research has focused far more on older adolescent and adult relationships than on the initial romantic experiences of preteens. Recent literature has established that early adolescent relationships are prevalent (Carver et al., 2003) and bear important implications for youths' future development. However, we know relatively little about variables from early childhood that may potentiate a preteen's early involvement in romantic experience and how those early factors may affect the relational quality that then carries implications for well-being and broader development. Research has demonstrated that early adolescent psychosocial functioning is impacted by both early childhood environment (e.g., parenting) and individual characteristics (e.g., temperament), but a striking gap exists in the study of how such dimensions of early childhood may affect early adolescent romantic relationships. Specific gaps in the literature are detailed below.

First, the majority of research to date on age 12 adolescent romantic relationships has focused on the presence/absence of a romantic relationship or on sexual activity. Little investigation has examined age 12 romantic relationships using a comprehensive approach to capture different dimensions of relationship experience and psychosocial functioning. Specifically, little research has considered age 12 dating experiences (both normative and risky experiences), quality of relationship (both positive and negative), sexual experiences, and concurrent psychosocial outcomes within the same study. Second, many studies on early adolescent dating have included samples of girls only; therefore, relatively less is known about

boys during this period. Given that these early formative experiences can carry implications for development through adolescence and beyond, this period in particular bears closer scrutiny.

Third, scant research has examined early childhood predictors of early adolescent romantic relationship involvement. Specifically, little research has directly examined links between early parenting behaviors or child temperament and age 12 adolescent romantic involvement. Previous work has examined concurrent associations between parenting and early adolescent romantic relationship involvement (e.g., Ivanova et al., 2012) or have focused on late adolescence (i.e., over age 16) (Collins & van Dulmen, 2006) as the outcome period of interest. Similarly, previous work has examined concurrent associations between early adolescent temperament and romantic relationship involvement (e.g., Ivanova et al., 2012) and longitudinal associations between early child temperament and late adolescent romantic involvement (e.g., Zimmer-Gembeck et al., 2004), but little work has focused explicitly on *early* adolescent romantic relationship outcomes. Identifying these temperamental and environmental vulnerabilities earlier may help elucidate who is most at risk for negative outcomes.

Current Study

In order to address these gaps in our knowledge of early adolescent romantic relationships, the current study aimed to elucidate the phenomenology and concurrent psychosocial correlates of preteen (age 12) romantic relationships and to delineate early childhood variables that predict involvement in and quality of preteen romantic relationships. Given previous research demonstrating that early romantic relationships generally grow out of peer relationships, and friendships can offer a “trial run” for handling positive and negative emotions outside of the family context (e.g., Connolly et al., 2000, 2004), we also examined friendship competence as an outcome variable alongside romantic relationships. Since not all

youth aged 12 have experienced a romantic relationship, friendship competence provides a measure of peer relationship functioning that may be a precursor to future romantic relationship functioning. Notably, a large body of research has examined links between poorer friendship competence and increased psychopathology across development (e.g., Bagwell, Newcomb, & Bukowski, 1998; Bornstein, Hahn, & Haynes, 2010; Burt, Obradović, Long, & Masten, 2008), which allowed us to consider romantic relationships findings alongside peer relationship findings in this age group.

In a longitudinal sample of 440 youth, we examined concurrent associations between multiple dimensions of age 12 romantic relationships (dating experiences, risky dating, relationship discord, relationship closeness, sexual experience) and friendship competence, and age 12 psychopathology (anxiety, depression, attention-deficit hyperactivity disorder [ADHD], disruptive behavior disorder [DBD] symptoms) and psychosocial functioning (in peer, school, and family domains). Given prior research indicating that pubertal status (e.g., Capaldi et al., 1996; Phinney et al., 1990) and child sex (e.g., Joyner & Udry, 2000; Susman et al., 1985) may also play a role in romantic relationship involvement, we examined these two variables as moderators in all concurrent analyses. Furthermore, we examined how two salient dimensions of early childhood (parenting and temperament, assessed at age 3) predicted involvement in romantic relationships and friendship competence at age 12.

The current study used age 3 observational laboratory assessments of positive and negative parenting behaviors and child temperament (Sociability/Assertiveness, Dysphoria, Fear, Exuberance, and Disinhibition). At age 12, romantic relationship variables were assessed by youth self-report. Psychopathology and functioning were assessed via a youth- and parent- report clinical interview, a youth- and parent- report life stress interview, and youth self-report

measures. Pubertal status at age 12 was assessed using a standardized youth-report pubertal development scale. Given prior evidence suggesting that stronger social competence is linked to earlier romantic involvement (Connolly et al., 1999, 2000, 2004), we controlled for age 3 social competence in all longitudinal analyses.

The current study examined two primary specific aims. These two aims were distinct and thus do not necessarily create a single model. The first aim focused on providing epidemiological information and characterizing early adolescent romantic relationships, while the second aim focused on examining early childhood predictors of early adolescent romantic relationships.

Aim 1: We examined concurrent associations between early adolescent romantic relationship variables and psychiatric symptoms and psychosocial functioning at age 12 (Aim 1a).

Hypothesis (Aim 1a): Given previous research suggesting that early dating may be associated with increased psychosocial distress (e.g., Compian et al., 2004; Davila et al., 2009, 2004; Joyner & Udry, 2000) we hypothesized that frequency of dating experiences, history of risky dating behaviors or sexual experience, and higher relationship discord would be associated with more psychopathology and poorer functioning. Given research with older adolescents suggesting that positive quality of relationship is linked to more positive outcomes (Seiffge-Krenke, 2003), we hypothesized that higher romantic relationship closeness would be linked to lower levels of psychopathology and functioning.

Next, we examined pubertal status and child sex as moderators in the concurrent associations between early adolescent romantic relationship variables and psychopathology and psychosocial functioning at age 12 (for continuous outcome variables only) (Aim 1b).

Hypothesis (Aim 1b): Given previous research linking both child sex (Joyner & Udry, 2000) and pubertal status (Capaldi et al., 1996; Phinney et al., 1990) to adolescent romantic relationships and psychosocial outcomes, we hypothesized that the pattern of associations between romantic relationship variables and psychiatric symptoms, diagnoses, and psychosocial functioning would differ for males and females and for youth at different stages of pubertal development. Specifically, we hypothesized that the positive association between greater romantic relationship involvement and increased psychopathology and poorer functioning would be stronger for females as compared to males. In addition, we hypothesized that the positive association between greater romantic relationship involvement and increased psychopathology and poorer functioning would be stronger for youth of higher pubertal status as compared to youth of lower pubertal status.

Aim 2: We examined parenting (Aim 2a) and child temperament (Aim 2b) as age 3 predictors of early adolescent romantic relationship involvement at age 12, over and above social functioning at age 3. Lastly, we entered all age 3 predictors into multiple linear regressions to examine which predictors had unique effects (Aim 2c).

Hypothesis (Aim 2a): Previous research suggests that early parenting predicts early adolescent outcomes (Galambos et al., 2003; Pettit et al., 2001). We hypothesized that greater levels of positive parenting at age 3 would be linked to lower frequency of dating experiences at age 12, lower likelihood of any sexual history, lower likelihood of any history of risky dating behaviors, and higher relationship closeness at age 12. In contrast, we hypothesized that greater levels of negative parenting at age 3 would be linked to higher frequency of dating experiences, greater likelihood of any sexual experience, greater likelihood of any history of any risky dating behaviors, and higher relationship discord at age 12. In order to examine the predictive role of

early parenting over and above early social competence, we controlled for age 3 social behavior in all longitudinal analyses.

Hypothesis (Aim 2b): We assessed five empirically derived dimensions of observed temperament: Sociability/Assertiveness, Dysphoria, Fear, Exuberance, and Disinhibition (Dougherty et al., 2011). Previous research supports that child temperament predicts adolescent psychosocial functioning (Sanson et al., 2004; Schwartz et al., 1999). We hypothesized that negative early temperament styles (e.g., dysphoria and disinhibition) would predict greater frequency of early dating experiences, greater likelihood of sexual activity and risky dating experiences, and greater romantic relationship discord, while early positive or inhibited temperament styles (sociability/assertiveness, exuberance, and fear) would predict lower frequency of early dating experiences, lower likelihood of sexual activity and risky dating experiences, and greater relationship closeness. In order to examine the predictive role of early temperament over and above early social competence, we controlled for age 3 social behavior in all longitudinal analyses.

Hypothesis (Aim 2c): We examined all dimensions of age 3 parenting and temperament in the same multiple linear regression model for each continuous romantic relationship outcome variable to examine which predictors, if any, had unique effects. The independent variables included Positive and Negative parenting composites, the 5 temperament variables (Sociability/Assertiveness, Dysphoria, Fear, Exuberance, and Disinhibition), and covariates (current age at age 12 assessment, youth sex, and age 3 child social competence). Given the exploratory nature of these analyses, we held no specific a priori hypotheses on which dimensions of parenting and/or temperament would be the most salient predictors of early adolescent romantic relationship outcome variables.

Chapter 2: Method

Participants

The Stony Brook Temperament Study is a longitudinal study investigating the role of early temperament on the development of psychiatric disorders (Dougherty et al., 2011; Olino, Klein, Dyson, Rose, & Durbin, 2010). This is a pre-existing dataset and all measures have been collected previously. We recruited families with a 3-year-old child living within 20 contiguous miles of Stony Brook University. Potential participants were identified via a commercial mailing list; eligible families had a child between 3 and 4 years of age with no significant medical conditions or developmental disabilities, and at least one English-speaking biological parent. Participants in the initial wave of this longitudinal study were 559 families. Census data suggest that the sample is reasonably representative of the surrounding county. The study was approved by the human subjects review committee. Informed consent was obtained from parents, and child assent was obtained at age twelve; families were financially compensated for participating.

Subsequent follow-up assessments took place every three years at ages 6, 9 and 12 years. At the age 6 assessment, 50 additional minority families were recruited to increase diversity. The current study will focus on children who completed the age 3 and age 12 assessments. Measures collected by the larger study at the age three assessment include parenting (observational and questionnaire), child temperament (observed and parent-report questionnaires), child performance (e.g., vocabulary and executive functioning tasks), child psychopathology (clinical interview and parent-report), child functioning, stress reactivity, genetic information, electroencephalogram (*EEG*) data, and parental personality and psychopathology. Measures collected at age 12 include self-report and parent-report questionnaires about child psychopathology, functioning, temperament, school performance, friendships and relationship

functioning, clinical interviews with parent and child about psychopathology and life stress, executive functioning, and EEG data. At age 12, 440 youth participants (including the minority participants recruited at age 6) completed self-report questionnaires about their romantic and peer relationships at age twelve ($M=12.67$, $SD=.45$) and 439 youth and their primary caregiver completed a diagnostic interview about the child's psychiatric history. 404 participants completed both the age 3 and age 12 assessments, and thus will contribute to analyses examining longitudinal associations. Participants who completed the age twelve assessment identified themselves as White (89.8%), African-American/Black (7.0%), Asian (2.7%), Native American (.2%) and Other Race (.2%). Children who completed both the age three and twelve assessments ($n=404$) were compared to children who completed only the first assessment on age three demographic variables, parenting, and temperament. One significant difference was observed: children who participated at both time points had significantly greater levels of Noncompliant/Disinhibited temperament type (z-scored; $M=.06$, $SD=.95$) as compared to children who participated at age three only ($M=-.17$, $SD=1.13$), $t(535)=2.29$, $p=.022$. See Table 1 for all demographic information.

