

The contribution of relationship experiences to adolescent romantic relationship outcomes

by

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A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
August 1, 2015

Keywords: adolescence, relationship education, romantic relationship quality, parent-child
relationship quality

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Abstract

This research focused on the role of relationship experiences in adolescent romantic relationships using both basic and applied approaches. Research questions are guided by life course and social cognitive theories which support the examination of close personal relationships and their links to individual development. Results indicate that parents are in some ways influential in adolescent romantic relationships, for both relationship quality and interventions aiming to improve romantic relationship knowledge and skills. Additionally, adolescents' perceptions and beliefs are shaped to some extent by their relationships with parents and dating partners.

The first study investigated whether change in parent-child relationships, as perceived by parents across childhood and early adolescence, predicted middle adolescent romantic relationship quality (RRQ). We also explored whether changes operated indirectly through adolescent's perceptions of the parent-child relationship and whether child gender conditioned these associations. The analytic sample consisted of 178 adolescents who were currently in a romantic relationship. Adolescents were 15 years old at the final wave of data collection and had both father and mother reports on relationship quality beginning in 1st grade and continuing to when the adolescent was 15. Latent growth curve models were fit in MPlus and structural equation modeling and multi-group analyses were used to test study hypotheses. The final level of conflict with mothers marginally predicted less positive adolescent RRQ. Among females, associations were found between adolescent perceptions of maternal hostility and more negative

RRQ. Change in mother-child conflict was associated with adolescents' perceptions of warmth and hostility, and only among females did warmth and hostility predict RRQ. A steeper increase in father-child conflict predicted male and female adolescents' perceptions of more hostility, but only among females did warmth and hostility predict RRQ. Paternal warmth predicted more positive RRQ whereas hostility predicted more negative RRQ, but only for females. Results indicate that adolescent's perceptions of the parent-child relationship quality is more influential on their romantic relationship quality, primarily among females.

The second study explored how improvements from a youth-focused relationship education program vary depending on important relationships (i.e., parents and dating partners). Specifically, parental support, parental psychological control, and level of dating experience (i.e., none, past, or current) were used as moderators of programmatic change. A total of 1,937 participants, ages 13 to 21, completed evaluations before and after participating in either a treatment ($n = 1393$) or control ($n = 544$) group. Paired samples t-tests and path analyses were used to test for significant treatment effects, and subsequent analyses determined whether parenting variables or dating experience moderated change in program outcomes. Results indicated that participants in the treatment group had significantly reduced faulty relationship beliefs and these beliefs were significantly lower than the control group at posttest. Of these faulty beliefs, a significant interaction was found between parental psychological control and the One and Only belief. Participants who began the program with high endorsement of this belief and more psychologically controlling parents reduced their endorsement of this belief more than participants with less psychologically controlling parents. Dating experience also significantly moderated both types of faulty relationship beliefs. Even though all groups reduced their endorsement of faulty relationship beliefs, currently dating adolescents had the highest

endorsement of faulty beliefs at both pre- and posttest assessments. Finally, adolescents in the treatment group increased their intentions to delay sexual activity, but this change was not moderated by parental support, psychological control, or dating experience. Treatment effects were not found for conflict management or endorsement of psychological or physical dating aggression. Results indicate that relationships with parents and experience with dating influenced the degree of change in adolescents' faulty relationship beliefs after participation in a YRE program.

Acknowledgements

“Success is peace of mind which is a direct result of self-satisfaction in knowing you did your best to become the best you are capable of becoming.”

-John Wooden

Considering that my favorite movie is *Forrest Gump*, it is very appropriate that I spent five years of my life in Alabama. The only flaw in that film is that Forrest chose the wrong university in Alabama. He should have joined the Auburn Family, like I did. Someone once told me that getting a Ph.D. is like running a marathon, the most important trait to have is endurance. It's a good thing that I just felt like running.

There's an awful lot you can tell about a person by their shoes: Where they've gone, where they've been. The sturdy shoes I wear as I explore this world were provided by my family, so I must first acknowledge their role in my success. My father modeled hard work, integrity, and leadership and shared valuable wisdom across the dinner table and across hundreds of miles since I left home. My mother always encouraged my academic potential since I was young, from coaching *Odyssey of the Mind* to cheering me on as I cried my way through calculus homework in high school. And my sister, Melody—who fulfills her sibling duties well—from teasing me about being a nerd as children to providing unconditional love and support during the triumphs and challenges I experience as an adult. It's Dr. Nerd now, thank you very much! I am also grateful for my “chosen family” of sisters, my best good friends: Christin, Lindsey, Rachel, and Seda. You all have your own ways of making my heart smile and stress melt away. Finally, I want to acknowledge my guy, Ike. You show me what love is. Love is leaving friends and a

great job and moving to Alabama so I can pursue my career goals. Love is running alongside me when I need moral support. And finally, love is the little things like keeping the refrigerator stocked with my favorite home-brewed beer, doing my laundry, and listening to me endlessly talk about fitting statistical models. I am eternally grateful for your love, patience, and support. Adventure awaits in the Wild West, my friend.

Life is like a box of chocolates, you never know what you're gonna get. Corny as it sounds, this saying rang true when I first arrived at Auburn University and I wondered who would be my new classmates, friends, and future colleagues. I immediately found myself surrounded by some of the most genuine, hard-working, and supportive people I have ever encountered. Truthfully, if I couldn't laugh, I would go insane. I would be drooling in a straightjacket right now if not for the family of graduate students with whom I shared fun and laughter over many Chinese hot pot dinners, Cards Against Humanity games, and at piano bars across the country. Thank you for listening as well as providing validation, assistance with statistics, and moral support. I am very grateful for the fellowship and community we created over the years.