Measures

Age 3 Assessment

Observed child temperament. Each child and a parent visited the laboratory for a two-hour observational assessment of temperament that included a standardized set of 12 episodes from the Laboratory Temperament Assessment Battery (Lab-TAB; Goldsmith, Reilly, Lemery, Longley, & Prescott, 1995). Tasks were selected to elicit a range of temperament-relevant behaviors. This assessment battery has been described in detail previously (Dougherty et al., 2011; Olino et al., 2010). The Lab-TAB has demonstrated moderate convergent validity with

post-visit observer ratings (r 's = .21-.76) (Gagne, Van Hulle, Aksan, Essex, & Goldsmith, 2011) and home observations (e.g., Shankman et al., 2005), and moderate stability (positive affect $r = .46$; negative affect, $r = .45$) from ages 3-7 (Durbin, Hayden, Klein, & Olino, 2007).

Furthermore, parents observing their children during the Lab-TAB rated their child's behavior as typical of their behavior outside the lab (Lo, Vroman, & Durbin, 2015) supporting the ecological validity of the Lab-TAB.

To prevent carry-over effects, no episodes presumed to evoke similar affective responses occurred consecutively, and each episode was followed by a brief play break. The parent remained in the room with the child for all episodes except *Stranger* and *Box Empty* (see below) but was instructed not to interact with the child (except in *Pop-Up Snakes*). Each episode was videotaped and later coded.

The episodes, in the order they occurred, were as follows: *Risk Room*—child explored a set of novel and ambiguous stimuli, including a Halloween mask, balance beam, and black box. *Tower of Patience*—child and experimenter alternated turns in building a tower. The experimenter took increasing amounts of time before placing her block on the tower during each turn. *Arc of Toys*—child played independently with toys for 5 min before the experimenter asked the child to clean up the toys. *Stranger Approach*—child was left alone briefly in the room before a male accomplice entered, speaking to the child while slowly walking closer. *Make that Car Go*—child and experimenter raced remote-controlled cars. *Transparent Box*—experimenter locked an attractive toy in a transparent box, leaving the child alone with a set of inoperable keys. After a few minutes, the experimenter returned and told the child that she had left the wrong set of keys. The child used the new keys to open the box and play with the toy. *Exploring New Objects*—child was given the opportunity to explore a set of novel and ambiguous stimuli,

including a mechanical spider, a mechanical bird, and sticky soft gel balls. *Pop-Up Snakes*—child and experimenter surprised the parent with a can of potato chips that actually contained coiled snakes. *Impossibly Perfect Green Circles*—experimenter repeatedly asked the child to draw a circle on a large piece of paper, mildly criticizing each attempt. *Popping Bubbles*—child and experimenter played with a bubble-shooting toy. *Snack Delay*—child was instructed to wait for the experimenter to ring a bell before eating a snack. The experimenter systematically increased the delay before ringing the bell. *Box Empty*—child was given an elaborately wrapped box to open under the impression that a toy was inside.

Tape coding procedures. Coding procedures followed those reported in previous studies (Dougherty et al., 2011; Olino et al., 2010). The scoring developed for these assessments has been related to home observations and demonstrated moderate stability over time in an independent sample (Durbin et al., 2007). The following temperament traits, emotional displays, and behaviors were rated: positive affect (PA), fear, sadness, anger, BI, inhibitory control, interest, activity, sociability, impulsivity, initiative, anticipatory PA, dominance, warmth, social interest, affiliation, assertiveness, clinginess, pushiness, hostility, noncompliance, avoidance, and social fear. Each variable was rated for all episodes except BI and inhibitory control.

Each display of facial, bodily and vocal affect (PA, fear, sadness, anger) in each episode was rated on a 3-point scale (low, moderate, high). Ratings were summed separately within each channel (facial, bodily, vocal) across the 12 episodes, standardized, and summed across the three channels to derive total scores for each affect domain. With the exception of BI and inhibitory control, the other variables were rated once per episode on a 4-, 5-, or 10-point scale and summed across episodes. Coefficient alphas ranged from .50 to .87 (*Mdn* = .70), and intraclass coefficients (ICCs) for interrater reliability ranged from .40 to .92 (*Mdn* = .75, *n* = 35).

BI was coded only in the three episodes designed to assess this behavior: *Risk Room*, *Stranger Approach*, and *Exploring New Objects*. Specific behaviors, such as latency to touch objects, tentative play, gaze aversion, latency to vocalize, and approach to and avoidance of stranger were coded for each epoch, which spanned 20 to 30 seconds depending on the particular episode. Within each epoch, a maximum intensity rating of facial, bodily, and vocal fear was also coded. Except for latencies, behaviors were coded on 3- or 4-point scales. BI was computed as the average of the standardized ratings across epochs and episodes. Coefficient alpha for the BI scale was .80 and the interrater ICC was .88 ($n=35$).

Inhibitory control was coded in two episodes designed to assess this behavior: *Tower of Patience* and *Snack Delay*. The coding system was adapted from Carlson (2005), which involved tallying the number of times a child failed to wait his or her turn during the episode. *Tower of Patience* consisted of 14 trials, and *Snack Delay* consisted of 7 trials. The composite global inhibitory control variable ($\alpha=.70$, interrater ICC=.98, $n=8$) was constructed by adding the standardized scores for the two episodes.

Principal components analysis (PCA) of Lab-TAB variables. As detailed in Dougherty et al. (2011), to reduce the number of temperament variables listed above, a PCA was conducted followed by an oblique rotation. Based on the eigenvalue > 1.0 rule and inspection of the scree plot, five components were extracted. Each component was easily interpretable and included several theoretically relevant variables with loadings greater than .40 and few cross-loadings on multiple factors. In the few cases where there were cross-loadings, the item was added to the scale with the higher loading. Unit-weighted scores were derived for each child to yield five temperament dimensions: Sociability/Assertiveness ($\alpha=.93$, ICC=.82), Dysphoria ($\alpha=.80$, ICC=.88), Fear ($\alpha=.71=.82$), Exuberance ($\alpha=.88$, ICC=.92), and Disinhibition ($\alpha=.70$, ICC=.83).

Observed positive and negative parenting behavior. At age three, 404 children participated in a laboratory-based parent-child interaction task with one parent (94% mothers). Direct observations of parent-child interactions in the laboratory have demonstrated ecological validity: previous research has demonstrated moderate to high correlations between observations in clinic settings and the home for unstructured tasks (r 's = .37-.70 and p 's between $<.01$ and $<.0001$) (Webster-Stratton, 1985). The observational assessment was based on a modified version of the Teaching Tasks Battery and included six standardized tasks (book reading, block building, naming objects with wheels, matching shapes, completing a maze using an etch-a-sketch, and gift presentation) designed to elicit parent and child behaviors (Egeland et al., 1995). Interactions were videotaped and coded on seven parenting scales: parental positive affect, parental supportive presence (e.g. expressions of positive regard and emotional support), parental confidence (e.g., parental belief that she can successfully work with child in situation and that child will behave appropriately), parent's quality of instruction (e.g., how well parent structures situation so that child knows what the task objectives are), parental negative affect, parental hostility (e.g., expressions of anger, frustration and criticism towards the child), and parental intrusiveness (e.g., parental interference and little respect for child's need to gain autonomy). Parental supportive presence, quality of instruction, parental hostility, and parental intrusiveness were rated on 5-point a scale ranging from 1.00 to 5.00. Parental positive affect, confidence, and negative affect were rated on a three-point scale ranging from 1.00 to 3.00. Supportive presence, quality of instruction, positive affect, and confidence scales were averaged to create a Positive Parenting composite ($\alpha=.89$, $ICC=.87$); hostility, intrusiveness, and negative affect were averaged to create a Negative Parenting composite ($\alpha=.80$, $ICC=.79$).

To further validate the use of the observational parenting measure in our study, we examined correlations between positive and negative parenting composites and self-report parenting based on the Parenting Styles Dimensions Questionnaire (PSDQ; Robinson et al., 2001), which is comprised of three factors (Authoritative, Authoritarian, and Permissive parenting). The positive PCI composite was significantly negatively associated with Mother Authoritarian Parenting ($r = -.21, p < .001$) and Mother Permissive Parenting ($r = -.18, p < .001$). The negative PCI composite was significantly positively associated with Mother Authoritarian Parenting ($r = .16, p < .001$) and Mother Permissive Parenting ($r = .18, p < .001$).

Furthermore, parenting was reassessed with the same measure in the current study at age 6. We examined the stability of the PCI from age 3 to age 6, and found that parenting behaviors remained moderately stable (positive parenting $r = .31, p < .001$; negative parenting $r = .43, p < .001$).

Social competence. Children's peer behavior at age three was measured using the Ratings of Children's Behaviors scale, developed by Eisenberg and colleagues (Eisenberg et al., 1996; Eisenberg, Fabes, Guthrie, & Reiser, 2000) to elicit parent reports of early child social competence. It includes seven items that are rated on a scale from 1-4, with the informant selecting whether each statement is like or unlike the child. Items from the socially appropriate behavior subscale ask about whether the child is well-behaved, acts appropriately, gets into trouble, and has good social skills; items from the popularity subscale ask about whether it is hard for the child to make friends, the child has a lot of friends, and the child is popular with peers. Cronbach's alpha for parent-rated social behavior was .75. Previous research has demonstrated that the Ratings of Children's Behaviors scale is a reliable and valid measure of child social competence; correlations between multiple observers of preschool children's social

behavior (i.e., teachers, aides, and researchers) using this scale are moderate to high ($r's = .63-.75$; $p's < .001$) and ratings of children's popularity are significantly associated with peer-rated child sociometric status ($r's = .40-.58$; $p's < .001$).

Age 12 Assessment

Romantic experiences. A self-report measure used in prior studies (Starr & Davila, 2009; Steinberg, Davila, & Fincham, 2006) was used to assess early adolescent romantic experiences. Adolescents rated the lifetime frequency (1=*Never*, 2=*Once or twice*, 3=*A few times*, 4=*Many times*) with which they had engaged in various romantic experiences. Four romantic experiences were assessed, including "ever gone on a date", "flirted with someone", "been romantically attracted to someone", and "kissed a date or romantic partner." Items were summed to create a total Romantic Experiences scale ($M = 6.50$, $SD = 2.71$; $range = 4.00 - 16.00$; $\alpha = .89$).

Risky dating experiences. Seven potentially risky dating experiences were assessed, including whether adolescents had ever "engaged in other sexual relations (more than kissing) with a date or romantic partner", "engaged in other sexual relations (more than kissing) with someone you (the adolescent) were not dating or in romantic relationship with?", "had a romantic partner or a date become aggressive or violent towards you (the adolescent)?", "had sexual relations (more than kissing) while using alcohol or drugs?", "you had sexual relations when you (the adolescent) really didn't want to?", "you (the adolescent) had sexual relations (more than kissing) with a person who was in a romantic relationship with someone else, or with someone you (the adolescent) didn't know well?", and "had a one-time 'hook-up'?". Due to the low frequencies of these events, this variable was coded as 0 = *absent* (i.e., has never engaged in any of the potentially risky experiences) and 1 = *present* (i.e., has engaged in at least one of the

potentially risky experiences). Twenty-two adolescents (5.1%) had engaged in at least one potentially risky dating experience.

Sexual experience. Youth were asked whether they engaged in a sexual experience with a partner (defined as “more than kissing but not necessarily intercourse”). This variable was coded as 0 = *absent* (i.e., has never engaged in a sexual experience) and 1 = *present* (i.e., has engaged in a sexual experience). Fifteen adolescents (3.5%) had engaged in at least one sexual experience.

Romantic relationship quality. Youth completed the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985, 2009), which consists of six three-item subscales that load onto two factors: 1) Romantic Partner Closeness (romantic partner approval and satisfaction subscales) and 2) Romantic Partner Discord (romantic partner criticism, conflict, exclusion, and pressure subscales). Youth were asked to choose the most important romantic friend they have ever had in their life and to answer the questions as they would have when they were in that relationship. Youth were prompted to provide the name of this romantic friend. For example, the Romantic Partner Closeness scale included items such as “How happy are you with your relationship with your romantic friend?” (satisfaction subscale) and the Romantic Partner Discord scale included items such as “How often do you and your romantic friend argue with each other?” (conflict subscale). Items were rated on a 5-point Likert scale (1 = *Never or hardly at all*, 2 = *Seldom or not too much*, 3 = *Sometimes or somewhat*, 4 = *Often or very much*, 5 = *Always or extremely*). Scores for each subscale were calculating by averaging the three items making up the scale, and total scores for the Romantic Partner Closeness (6 items, $\alpha = .88$) and Romantic Partner Discord (12 items, $\alpha = .88$) were calculated by averaging the relevant

subscales. The Romantic Partner Discord variable was log-transformed. Only youth with a current or past romantic partner completed the NRI measures ($n = 114$).

The NRI has proven to be a reliable and valid measure of adolescent relationships. The NRI has demonstrated stability over one year (r 's range from .49 to .75), and has revealed moderate to high correlations between adolescent self-report ratings and other-report ratings (Romantic Closeness $r = .47$; Romantic Discord $r = .37$; p 's $< .01$). In addition, the NRI composites have been significantly associated with observations of adolescent friendships (NRI support positively associated with communication [$r = .21, p < .01$] and positivity [$r = .22, p < .01$]; NRI negative interaction negatively associated with communication [$r = -.15, p < .05$] and positively associated with conflict [$r = .16, p < .05$]) (Furman & Buhrmester, 2009).

Friendship competence. Friendship competence was assessed using the Friendship Deciding Scale (FDS), an adaptation of the Relationship Deciding Scale (RDS; Vennum & Fincham, 2011). The RDS has demonstrated good reliability and validity in previous studies (Davila et al., 2017; Vennum & Fincham, 2011) The FDS Total is comprised of three subscales (ten items total): Relationship Confidence (confidence in ability to maintain relationship; four items), Warning Signs (knowledge of and ability to cope with warning signs in a relationship; three items), and Deciding (consideration of decisions in relationship; three items). Items were rated on a 5-point likert scale, where 1 = *Strongly disagree* and 5 = *Strongly agree*. All items were summed to create the FDS Total scale score, with higher scores indicated better friendship competence. The FDS Total demonstrated good internal consistency ($\alpha = .89$).

The FDS is adapted from the Relationship Deciding Scale (RDS), which has demonstrated reliability and validity (Vennum & Fincham, 2011). The RDS has been shown to predict relationship characteristics 14 weeks later, and demonstrates good convergent validity;

specifically, the RDS is positively associated with the Self Control Scale (Tangney, Baumeister, & Boone, 2004) (r 's range from .20 to .25, p 's < .001) and Self-Efficacy Scale (Fincham, Harold, & Gano-Phillips, 2000) (r 's range from .24 to .42, p 's < .001), and negatively associated with the Psychological Aggression subscale of the Revised Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) (r 's range from -.11 to -.27, p 's range from .015 to .001) and negative interactions on the Communication Danger Signs Scale (Stanley & Markman, 1997). (r 's range from -.12 - to .27, p 's range from .001 to .005) (Vennum & Finchum, 2011). In the current study, the FDS was significantly negatively associated with the Peer Experience Questionnaire (Prinstein, Boergers, & Vernberg, 2001) measures of Bullying ($r = -.15, p < .002$) and Victimization ($r = -.11, p = .027$) at age 12.

Youth psychopathology. The K-SADS Present and Lifetime Version (K-SADS-PL; (Endicott & Spitzer, 1978; Kaufman et al., 1997) was used to assess *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013)* current psychiatric symptoms at age 12. The K-SADS-PL has good-to-excellent test-retest interrater reliability for all diagnoses (Kaufman et al., 1997). Doctoral students in clinical psychology and a master's-level clinician administered the K-SADS first to the parent and then to the child. Summary ratings for each symptom were derived based on the combination of parent and child reports. All cases with a K-SADS diagnosis were reviewed in a case conference co-led by a child psychiatrist and a clinical psychologist.

Current dimensional symptom scales were derived for the following DSM-5 psychiatric categories: any depressive disorder (MDD, dysthymic disorder, depressive disorder-NOS); any anxiety disorders (specific phobia, social phobia, separation anxiety, GAD, panic, agoraphobia), disruptive behavior disorder (DBD), and attention-deficit hyperactivity disorder (ADHD-

inattentive, hyperactivity or combined type). Current symptoms of any depression ($\alpha = 0.84$), anxiety ($\alpha = 0.85$), ADHD ($\alpha = 0.86$) and DBD ($\alpha = 0.73$) were rated on a three-point scale (0 = not present; 1 = subthreshold; 2 = threshold) and were summed to create dimensional scores for each diagnostic category. A second rater derived ratings from 74 videotaped interviews to assess inter-rater reliability, and the intraclass correlation (ICC) was acceptable (range = 0.77 – 0.97). Previous research has supported concurrent validity of KSADS-PL screens and diagnoses, and test-retest reliability coefficients are in the good to excellent range for all present and lifetime diagnoses (.63 to 1.00) (Kaufman et al., 1997). We report associations with dimensional scales in the main text as evidence supports dimensional models of psychopathology and the significance of subthreshold symptoms, particularly in childhood and adolescence (e.g., Balázs et al., 2013). As supplemental information, we have also included the rates of psychiatric disorders (see Appendix A) and their associations with our romantic and peer relationship outcome variables (see Appendix B).

At the age 12 assessment, 438 youth also completed the self-reported 28-item Child Depression Inventory-2 (CDI-2; Kovacs & Staff, 2003) ($\alpha = 0.85$). The CDI-2 has demonstrated good reliability, validity, and is sensitive to changes in depressive symptoms over time (Kovacs & Staff, 2003). The CDI is negatively associated with social competence, teacher- and parent-rated behavior, positive communication, problem solving, and academic performance (r 's range from -.19 to -.58, p 's range from <.01 to <.05) (Fauber, Forehand, Long, Burke, & Faust, 1987), and the Patient-Reported Outcomes Measurement Information System Depression Child ($r = .53$, $p < .001$) (Irwin et al., 2010). In our study, the CDI was significantly associated with a KSADS depression diagnosis ($r = .17$, $p < .001$), and current KSADS depression symptoms ($r = .33$, $p < .001$).

In addition, 439 youth completed the 41-item Screen for Child Anxiety Related Disorders (SCARED; Birmaher et al., 1999) ($\alpha = 0.90$). The SCARED has demonstrated good reliability and validity in multiple samples (Birmaher et al., 1999). Lastly, 426 youth completed the 5-item Body Image scale from the Eating Disorders Inventory (EDI; Garner, 1991) ($\alpha = 0.56$). The EDI has demonstrated good internal consistency ($\alpha = 0.80$ for clinical samples) and is significantly positively associated with clinician ratings of eating disorder symptoms ($r = 0.44, p < .05$); the EDI Body Image scale has also been significantly positively associated with the body dissatisfaction scale on the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979) (Garner, Olmstead, & Polivy, 1983).

Psychosocial functioning. Four-hundred thirty-four parents and 434 youth completed the UCLA Child Episodic Life Stress and Chronic Stress Interview for Children (Rudolph & Hammen, 1999), a semi-structured interview that assesses episodic/acute and chronic stress. We used an adapted version for adolescents, and utilized only the chronic stress portion of the interview for this paper. This interview has been widely used and demonstrates good interrater reliability and validity (Hammen, Shih, & Brennan, 2004). Importantly, while the interview is framed in terms of assessing stress, chronic stress scores are readily interpreted as reflecting social functioning (Harkness & Monroe, 2016).

The academic section assesses performance in classes and degree of difficulty with, and extra help needed for, schoolwork; the behavior section reflects problems with teachers, and frequency and severity of behavior problems and fights with peers at school. Scores from the academic and behavior sections were averaged to create the Academic and Behavior Chronic Stress score. The close friends section reflects number of close friends, as well as degrees of mutual satisfaction, conflict, confiding, and stability of relationships; the social section reflects

degrees of popularity, being a victim of bullying, and engagement in social activities with a wider peer group. Scores from the friends and social sections were averaged to create the Peer Chronic Stress score. The family stress section assesses quality of relationships with family members and degree of family support, tension, and conflict; this information comprised the Family Chronic Stress score. Higher scores represent greater levels of stress and poorer functioning.

Interviewers used behavioral probes to assess functioning over the past year and assign ratings based on parent and teen reports on a scale from 1 to 5 (including half-points; higher scores indicate poorer functioning). Interviews were conducted by trained post-baccalaureate research assistants during home visits with parents and then teens. Parent and teen interviews were conducted separately and ratings were based on information from both informants. Interviews lasted for approximately 45 minutes each. A post-doctoral fellow trained on the interview independently rated functioning using audio-recordings of interviews ($n = 32 - 33$); ICCs ranged from 0.57 - 0.93 (median = 0.85).

Validity for the UCLA LSI has been demonstrated in previous samples (e.g., Hammen et al., 1987, 2004). Average chronic stress using this measure has been associated with socioeconomic status (Hollingshead score, $r = .57, p < .001$), education level ($r = .39, p < .001$), and greater marital strain ($r = .50, p < .001$) (Hammen et al., 1987). Youth interpersonal stress on the UCLA stress interview has also been significantly positively associated with maternal chronic stress, maternal hostility, youth sociability, youth depression, and negatively associated with maternal acceptance (r 's range from .10 to .16, p 's range from .05 to .01) (Hammen et al., 2004).

The K-SADS interviewer also completed the Children's Global Assessment Scale (CGAS), a global measure of children's functioning over the past month, based on child and parent reports. Scores range from 0 – 100 (100 = superior functioning).

Pubertal status. Youth completed the Pubertal Development Scale (Carskadon & Acebo, 1993). This self-report scale consists of six items ($\alpha = .72$) assessing growth in height, growth of body hair (e.g., underarm or pubic hair), skin changes (e.g., pimples), breast development (for females only), menstruation (for females only), deepening of voice (for males only), and facial hair growth (males only). Females were significantly more advanced in pubertal status according to the Pubertal Development Scale ($M = 13.39$, $SD = 3.20$; $range = 5 - 23$) as compared to males ($M = 10.94$, $SD = 2.96$; $range = 5 - 19$), $t(438) = -8.33$, $p < .001$.

In addition, youth completed the Tanner drawings (Morris & Udry, 1980). This self-report measure illustrates the five stages of development for male genitalia (males only), breasts (females only), and pubic hair (both sexes). Youth were instructed to look at each of the five drawings, read the descriptions underneath, and choose the drawing closest to his or her stage of development. Both the PDS and Tanner drawings are reliable and valid scales for use with early adolescents (e.g., Carskadon & Acebo, 1993; Morris & Udry, 1980). Self-report Tanner ratings for youth aged 11-13 have been significantly associated with physician Tanner ratings (.82), maternal Tanner ratings (.85) and PDS self-report ratings (.61 – .67) (Brooks-Gunn, Warren, Rosso, & Gargiulo, 1987). In our study, females were significantly more advanced in pubertal status according to the Tanner drawings ($M = 6.85$, $SD = 1.67$; $range = 2 - 10$) as compared to males ($M = 5.84$, $SD = 1.79$; $range = 2 - 10$), $t(406) = -5.85$, $p < .001$.

In the current study, youth scores on the Pubertal Development Scale and the Tanner drawings were significantly correlated ($r = .60$, $p < .001$) and the Z-scores were averaged to create

a composite Pubertal Status scale. Females were significantly more advanced in Pubertal Status (Z-score $M = 0.34$, $SD = 0.83$, $range = -2.12 - 2.08$) as compared to males (Z-score $M = -0.33$, $SD = 0.84$, $range = -2.27 - 1.33$), $t(438) = -8.38$, $p < .001$.

Design Considerations

There are several important design considerations for this study. First, we chose to examine five separate but related outcome measures to assess early adolescent romantic relationships. Specifically, we assessed frequency of romantic experiences, history of any risky dating experience, history of any sexual experience, positive romantic relationship quality, and negative romantic relationship quality. In theory, we could have assessed only one of these outcome variables, as many previous studies have done when examining early romantic relationship involvement (e.g., Friedlander et al., 2007; Ivanova et al., 2012; Low & Shortt, 2017). However, we chose these five outcome measures because they provide a more comprehensive, multidimensional characterization of romantic relationships.

Second, we used a multi-method and multi-informant approach to assess age 12 psychopathology and functioning. This included the K-SADS (a parent- and youth- reported clinical interview), the Life Stress Interview (a parent- and youth- reported interview), and youth-report measures. While parent-report and youth-report measures are both subject to informant biases (Achenbach, McConaughy, & Howell, 1987), incorporating information from both parent and adolescent should serve to reduce informant biases.

Third, we used observational measures of positive and negative parenting. We chose to focus on parenting because early parental and family factors have been linked to later youth outcomes (Allen & Land, 1999; Collins & Sroufe, 1999; Collins et al., 2009; Steinberg, 2001). Whereas other studies have examined the effects of parenting in the preadolescent period on

outcomes in the early adolescent period (e.g., Ivanova et al., 2012), we chose to focus on early childhood parenting. Examining quality of the parent-child relationship during the preschool period allows us to assess the predictive validity of parenting from a younger age, which could provide a useful target for early intervention and prevention work. Finally, using an observational measure of parenting removes the potential confound of informant biases and eliminates shared method variance with the parent-reported outcome measures of child psychopathology. Observational approaches have significant benefit as compared to parent-report measures of parenting, as they allow researchers to examine processes as they unfold in real-time, and to define for themselves the presence or absence of behaviors (rather than being defined by the parent). In addition, parent-report measures are often more susceptible to parental biases or daily mood (for a review, see Aspland & Gardner, 2003). Importantly, studies that have examined whether subjects alter behavior as a consequence of being observed have revealed very small observer reactivity effects (for reviews, see Gardner, 2000; Harris & Lahey, 1982).

Fourth, we used an observational measure of early child temperament. Early child temperament is relatively stable from childhood into adulthood, and has been shown to predict later personality, psychiatric symptoms, and psychosocial functioning (Roberts & DelVecchio, 2000; Rothbart & Bates, 1998; Rothbart et al., 2000). We used an observational assessment of temperament to reduce informant bias; although parent report questionnaires are a simpler method of temperament assessment, they are subject to reporting biases. In addition, we used principal components analysis in order to reduce the number of temperament variables used in analyses, and thus derived five empirically-based dimensions of temperament.

Fifth, we decided to use two well-validated, youth-report measures of pubertal status (specifically, the Pubertal Development Scale and the Tanner Drawings) and averaged them.

These measures were significantly correlated at age 12 ($r = .60, p < .001$), suggesting that they are related but capture slightly different aspects of pubertal status. While some studies of 12-year-olds use maternal report of pubertal development (e.g., Ivanova et al., 2012), it is likely that by age 12, youth have developed a sense of privacy and independence from their parents. Thus, obtaining youth report may provide the most accurate picture of current pubertal status.

Sixth, we chose to control for age 3 child social competence in all longitudinal associations. This allowed us to assess *unique* effects of each predictor of interest, over and above early social competence. Given the consistent links between higher peer status and early romantic relationship involvement (Connolly et al., 1999; Connolly et al., 2000; Kuttler & La Greca, 2004), we wanted to ensure that longitudinal predictions between age three variables and age 12 outcomes were not better explained by early child social competence.

Data Analytic Plan

Aim 1: We examined concurrent bivariate associations and partial correlations (adjusting for current age and youth sex) between age 12 romantic relationship and peer outcomes (Romantic Experiences, Romantic Partner Closeness, Romantic Partner Discord, Any Sexual Experience, Any Risky Dating Experience, Friendship Competence) and age 12 current psychopathology (K-SADS symptoms of any depressive disorder, any anxiety disorder, any DBD, ADHD, youth-report CDI-2, youth-report SCARED, youth-report positive body image) and psychosocial functioning (Peer Stress, School Stress, Family Stress, youth CGAS scores) (Aim 1a).

Next, we conducted multiple linear regression analyses to examine whether youth sex (coded 1 = male and 0 = female) and/or pubertal status moderated the associations between the continuous romantic relationship variables (Romantic Experiences, Romantic Partner Discord,

Romantic Partner Closeness) and age 12 youth psychiatric symptoms and functioning (Aim 1b). Moderation analyses were not conducted for low frequency measures (i.e., Any Risky Dating or Any Sexual Experience). For each outcome, we examined the two-way interactions between youth sex and the age 12 romantic relationship variable and between youth pubertal status and the age 12 romantic relationship variable, and the three-way interaction between youth sex, pubertal status, and the age 12 romantic relationship variable. Thus, the IVs included the age 12 romantic relationship variable, pubertal status, youth sex, the youth sex X the age 12 romantic relationship variable interaction term, pubertal status X the age 12 romantic relationship variable interaction term, the pubertal status X youth sex interaction term, and the youth sex X pubertal status X age 12 romantic relationship variable interaction term; DVs included each of the continuous age 12 psychopathology and psychosocial functioning variables. If the three-way interaction term was not significant, we removed it from the model and the IVs included the age 12 romantic relationship variable, pubertal status, youth sex, the youth sex X the age 12 romantic relationship variable interaction term, and the pubertal status X the age 12 romantic relationship variable interaction term. All significant interactions were probed using simple slopes tests according to Aiken and West (1991)'s guidelines.

Aim 2: In models examining longitudinal associations, the age 3 predictor variables served as the IV in separate models. The independent variables included Positive and Negative parenting composites (Aim 2a) and temperament (Sociability/Assertiveness, Dysphoria, Fear, Exuberance, and Disinhibition) (Aim 2b) in separate models. Dependent variables included the age 12 romantic relationship and peer outcomes. Covariates in all analyses included current age (at age 12 assessment), youth sex, and age 3 child social competence. For models with a continuous dependent variable (DV), we used multiple linear regression analyses and for models

with a dichotomous DV, we used logistic regression analyses.

Lastly, all age 3 predictors were entered into multiple linear regressions to examine which predictors had unique effects (Aim 2c). Larger multivariate models were conducted with continuous outcome variables only and not conducted with low frequency dichotomous variables (i.e., Any Risky Dating or Any Sexual Experience). The independent variables included Positive and Negative parenting composites, the 5 temperament variables (Sociability/Assertiveness, Dysphoria, Fear, Exuberance, and Disinhibition), and covariates (current age at age 12 assessment, youth sex, and age 3 child social competence) in the same model. Tests of tolerance values to detect multicollinearity were conducted for the three multivariate models. Tolerance values for all variables in the multivariate models exceeded 0.59, indicating an acceptable degree of multicollinearity among the variables (Menard, 2002).

The Benjamini-Hochberg false discovery rate (FDR; Benjamini & Hochberg, 1995) correction for multiple comparisons was employed for each domain of analyses; we have noted which results survived FDR corrections at $p < .05$.

Chapter 3: Results

Characteristics of the Study Sample

Means and standard deviations of the study variables are reported in Table 1. On a scale from 4 to 16, where 4 indicates “never” engaging in romantic experiences and 16 indicates engaging in romantic experiences “many times,” the average was 6.50 ($SD = 2.71$) and the median was 6.00 ($range = 4 - 16$), suggesting that on average, youth endorsed engaging at least one romantic experience “a few times” or “many times,” or endorsed engaging in multiple romantic experiences “once or twice.” Of the 440 youth in the current sample, 114 (25.9%) youth were able to identify an “important romantic friend” and rated the level of romantic closeness ($M = 23.88$, $SD = 5.21$, $range = 6$ to 30) and discord ($M = 8.31$, $SD = 3.02$, $range = 6$ to 20.5) within that relationship; 15 (3.5%) had engaged in at least one sexual experience (defined as “more than kissing but not necessarily intercourse”) and 22 (5.1%) had engaged in at least one risky dating experience (including engaging in sexual relations with a romantic partner, engaging in sexual relations with someone who the adolescent was not currently in a romantic relationship with or didn’t know well, or having a one-time “hook up”). Characteristics of the longitudinal sub-sample ($n = 404$) are reported in Table 2.

Youth who identified a prior romantic friend ($n=114$) were compared to youth who did not identify a romantic friend on age 12 psychopathology and functioning variables and age 3 temperament and parenting variables. One significant difference emerged: youth with greater levels of KSADS DBD symptoms had greater likelihood of identifying a romantic friend at age 12 ($OR = 1.09$, 95% $CI = 1.02 - 1.17$, $p = .016$).

Bivariate Correlations between Age 12 Romantic and Peer Relationship Outcomes

Bivariate correlations between the age 12 romantic relationship outcomes are presented

in Table 3. Generally, correlations among the romantic relationship variables were small to medium; however, there were no significant associations observed between romantic partner discord and frequency of romantic experiences, any risky dating experience, or any sexual experience, and no significant associations between romantic partner closeness and any risky dating experience or any sexual experience. Friendship competence was negatively associated with romantic partner discord and positively associated with romantic partner closeness to a small extent, and was not significantly associated with frequency of romantic experiences, any risky dating experience, or any sexual experience.

Concurrent Bivariate Associations Between Age 12 Romantic and Peer Relationship Outcomes and Youth's Current Psychiatric Symptoms and Functioning

Concurrent bivariate associations between age 12 romantic and peer relationship outcomes and youth's current psychiatric symptoms and functioning are presented in Table 4. More frequent romantic experiences were significantly associated with greater youth-reported CDI symptoms and greater school and family stress. Greater romantic partner discord was significantly associated with greater youth-reported CDI depressive symptoms and family stress, and poorer youth-reported body image. Greater romantic partner closeness was significantly associated with positive youth-reported body image, and lower KSADS depressive symptoms, KSADS anxiety symptoms, and peer stress. Youth history of any risky dating experience was significantly associated with greater school and family stress. Youth history of any sexual experience was significantly associated with greater KSADS depressive symptoms and KSADS disruptive behavior disorder symptoms, and with poorer CGAS psychosocial functioning. Greater friendship competence was significantly associated with better CGAS psychosocial functioning, better youth-reported positive body image, and lower KSADS depressive

symptoms, KSADS anxiety symptoms, KSADS ADHD symptoms, KSADS DBD symptoms, youth-reported CDI depressive symptoms, youth-report SCARED anxiety symptoms, and lower peer, school, and family stress. As seen in Table 4, partial correlations controlling for youth sex and current age were similar.

The Benjamini-Hochberg FDR correction was implemented to determine which associations survived after correcting for multiple comparisons. As seen in Table 4, the associations between greater frequency of romantic experiences and greater youth-reported CDI symptoms, greater school stress, and greater family stress survived. The links between greater romantic partner closeness and lower KSADS depressive symptoms and lower peer stress survived. In addition, the associations between greater friendship competence and better CGAS psychosocial functioning, better youth-reported positive body image, and lower KSADS depressive symptoms, KSADS anxiety symptoms, KSADS ADHD symptoms, KSADS DBD symptoms, youth-reported CDI depressive symptoms, youth-report SCARED anxiety symptoms, and lower peer, school, and family stress survived.

Associations Between Age 12 Romantic Relationship Outcomes and Psychiatric Symptoms and Functioning: Moderation by Youth Sex and Puberty

We conducted multiple linear regression analyses to examine whether youth sex and/or pubertal status moderated the associations between the continuous romantic relationship variables (Romantic Experiences, Romantic Partner Discord, Romantic Partner Closeness) and age 12 youth psychiatric symptoms and functioning. Ten significant interactions emerged, which exceeds the number expected by chance. This included two significant three-way interactions (pubertal status X youth sex X romantic relationship variable), as well as six significant two-way interactions with youth sex as the moderator, and two significant two-way interactions with

pubertal status as the moderator. The Benjamini-Hochberg FDR correction was implemented to determine which interactions survived after correcting for multiple comparisons.

First, the three-way interaction between romantic experiences, puberty, and youth sex significantly predicted peer stress ($b = -.14$, $SE = .06$, $pr = -.11$, $p = .028$). Specifically, for males of higher pubertal status only, greater frequency of romantic experiences was associated with less peer stress ($b = -.18$, $SE = .05$, $pr = -.17$, $p = .001$). Second, the three-way interaction between romantic discord, puberty, and youth sex significantly predicted SCARED anxiety symptoms ($b = 7.49$, $SE = 2.85$, $pr = .25$, $p = .010$). Specifically, for males of higher pubertal status only, greater discord was associated with more anxiety symptoms ($b = 5.37$, $SE = 1.93$, $pr = .26$, $p = .006$). Neither of these interactions survived the Benjamini-Hochberg FDR correction for multiple comparisons.

Six two-way interactions with youth sex were significant. First, youth sex significantly moderated the association between frequency of age 12 romantic experiences and youth-report CDI depressive symptoms ($b = -1.52$, $SE = .57$, $pr = -.16$, $p = .008$). For females only, greater frequency of romantic experiences was significantly associated with greater CDI depressive symptoms ($b = 1.63$, $SE = .45$, $pr = .17$, $p < .001$), whereas for males, the link between frequency of romantic experiences and CDI depressive symptoms was not significant ($b = .11$, $SE = .35$, $pr = .02$, $p = .74$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Second, youth sex significantly moderated the association between frequency of age 12 romantic experiences and youth-reported positive body image ($b = 2.19$, $SE = .56$, $pr = .19$, $p < .001$). For females only, greater frequency of romantic experiences was significantly associated with poorer body image ($b = -1.40$, $SE = .45$, $pr = -.15$, $p = .002$). In contrast, for males, greater

frequency of romantic experiences was significantly associated with better body image ($b = .79$, $SE = .35$, $pr = .79$, $p = .024$). This interaction survived the Benjamini-Hochberg FDR correction for multiple comparisons.

Third, youth sex significantly moderated the association between romantic relationship discord and peer stress ($b = -.26$, $SE = .11$, $pr = -.22$, $p = .023$). For females only, greater discord was significantly associated with greater peer stress ($b = .23$, $SE = .09$, $pr = .24$, $p = .015$), whereas for males, the link between romantic relationship discord and peer stress was not significant ($b = -.02$, $SE = .06$, $pr = -.04$, $p = .678$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Fourth, youth sex significantly moderated the association between romantic relationship discord and family stress ($b = -.22$, $SE = .11$, $pr = -.20$, $p = .040$). For females only, greater relationship discord was significantly associated with greater family stress ($b = .25$, $SE = .09$, $pr = .27$, $p = .006$), whereas for males, the link between romantic relationship discord and family stress was not significant ($b = .030$, $SE = .06$, $pr = .05$, $p = .602$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Fifth, youth sex significantly moderated the association between romantic relationship closeness and school stress ($b = .25$, $SE = .11$, $pr = .21$, $p = .031$). For females only, lower relationship closeness was significantly associated with greater school stress ($b = -.21$, $SE = .09$, $pr = -.22$, $p = .023$), whereas for males, the link between romantic relationship closeness and school stress was not significant ($b = .05$, $SE = .07$, $pr = .06$, $p = .524$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Sixth, youth sex significantly moderated the association between romantic relationship closeness and family stress ($b = .22$, $SE = .10$, $pr = .21$, $p = .030$). For females only, lower

relationship closeness was marginally significantly associated with greater family stress ($b = -.15, SE = .08, pr = -.19, p = .057$), whereas for males, the link between romantic relationship closeness and family stress was not significant ($b = .07, SE = .06, pr = .11, p = .259$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Two two-way interactions with pubertal status were significant. First, pubertal status significantly moderated the association between romantic relationship discord and school stress ($b = -.16, SE = .07, pr = -.23, p = .018$). For youth of lower pubertal status, greater relationship discord was significantly associated with greater school stress ($b = .32, SE = .15, pr = .20, p = .036$), whereas for youth of higher pubertal status, the link between romantic relationship discord and school stress was not significant ($b = .01, SE = .09, pr = .01, p = .904$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Second, pubertal status also significantly moderated the association between romantic relationship closeness and family stress ($b = -.12, SE = .06, pr = -.20, p = .043$). For youth of higher pubertal status only, lower relationship closeness was significantly associated with greater family stress ($b = -.16, SE = .08, pr = -.19, p = .046$), whereas for youth of lower pubertal status, the link between romantic relationship closeness and family stress was not significant ($b = -.09, SE = .08, pr = -.11, p = .253$). This interaction did not survive the Benjamini-Hochberg FDR correction for multiple comparisons.

Early Childhood Predictors of Age 12 Peer and Romantic Relationship Outcomes

Results from the multiple linear regressions and logistic regressions examining early childhood predictors of age 12 peer and romantic relationship outcomes are presented in Table 5. Higher levels of sociability/assertiveness, exuberance, and positive parenting at age 3 significantly predicted higher levels of friendship competence at age 12. Higher levels of

negative parenting at age 3 significantly predicted poorer friendship competence at age 12. Higher levels of dysphoria at age 3 significantly predicted greater likelihood of any risky dating experience at age 12, and higher levels of noncompliance/disinhibition at age 3 significantly predicted lower levels of any risky dating experience at age 12. Higher levels of exuberance, noncompliance/disinhibition, and positive parenting at age 3 were significantly associated with lower likelihood of any sexual experience at age 12.

Lastly, we conducted multivariate linear regressions to test the unique effects of each age 3 predictor when all predictors were included in the same model. These larger multivariate models were conducted with the continuous outcome variables only to maintain sufficient power and reliable parameter estimation. Results revealed that greater levels of positive parenting at age 3 significantly predicted fewer romantic experiences at age 12 ($b = -.39$, $SE = .19$, $pr = -.11$, $p = .043$). Since this effect was not significant in the separate model examining only early positive parenting (and covariates) as the predictor variable, we explored a potential suppression effect (Thompson & Levine, 1997). We found that the significant effect of positive parenting on romantic experiences only emerged when negative parenting was also included in the model, whereas it was not significant when negative parenting was excluded from the model ($b = .20$, $SE = .16$, $p = .218$). As positive and negative parenting are moderately correlated ($r = -.59$), the full multivariate model revealed the significant effect of positive parenting over and above its shared variance with negative parenting and the other predictor variables.

The Benjamini-Hochberg FDR correction was implemented to determine which associations survived after correcting for multiple comparisons. One significant result survived: higher levels of positive parenting at age 3 significantly predicted lower likelihood of any sexual experience at age 12.

Chapter 4: Discussion

Overview

The current study sought to examine how romantic relationships and friendship competence at age 12 are concurrently associated with psychopathology and psychosocial functioning. This study also explored whether child sex and pubertal status moderate the associations between romantic relationship dimensions and age 12 outcomes. Furthermore, we examined how early childhood factors (age 3 child temperament and parenting) predict age 12 involvement in romantic relationships and friendship competence. Consistent with prior research (e.g., Davila et al., 2009, 2004, 2016; Joyner & Udry, 2000, Zimmer-Gembeck et al., 2001), we found that more frequent romantic experiences at age 12 are associated with increased psychosocial distress and poorer functioning. However, of note, youth with higher quality romantic relationships evidenced lower levels of psychiatric symptoms and better psychosocial functioning than their peers. Our findings revealed that the associations between early adolescent romantic relationships and adjustment are complex and vary by child sex and pubertal status. Further, we found that dimensions of early childhood temperament and parenting differentially predicted dimensions of early adolescent romantic relationships and friendship competence, over and above social functioning at age 3. Taken together, our findings contribute to a relatively small body of literature on dimensions of preteen romantic relationships by providing normative data about dating at this age, and are among the first data to examine early childhood predictors of age 12 romantic relationship outcomes.

Associations Between Age 12 Romantic Relationship Involvement and Psychiatric Symptoms and Functioning

Consistent with research demonstrating associations between early adolescent dating and

increased psychopathology (e.g., Davila et al., 2009, 2004; Joyner & Udry, 2000), we observed that preteen involvement in romantic relationships was generally associated with more psychological symptoms and poorer functioning. Specifically, more frequent romantic experiences at age 12 were associated with greater CDI depressive symptoms and greater school and family stress, all of which survived the correction for multiple comparisons. We also found that history of any risky dating experience was associated with greater school and family stress; history of any sexual experience was associated with greater KSADS depressive and disruptive behavior disorder symptoms and poorer CGAS psychosocial functioning; greater romantic partner discord was associated with greater CDI depressive symptoms, poorer body image, and greater family stress, although these findings did not survive the correction for multiple comparisons. Taken together, our findings expand upon previous work demonstrating that early dating is linked to poorer psychosocial functioning (e.g., Friedlander et al., 2007) and that increased psychosocial distress across early adolescence is linked to overinvolvement in dating at age 16 (e.g., Zimmer-Gembeck, 2001). Of note, although our bivariate correlation between romantic activities and psychosocial functioning were generally small to medium (r 's ranged from .10 to .32), they are generally consistent with other studies examining associations between early adolescent (ages 10 to 13) psychosocial functioning and dating behaviors (e.g., r 's ranging from .18 to .30; Compian et al., 2004; Zimmer-Gembeck, 2001) and with studies reporting bivariate correlations between psychopathology and romantic involvement in older adolescents ages 13 to 18 (e.g., r 's ranging from .18 to .39; Davila et al. 2009, 2004, Vujeva & Furman, 2011). At any age, romantic relationships can engender complex and intense emotions (Larson, Clore, & Wood, 1999), spanning hopefulness and hopelessness, elation and disappointment, validation and rejection. Given the emotional immaturity and often tenuous sense of identity and

self-esteem during the preteen years, 12-year-olds may be especially challenged by the highs and lows involved in the formation, maintenance, and dissolution of romantic attachments. In effect, early adolescents may not yet have the coping mechanisms to weather the complications of romantic involvement.

Interestingly, if preteen romantic relationships are relatively positive and stable, then they may confer benefits to the youth involved: we found that greater romantic partner closeness was associated with lower levels of peer stress and lower levels of depressive symptoms, and these results survived the correction for multiple comparisons. We also found that greater romantic closeness was associated with better body image and lower levels of anxiety symptoms, although these associations did not survive the correction for multiple comparisons. Overall, romantic relationships may provide intimacy, affection, and support (e.g., Collins et al., 2009), and research with older adolescents reveal that high schoolers' romantic relationships are associated with positive feelings of self-worth, confidence, and social competence (Connolly & Konarski, 1994; Zimmer-Gembeck et al., 2001, 2004). Our findings extend this by suggesting that even in early adolescence, a *high quality* romantic relationship is associated with better adjustment.

We also found that greater friendship competence was significantly associated with lower romantic discord and higher romantic closeness, in addition to better psychosocial functioning, better body image, lower KSADS and CDI depressive symptoms, KSADS and SCARED anxious symptoms, lower KSADS ADHD symptoms and DBD symptoms, and lower peer, school, and family stress. All of these findings survived the correction for multiple comparisons. Consistent with our results, previous research has revealed that during the early adolescent years, friendship provides a source of intimacy and trust (for a review, see Rubin, Bukowski, Parker, & Bowker, 2008), and higher friendship quality in preadolescents is linked to better psychosocial

functioning (e.g., Rubin et al., 2004). Taken together, our findings suggest that for early adolescents, having a positive peer relationship is linked to well-being, whether it is a romantic relationship or a friendship. This has important clinical implications, as it suggests that early adolescent involvement in a romantic relationship is not necessarily detrimental; rather, if that relationship is high in supportive characteristics then it can serve as a protective factor.

Associations Between Age 12 Romantic Relationship Outcomes and Psychiatric Symptoms and Functioning: Moderation by Youth Sex and Puberty

We found that the associations between early adolescent romantic relationship involvement and psychosocial adjustment are complex and vary by youth sex and pubertal status. One interaction survived the correction for multiple comparisons: Specifically, for females only, greater frequency of romantic experiences was linked to a significantly poorer body image, while males with a greater frequency of romantic experiences had a significantly better body image. This sex difference is consistent with research in older youth demonstrating that older adolescent and college-age females have lower body image following their first sexual experience, while the opposite effect has been observed for males (Valle, Røysamb, Sundby, & Klepp, 2009; Vasilenko, Ram, & Lefkowitz, 2011). Moreover, it may be that for males only, romantic involvement increases confidence which protects against symptomatology. A majority of studies of early adolescent romantic relationships have included only girls in their sample, and thus it is important that our study enables an examination of sex differences. Further research with samples including both male and female early adolescents is required to elucidate the mechanisms underlying this sex difference.

Although the remainder of our moderation analyses did not survive the correction for multiple comparisons, they provide important preliminary information about the role that youth

sex and pubertal status play in the links between age 12 romantic involvement and concurrent psychosocial functioning, and future replication is necessary. First, three-way interactions revealed that for males of higher pubertal status only, greater frequency of romantic experiences was associated with reduced peer stress, while greater romantic partner discord was associated with increased SCARED anxiety symptoms. This finding can be considered within an emerging body of literature examining how romantic activities fit into the larger early adolescent peer context (e.g., Connolly et al., 2000, 2004). It is possible that romantic interactions provide males with greater intimacy and support than friend interactions, thus reducing their overall peer stress. On the other hand, males of higher pubertal status who experienced higher levels of conflict with their romantic partner had elevated levels of anxiety. While longitudinal research is required to elucidate the nature of these associations, our results suggest that early maturing adolescent males may be particularly susceptible to the impact of early dating relationships, for better or for worse.

Further, for girls only, greater involvement in romantic experiences was linked to worse outcomes, and poorer quality romantic relationships were linked to poorer functioning across peer, family, and school domains. Specifically, for females only, greater CDI depressive symptoms and greater romantic relationship discord were associated with greater peer stress and family stress, and lower romantic relationship closeness was significantly associated with greater school stress and marginally associated with greater family stress. These findings are consistent with a growing body of work demonstrating that the association between greater involvement in adolescent romantic experiences and increased psychopathology, particularly depression, may be most salient for females regardless of pubertal status (e.g., Compian et al. 2004, Davila et al., 2004, 2008, 2009, 2016; Joyner & Udry 2000; Starr et al., 2012). Females are more prone to

rumination about relationships and may be more inclined to base self-esteem on relationship validation (Davila, 2008); therefore, the ups and downs of relationship involvement may hit girls harder. Indeed, in early adolescence (i.e., between the ages of 11 and 13 years), sex differences in depressive symptoms begin to emerge such that adolescent females have as much as double the rates of depression compared to males by the end of adolescence (Davila, 2008; Ge, Conger, & Elder, 2001; Nolen-Hoeksema & Girgus, 1994). Our study adds to this prior work by suggesting that the previously observed susceptibility for females to the deleterious impact of romantic experiences may emerge as early as age 12, and may be observed across multiple dimensions of early romantic involvement.

We found that for youth of lower pubertal status only, greater relationship discord was linked to greater school stress, and for youth of higher pubertal status only, lower relationship closeness was linked to greater family stress. Although this finding did not survive the correction for multiple testing, it is consistent with an “off-time” hypothesis, such that both early- and late-maturing adolescents are at increased risk for negative outcomes (Conley & Rudolph, 2009; Weichold, Silbereisen, & Schmitt-Rodermund, 2003). Previous research has revealed that early physical maturation is linked to negative outcomes, particularly for females, including depression, substance use, disordered eating, body dissatisfaction, and academic difficulties (e.g., Graber et al, 1997; Graber, Seeley, Brooks-Gunn, & Lewinsohn, 2004; Mendle, Turkheimer, & Emery, 2007; Stattin & Magnusson, 1990; Stice, Presnell, & Bearman, 2001; Udry, 1979). Research also suggests that later timing of puberty, and particularly *perceived* late timing of puberty (Michael & Eccles, 2003), also confers risk for negative psychosocial outcomes, particularly for males (Conley & Rudolph, 2009). We did not find evidence for sex differences for these associations in our sample, but it is possible that in a larger sample we would see

evidence for early physical maturation being a greater risk factor for females, and later physical maturation being a greater risk factor for males. Of note, our study captures pubertal variation within a relatively narrow age range (i.e., primarily age 12), and it is possible that we would observe significant sex differences in a sample with a wider age range (e.g., ages 10 to 14). Moreover, replication and additional research is needed to better understand the differential risk imposed by earlier versus later maturation in early adolescence.

Early Childhood Predictors of Age 12 Peer and Romantic Relationship Outcomes

Our results demonstrate that early temperament and parenting, when examined in separate models, significantly predicted age 12 peer and romantic relationship outcomes with a complex pattern of associations. One longitudinal association survived the correction for multiple comparisons: Higher levels of positive parenting at age 3 significantly predicted lower likelihood of any sexual experience by age 12. This is consistent with previous research demonstrating that parent-adolescent quality of relationship and parental involvement in adolescence are associated with reduced likelihood of early sexual experience (Ikramullah, Manlove, Cui, & Moore, 2009) and pregnancy risk (for a review, see Miller, Benson, & Galbraith, 2001). Our finding importantly extends this work by demonstrating that positive parenting behaviors with children as early as age three may protect against early adolescent sexual involvement at age 12. Again, it will be important for future research to explore potential moderators and mediators of this association, including quality of current (age 12) parenting, which will inform parenting components of educational prevention and intervention programs.

Although the remainder of our longitudinal findings did not survive the correction for multiple comparisons, we believe they warrant important consideration for future research and replication. We found that higher levels of sociability/assertiveness, exuberance, and positive

parenting at age 3 significantly predicted higher levels of friendship competence at age 12 over and above social competence at age 3, while higher levels of negative parenting at age 3 significantly predicted poorer friendship competence at age 12 over and above social competence at age 3. These findings are consistent with previous work demonstrating that children with temperaments higher in sociability have better relationships with peers and are more popular (e.g., Sanson et al., 2004; Skarpness & Carson, 1986; Stocker & Dunn, 1990), and that early negative parenting behaviors are linked to less social competence across childhood, while early positive parenting behaviors predict better social competence (e.g., Ladd & Pettit, 2002; Rubin et al., 2008; Rubin, Burgess, & Hastings, 2002; Rubin, Cheah, & Fox, 2001; Schwartz, Dodge, Pettit, & Bates, 2000). Our study extends this work by capturing specific dimensions of peer relationships at age 12 that are highly relevant to romantic relationships (i.e., relationship confidence, knowledge of relationship warning signs, and consideration of relationship decisions) over a nine-year longitudinal follow-up period. Further longitudinal research is required to determine whether early childhood temperament and parenting continue to predict friendship competence, and also predict romantic relationship competence, in later teen years. It is possible that preschool-age children with lower levels of sociability, lower levels of exuberance, or who experience poorer early parenting would benefit from early identification and social skills training to promote optimal peer relationship functioning in early adolescence.

Further, we found that higher levels of dysphoria at age 3 significantly predicted greater likelihood of any risky dating experience at age 12. This can be considered within the context of previous research which has demonstrated that among early adolescent girls (aged 13), greater depressive symptoms predicted greater romantic involvement and sexual activities one year later (Davila et al., 2009). Our findings extend this work to early childhood, suggesting that a

dysphoric temperament as early as age 3 may be a marker for early adolescent romantic and sexual involvement. While our research cannot elucidate the underlying explanation for this connection, we postulate that perhaps dysphoric youth seek out these riskier romantic and sexual experiences in an effort to find support or self-regulate.

We found that higher levels of noncompliance/disinhibition at age 3 significantly predicted lower levels of any risky dating experience and any sexual experience at age 12. Although this was contrary to our prediction, this is somewhat consistent with previous findings demonstrating children higher in disinhibition may have delayed involvement in romantic activities. For example, Zimmer-Gembeck and colleagues (2004) found that children higher in impulsivity at 30 months formed their first romantic relationships at a later age (reported retrospectively at age 19). In another study, Newman et al. (1997) revealed that children high in uncontrollability at age 3 (impulsive, overactive, emotionally labile) had lower relationship intimacy at age 21, suggesting that children who are highly impulsive struggle to initiate and maintain dating relationships. Thus, it may be that more disinhibited youth are involved in delinquent behaviors unrelated to dating and romance. In addition, we found a link between higher levels of exuberance at age 3 and lower likelihood of any sexual experience at age 12. Given that preschool-age exuberance has been linked to greater social competence across early childhood (Degnan et al., 2011), it is possible that these youth experience less peer pressure, which reduces likelihood of early sexual behavior (e.g., Crockett, Raffaelli, & Shen, 2006). However, early exuberance has also been linked to increased externalizing behavior, surgency, and lower effortful control across early childhood (Degnan et al., 2011; Morales, Pérez-Edgar, & Buss, 2016; Putnam & Stifter, 2005), suggesting that youth higher in exuberance may also be involved in problematic behaviors unrelated to dating. Further work is required to explore the

nature of risk for these youth, and to identify potential mediators and moderators in the association between early noncompliant/disinhibited and exuberant temperament types and early adolescent outcomes.

Finally, when multivariate regressions including all age 3 temperament and parenting predictors and covariates were conducted, only one significant predictor emerged. Specifically, greater levels of positive parenting at age 3 significantly predicted fewer romantic experiences (e.g., going on a date, flirting, romantic attraction, or kissing) at age 12. This finding aligns with and builds upon a recent study demonstrating that youth with more secure mother-child attachment at age 10 were less likely to be involved in a romantic relationship at age 12 (Kochendorfer & Kerns, 2017) and supports the theory that a high quality parent-child relationship may serve as a buffer against the potential development of negative outcomes associated with early romantic involvement. Taken together, our findings constitute an important first step to examining direct links between early parenting and temperament and early adolescent romantic relationship functioning, and a critical next step will include replicating these findings and identifying pathways, mediators, and moderators in childhood and early adolescence which help elucidate the mechanisms underlying these effects.

Strengths and Limitations

The present study had several strengths. First, we assessed age 12 romantic relationships using a comprehensive approach to capture different dimensions of relationship experience and functioning, all within the same study (i.e., frequency of romantic experiences, any risky romantic or sexual experience, quality of relationship, and concurrent psychosocial outcomes). Much of the prior research has focused on the presence/absence of a romantic relationship at this age.

Second, our sample includes both boys and girls which enabled us to examine sex differences in these associations; much of the prior literature examining early adolescent romantic relationships focuses on girls only. In addition, we examined pubertal differences in these associations, enabling us to explore novel three-way interactions between romantic experiences, child sex, pubertal status, and psychosocial outcomes.

Third, our study is among the first to utilize a prospective, longitudinal design to examine early childhood predictors of age 12 romantic relationship outcomes. Previous work has focused on associations between adolescent parenting and early adolescent romantic relationship involvement (e.g., Ivanova et al., 2012) or have focused on late adolescence as the outcome period of interest (e.g., Collins & van Dulmen, 2006).

Fourth, we utilized a multi-method and multi-informant approach to assess age 12 psychopathology and functioning. This included the K-SADS (a parent- and youth- reported clinical interview), the Life Stress Interview (a parent- and youth- reported interview), and youth-report measures. While parent-report and youth-report measures are both subject to informant biases (Achenbach et al., 1987), incorporating information from both parent and adolescent serves to reduce informant biases.

Fifth, we used observational measures of positive and negative parenting and of early child temperament. Observational approaches have significant benefit as compared to parent-report measures of parenting, as they allow researchers to examine processes as they unfold in real-time, and to define for themselves the presence or absence of behaviors (rather than being defined by the parent) (Aspland & Gardner, 2003). In addition, parent-report measures are often more susceptible to parental biases or daily mood (for a review, see Aspland & Gardner, 2003).

This study also had limitations. First, we had a small number of participants who had a history of any sexual or risky dating experience, which may have led to range restriction and affected the power to detect significant longitudinal effects. Second, only a portion of our sample identified a “special romantic friend” for whom they were able to report on quality of romantic relationship. Thus, our findings should be replicated in larger samples of early adolescents who identify prior romantic relationship experience.

Third, we examined a large number of associations. Although we employed the Benjamini-Hochberg FDR correction for multiple comparisons, we chose to report and interpret the significant results which did not survive the FDR correction. Given the paucity of research on age 12 romantic relationship functioning and early childhood predictors of early adolescent romantic relationships, we believe this more liberal approach is important for hypothesis testing in future studies. We used multiple outcome measures of romantic relationships, which allowed for a more comprehensive, multidimensional characterization of romantic relationships. We believe that our findings provide valuable preliminary data and inform hypotheses to be replicated in larger studies, and perhaps in samples over-selecting early adolescents with experience with romantic and/or sexual relationships. Future work should also examine latent constructs of romantic relationship functioning or use analytic methods to reduce the number of variables and tests.

Fourth, our study asked only about whether the adolescents had a “special romantic friend,” and did not ask about the sex of that friend. Thus, we are unable to examine possible differences in patterns for sexual minority youth as compared to their heterosexual peers. It will be important for future research to explore how the associations between early romantic experiences and psychosocial outcomes may differ across these groups.

Fifth, we relied on early adolescent reports of romantic relationship involvement, which may be subject to informant biases. Given that youth have increased privacy from their parents at this age, adolescent reports on frequency of romantic experiences offer the best information as compared to parent reports. However, future research should also incorporate reports from adolescents' romantic friend, as this will better capture the quality and nature of the relationship. In addition, future studies should examine how factors such as age of partner and length of the relationship impact psychosocial outcomes and which early childhood variables predict these characteristics of involvement.

Sixth, we assessed romantic relationship variables and psychosocial adjustment at the same time point (age 12). Future research is needed to determine the directionality and causality of these associations through longitudinal designs. It is likely that these processes are bidirectional and transactional, such that psychiatric distress both contributes to and results from problematic relationship involvement. Additional research is needed to further examine these associations and to longitudinally follow youth across adolescence and into adulthood to see how these associations may demonstrate continuity and/or change.

Seventh, we did not examine current (age 12) parenting or temperament as we did not have comparable observational measures at age 12. Early temperament and parenting remain moderately stable across development (e.g., Holden & Miller, 1999; Pedlow, Sanson, Prior, & Oberklaid, 1993; Sanson et al., 2004), although both of these constructs may change for some adolescents and parent-child dyads. Thus, future research should explore whether changes in parenting and temperament moderate associations between age 3 factors and age 12 romantic involvement.

Lastly, our sample was largely white and middle class. Future research should extend this research and replicate our findings in more diverse samples.

Conclusions

The extant literature has demonstrated that early adolescent romantic involvement may increase risk for negative outcomes (Furman et al., 2007; Zimmer-Gembeck et al., 2004), although a paucity of prior research has focused on the phenomenology and predictors of romantic experiences at the outset of adolescence at age 12. Overall, consistent with and building upon previous research (e.g., Friedlander et al., 2007; Zimmer-Gembeck, 2001), we found that greater early adolescent romantic involvement is associated with greater psychiatric symptomatology and poorer functioning. However, youth with higher quality romantic relationships had lower symptomatology and better functioning as compared to their peers, which is consistent with research in older adolescents (e.g., Connolly & Konarski, 1994; Zimmer-Gembeck et al., 2001, 2004). Further, these associations are complex and vary by child sex and pubertal status. As youth begin to initiate romantic relationships, we must consider both of these factors in understanding the impact of romantic dating on adjustment. Importantly, the links between dating and adjustment are likely bidirectional, and future research is needed to illuminate directionality and causality in order to better understand how to inform prevention and intervention programs. In addition, we found that early childhood temperament and parenting significantly predicted dimensions of early adolescent peer and romantic relationships. For example, our findings suggest that higher levels of positive parenting observed in preschool may decrease risk for early dating and sexual experiences. However, the processes involved are likely complex and incorporating additional variables will be important to further understand the mechanisms through which early childhood temperament and parenting are related to early

adolescent outcomes. Moreover, future research replicating these findings and investigating mediators and moderators of these associations will be critical to better understanding who is at increased risk for negative outcomes.

It is important to note that the effect sizes in the current study were small to medium, and many of the results did not survive the FDR correction for multiple comparisons. Romantic involvement is just one contributor to early adolescent psychological outcomes, and additional dimensions such as peer relationships, family factors, academic functioning, and personality all play a role in youth functioning. Further, early childhood temperament and early parenting style are just two variables which may impact early adolescent romantic functioning, and further research is required to illuminate other early childhood contributors.

Nevertheless, the current study holds important clinical implications for future prevention and intervention with early adolescents. Encouragingly, we found that positive quality of early adolescent romantic relationship was associated with better outcomes, suggesting that improving romantic competence in early adolescents could offset the potential toll of early romantic involvement on psychological health and psychosocial functioning. Several youth relationship education programs have been developed to educate high schoolers about dating and romantic relationships (Karney, Beckett, Collins, & Shaw, 2007). For example, the “Love U2: Increasing Your Relationship Smarts” curriculum teaches high school-aged youth about maturity and values, dating strategies, identification of healthy and unhealthy relationships, and discussion of skills essential to healthy marriages (e.g., Adler-Baeder, Kerpelman, Schramm, Higginbotham, & Paulk, 2007; Chan, Adler-Baeder, Duke, Ketring, & Smith, 2016; Futris, Sutton, & Duncan, 2017). A recent meta-analysis found that these youth relationship education programs yield significant improvements in conflict management skills and faulty relationship beliefs

(McElwain, McGill, & Savasuk-Luxton, 2017). However, these programs target older teens (mean age 15 to 16 years); our study highlights that it is imperative for these programs to occur during the preteen years, as romantic involvement at age 12 is already impacting youth functioning. Thus, these programs could be adapted for preteen youth, and our study suggests they should focus on providing psychoeducation about potential negative correlates of early dating, but also equip youth with skills to effectively manage the complexities and challenges of early romantic experiences should they decide to get involved (possible skills include coping strategies, effective communication, conflict management, identification of healthy and unhealthy relationship traits). Future longitudinal research should continue to seek to identify factors contributing to maladaptive romantic experiences, and to explore early adolescent intervention efforts which impart interpersonal and emotion regulation skills to improve functioning for youth.

Tables

Table 1.

Characteristics of the Study Sample at Age 12 (N = 440)

Youth mean age: years (SD); range	12.67 (.45)	11.5 – 14
Youth sex: female <i>n</i> (%)	208 (47.3)	
Youth race: <i>n</i> (%)		
White	395 (89.8)	
Black/African-American	31 (7.0)	
Asian	12 (2.7)	
Other	2 (0.4)	
Youth Hispanic ethnicity: <i>n</i> (%)	54 (12.3)	
<i>Age 12 Romantic Relationship Outcomes, M (SD); range</i>		
Romantic Experiences Scale (<i>n</i> =429)	6.50 (2.71)	4 – 16
Romantic Partner Closeness (<i>n</i> =114)	23.88 (5.21)	6 – 30
Romantic Partner Discord (<i>n</i> =114)	8.31 (3.02)	6 – 20.5
Any Risky Dating Experiences, <i>n</i> (%) (<i>n</i> =431)	22 (5.1)	
Any Sexual Experience, <i>n</i> (%) (<i>n</i> =431)	15 (3.5)	
<i>Age 12 Peer Outcomes, M (SD); range</i>		
Friendship Competence	48.90 (7.21)	12 – 60
<i>Age 12 Psychiatric Symptoms and Functioning, M (SD); range</i>		
KSADS Depression	.45 (1.72)	0 – 18
KSADS Anxiety	3.49 (5.43)	0 – 35
KSADS ADHD	3.14 (6.86)	0 – 33
KSADS DBD	.91 (2.67)	0 – 18
Youth-report CDI Depression	5.16 (5.55)	0 – 31.11
Youth report SCARED Anxiety	16.77 (10.56)	0 – 60
Youth report Positive Body Image	24.71 (5.44)	5 – 30
Peer Stress	2.15 (.50)	1 – 4.50
School Stress	1.54 (.56)	1 – 4.25
Family Stress	2.23 (.50)	1 – 4
Children's Global Assessment Scale	80.75 (11.00)	45 – 100

Age 12 Pubertal Status

Tanner Drawings	6.32 (1.80)	2 – 10
Pubertal Development Scale	12.10 (3.31)	5 – 23

Note. Any Risky Dating Experience and Any Sexual Experience coded 0=absent, 1=present. KSADS=Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version. ADHD=Attention Deficit Hyperactivity Disorder. DBD=Disruptive Behavior Disorder. CDI=Children’s Depression Inventory. SCARED=Screen for Child Anxiety Related Disorders.

Table 2.

Characteristics of Longitudinal Sub-sample (N = 404)

	Age 3 Assessment		Age 12 Assessment	
Youth mean age: years (SD); range	3.56 (.26)	2.93 – 4.18	12.67 (.44)	11.83 – 14
Youth sex: female <i>n</i> (%)	190 (47.0)			
Youth race: <i>n</i> (%)				
White	380 (94.1)			
Black/African-American	11 (2.7)			
Asian	11 (2.7)			
Other	2 (0.4)			
Youth Hispanic ethnicity: <i>n</i> (%)	36 (8.9)			
Biological parents' marital status: <i>n</i> (%)				
Married	378 (93.8)		346 (78.6)	
Divorced or separated ^a	11 (2.7)		65 (16.1)	
Never married	14 (3.5)		18 (4.1)	
Parents' education: graduated college: <i>n</i> (%)				
Mother	236 (58.42)		246 (60.89)	
Father	185 (45.8)		188 (46.53)	
<i>Age 12 Romantic Relationship Outcomes, M (SD); range</i>				

Romantic Experiences Scale (<i>n</i> = 394)	6.48 (2.66)	4 – 16
Romantic Partner Closeness (<i>n</i> = 105)	23.96 (5.17)	6 – 30
Romantic Partner Discord (<i>n</i> = 105)	8.21 (2.79)	6 – 18
Any Risky Dating Experiences, <i>n</i> (%) (<i>n</i> = 396)	20 (5.0)	
Any Sexual Experience, <i>n</i> (%) (<i>n</i> = 392)	14 (3.6)	

Note. **p*<.05; ***p*<.01; ****p*<.001. Covariates in all analyses include current age (age 12 assessment), youth sex, and age 3 child social competence. Any Risky Dating Experience and Any Sexual Experience coded 0=absent, 1=present. ^aFive “primary caregiver” designations changed from age 3 to age 12 due to separation or divorce.

Table 3.

Bivariate Correlations between Age 12 Romantic and Peer Relationship Outcomes

	1	2	3	4	5	6
1. Romantic Experiences	--					
2. Partner Discord	.13	--				
3. Partner Closeness	.31**	-.26**	--			
4. Any Risky Dating Experience	.31***	.11	-.04	--		
5. Any Sexual Experience	.26***	.002	.06	.33***	--	
6. Friendship Competence	.033	-.22*	.28**	-.02	-.06	--
Mean	48.89	8.31	23.88	--	--	48.90
SD	7.22	3.02	5.21	--	--	7.21
N	428	114	114	430	424	426

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. Any Risky Dating Experience and Any Sexual Experience coded 0=absent,

1=present. Mean (SD) provided for continuous variables. 22/440 youth had a history of Any Risky Dating Experience

and 15/440 youth had a history of Any Sexual Experience.

Table 4.

Concurrent Bivariate Associations Between Age 12 Romantic and Peer Relationship Outcomes and Youth's Current Psychiatric Symptoms and Functioning (Partial Correlation Adjusting for Youth Sex and Current Age)

	Peer Outcome	Romantic Relationship Outcomes				
	Friendship Competence	Romantic Experiences	Partner Discord	Partner Closeness	Any Risky Dating Experience	Any Sexual Experience
KSADS Depression	-.19*** (-.20***) ^a	-.04 (-.03)	.05 (.06)	-.27** (-.27**) ^a	-.01 (-.01)	.11* (.11*)
KSADS Anxiety	-.18*** (-.20***) ^a	-.04 (-.05)	.08 (.09)	-.21* (-.20*)	-.08 (-.07)	.001 (.002)
KSADS ADHD	-.16** (-.14**) ^a	.04 (.03)	.05 (.05)	.06 (.07)	.03 (.01)	.03 (.03)
KSADS DBD	-.17** (-.15**) ^a	.06 (.05)	.06 (.06)	-.15 (-.14)	.08 (.07)	.13** (.13**)
Youth-report CDI Depression	-.30*** (-.32***) ^a	.13** (.13**) ^a	.24* (.24*)	-.18 (-.18)	.02 (.02)	.04 (.04)
Youth report SCARED Anxiety	-.17*** (-.21***) ^a	.001 (.03)	.18 (.19)	-.13 (-.13)	.05 (.07)	.03 (.03)
Youth report Positive Body Image	.22*** (.23***) ^a	-.03 (-.03)	-.21* (-.22*)	.21* (.21*)	.08 (.07)	.01 (.01)
Peer Stress	-.25*** (-.25***) ^a	-.08 (-.08)	.10 (.10)	-.25** (-.24*) ^a	.02 (.02)	.02 (.02)
School Stress	-.22*** (-.20***) ^a	.16** (.14**) ^a	.11 (.11)	-.10 (-.10)	.12* (.11*)	.07 (.07)
Family Stress	-.13** (-.13**) ^a	.10* (.10) ^a	.22* (.23*)	-.05 (-.02)	.10* (.10*)	.08 (.08)
Children's Global Assessment Scale	.26*** (.25***) ^a	-.01 (-.002)	-.15 (-.15)	.14 (.15)	-.02 (-.01)	-.11* (-.11*)

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. ^aResult survived Benjamini-Hochberg FDR corrections at $p < .05$. Any Risky Dating Experience and Any Sexual Experience coded 0=absent, 1=present. KSADS=Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version. ADHD=Attention Deficit Hyperactivity Disorder. DBD=Disruptive Behavior Disorder. CDI=Children's Depression Inventory. SCARED=Screen for Child Anxiety Related Disorders.

Table 5.

Early Childhood Predictors of Age 12 Peer and Romantic Relationship Outcomes

Age 3 Predictors	Peer Outcome (Age 12) Friendship Competence	Romantic Relationship Outcomes (Age 12)				
		Romantic Experiences	Partner Discord	Partner Closeness	Any Risky Dating Experience	Any Sexual Experience
<i>Child Temperament</i>	b (SE)	b (SE)	b (SE)	b (SE)	OR (95% CI)	OR (95% CI)
Sociability/Assertiveness	1.02 (.39)*	.26 (.14)	-.01 (.02)	.40 (.68)	.94 (.58 – 1.52)	.78 (.46 – 1.31)
Dysphoria	.25 (.42)	.25 (.15)	-.02 (.02)	-.25 (.64)	1.59 (1.06 – 2.39)*	1.24 (.74 – 2.09)
Fear/Inhibition	-.04 (.38)	-.22 (.14)	-.01 (.02)	-.42 (.62)	1.03 (.64 – 1.64)	1.20 (.72 – 1.98)
Exuberance	.80 (.39)*	-.13 (.14)	.01 (.02)	-.29 (.62)	.65 (.39 – 1.08)	.48 (.27 - .86)*
Noncompliance/Disinhibition	-.01 (.43)	-.25 (.15)	.000 (.02)	.48 (.64)	.56 (.36-.87)*	.54 (.33 -.90)*
<i>Observed Early Parenting</i>						
Positive Parenting	.89 (.43)*	-.28 (.16)	-.01 (.02)	.52 (.61)	.76 (.48 – 1.21)	.54 (.35 - .83)** ^a
Negative Parenting	-.98 (.43)*	-.06 (.16)	.002 (.02)	-.82 (.63)	.53 (.21 – 1.33)	1.27 (.84-1.92)

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. Separate models run for each age 3 predictor. Covariates in all analyses include current age (age 12 assessment), youth sex, and age 3 child social competence. ^aResult survived Benjamini-Hochberg FDR corrections at $p < .05$. Any Risky Dating Experience coded 0=absent, 1=present. Any Sexual Experience coded 0=absent, 1=present. Linear regressions with continuous dependent variables report B (SE), and logistic regressions with dichotomous dependent variables report Odds Ratios (OR) and 95% Confidence Intervals (CI).

Appendices

Appendix A.

Frequencies of Current and Lifetime Psychiatric Diagnoses

	<i>n</i> (%)
KSADS Current Any Depressive Disorder	8 (1.8)
KSADS Current Any Anxiety Disorder	74 (16.9)
KSADS Current ADHD Diagnosis	50 (11.4)
KSADS Current Any DBD Diagnosis	17 (3.9)
KSADS Lifetime Any Depressive Disorder	31 (7.4)
KSADS Lifetime Any Anxiety Disorder	149 (35.3)
KSADS Lifetime ADHD Diagnosis	74 (16.8)
KSADS Lifetime Any DBD Diagnosis	31 (7.4)

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. Any Risky Dating Experience and Any Sexual Experience coded 0=absent, 1=present. KSADS=Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version. ADHD=Attention Deficit Hyperactivity Disorder. DBD=Disruptive Behavior Disorder.

Appendix B.

Concurrent Associations Between Age 12 Romantic and Peer Relationship Functioning and Youth's Current and Lifetime Psychiatric Diagnoses; Odds Ratios (95% Confidence Interval)

	Peer Outcome	Romantic Relationship Outcomes				
	Friendship Competence	Romantic Experiences	Partner Discord ^a	Partner Closeness	Any Risky Dating Experience	Any Sexual Experience ^a
KSADS Current Any Depressive Disorder	.96 (.88 – 1.03)	.95 (.72 – 1.26)	.01 (.00 -3322.79)	.90 (.75 – 1.08)	.00 (.00 – .00)	10.31 (1.90 – 56.03)**
KSADS Current Any Anxiety Disorder	.96 (.93 – 1.00)*	.92 (.83 – 1.02)	.14 (.001 – 15.03)	.91 (.82 – 1.00)*	.22 (.03 – 1.68)	1.28 (.35 – 4.65)
KSADS Current ADHD Diagnosis	.95 (.91 - .98)**	1.00 (.89 – 1.12)	4.25 (.08 – 225.55)	1.05 (.93 – 1.18)	1.31 (.37 – 4.59)	1.31 (.29 – 6.00)
KSADS Current Any DBD Diagnosis	.92 (.87 - .97)**	1.11 (.94 – 1.31)	2.64 (.03 – 283.55)	.92 (.82 – 1.02)	2.81 (.60 – 13.24)	4.34 (.89 – 21.10)
KSADS Lifetime Any Depressive Disorder	.99 (.94 – 1.04)	.99 (.87 – 1.14)	2.71 (.01 – 903.59)	.97 (.84 – 1.12)	.60 (.08 – 4.64)	3.25 (.87 – 12.19)
KSADS Lifetime Any Anxiety Disorder	.97 (.94 - .99)*	.98 (.90 – 1.05)	.54 (.02 – 12.14)	.92 (.86 – 1.00)*	.73 (.28 – 1.92)	1.73 (.61 – 4.87)
KSADS Lifetime ADHD Diagnosis	.96 (.93 – 1.00)*	1.03 (.94 – 1.14)	4.70 (.13 – 174.34)	1.07 (.96 – 1.20)	1.16 (.38 – 3.57)	1.26 (.35 – 4.60)
KSADS Lifetime Any DBD Diagnosis	.94 (.90 - .99)*	1.11 (.98 – 1.25)	11.93 (.18 – 776.20)	.93 (.84 – 1.03)	2.24 (.62 – 8.06)	2.07 (.44 – 9.64)

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. ^aLarge CIs indicate unreliable estimates; these results should be interpreted with caution. Any Risky Dating Experience and Any Sexual Experience coded 0=absent, 1=present. KSADS=Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version. ADHD=Attention Deficit Hyperactivity Disorder. DBD=Disruptive Behavior Disorder. 114 youth reported on Romantic Partner Discord and Closeness; 424 to 430 youth reported on other romantic and peer variables (total $N = 440$). 22/440 youth had a history of Any Risky Dating Experience and 15/440 youth had a history of Any Sexual Experience.

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