All graduate students have a major professor, but I consider myself exceedingly fortunate to have collected multiple mentors over the years. I want to first acknowledge my major professor, Dr. Jennifer Kerpelman, who has a contagious excitement and dedication to her work. She provided many opportunities throughout my time at Auburn and spent a vast amount of time and effort reviewing and guiding my work. Thank you to my committee members, Dr. Joe Pittman, Dr. Amy Rauer, and Dr. Donna Sollie, for providing valuable feedback and challenging my abilities as a researcher. Dr. Kristen Bub, my methods professor and collaborator, who always had a way of explaining things so I could understand them. Dr. Francesca Adler-Baeder,

who taught me that although I may sometimes feel like I am just moving rocks, in reality, I am really building something very important in the community. A special thank you goes to Dr. Jim Groccia and Dr. Amy Rauer who modeled excellent teaching, reminded me that learning can be really fun, and mentored me as I focused on my passion for teaching. I must also acknowledge all of the hard-working and committed undergraduates and colleagues with whom I had the pleasure of implementing youth programs in the Auburn community. Your dedication made my work exceptionally rewarding and I believe that together we made a difference.

I found the last five years to be formative in both my professional development and personal journey into adulthood. Because of my support team, I was able to become a well-rounded academic and successfully prepare for a career in which I can put my passions into action. It sure was a fine idea to come to Auburn. I'm pretty tired. I think I'll go home now.

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I. General Introduction

Adolescent romantic relationships have recently gained empirical attention for their developmental significance, impact on individual well-being, and enduring effects into emerging adulthood (Barber & Eccles, 2003; Collins, 2003; Madsen & Collins, 2011; Montgomery, 2005; Rauer, Pettit, Bates & Dodge, 2013). Developmental scholars have recently called for attention to adolescence using a life course perspective (Johnson, Crosnoe & Elder, 2011). Three themes paramount to life course theory are relevant to the current studies 1) linked lives with others in close relationships 2) the role of the individual in his/her development, and 3) the importance of social historical context (Elder, Johnson, & Crosnoe, 2003). Although romantic experiences begin in adolescence (Collins, 2003; Montgomery, 2005), from a life course perspective, life stages cannot be understood in isolation (Elder, 1996). That is, experiences and development prior to adolescence can shape individual trajectories and are important to understand when predicting adolescent outcomes. The current historical context involves an extended period between puberty and age of first marriage (Abma, Martinez, & Copen, 2010), increased scholarship on adolescent dating relationships (Collins, 2003), and increasing implementation and evaluation of relationship education programs targeting adolescents (e.g., Gardner, Giese, & Parrott, 2004; Gardner & Boellaard, 2007; Kerpelman, Pittman, Adler-Baeder, Eryigit, & Paulk, 2009). Additionally, individual development occurs within a given context, such that experiences with parents, romantic partners, and educational programs can influence adolescent and subsequent adult outcomes (De Goede, Branje, van Duin, VanderValk & Meeus, 2012; Gardner

& Boellaard, 2007). Adolescent romantic relationships are a critical part of the life course worthy of further empirical exploration.

To gain a more comprehensive understanding of the nature and significance of adolescent romantic relationships, research must investigate variables in childhood that precede adolescence, as well as outcomes of adolescent relationships that may endure into adulthood. Recent longitudinal work has begun to address this issue using a developmental contextual approach that focuses on experiences across life stages and within social contexts. For example, Rauer and colleagues (2013) found that experiences with parents during childhood and adolescence are associated with the type of dating relationship trajectories experienced in emerging adulthood. They concluded that proximal experiences (i.e., adolescents' relationships with parents) were the most influential for predicting the type of involvement in early adult relationships. That is, in a longitudinal developmental model, childhood experiences with parents operated through adolescent variables. Additionally, Madsen and Collins (2011) provide longitudinal evidence that the quality of romantic experiences in middle adolescence (ages 15-17) predicts the quality of romantic relationships in emerging adulthood (ages 20-21). These studies offer support for a life course perspective by demonstrating that adolescent romantic relationships are influenced by childhood experiences and can provide a foundation for building future romantic relationships in adulthood.

Life course perspective also maintains that individuals play a significant role in their own development (Elder, 1996). That is, adolescents select relationships and experiences that “reflect their past and contribute to their futures” (Johnson et al., 2011, p. 274). Adolescents select dating partners and have mental schemas about relationships based on past relationships with parents or caregivers. In line with this theme is the individual agency described by social cognitive theory

(Bandura, 2011) by which individuals filter and manipulate social cognitions that have an active role in their behavior. Simultaneously, adolescents' developmental trajectories are linked to the lives of others (Elder, 1996; Johnson et al., 2011) where experiences with parents and romantic partners serve as opportunities to learn about how one should behave in a close relationship (Bandura, 1986; 2011). Furthermore, adolescents' perceptions of their relationships can influence their own beliefs, behaviors, and relationships (McElhaney, Porter, Thompson, & Allen, 2008; Sweeting, 2001). The present studies explore how relationships with parents, dating experience, and exposure to formal relationship education influence adolescents' romantic relationships.

Adolescents learn to have relationships from several sources. First, parents are the longest, most enduring model of relationships that most adolescents have when they begin to initiate romantic relationships. Indeed, longitudinal research indicates that experiences within the family can shape adolescents' engagement in romantic relationships (Beyers & Seiffge-Krenke, 2007; De Goede et al., 2012). For example, adolescents' perceptions of greater closeness and less conflict within relationships with parents are associated with greater closeness and better quality romantic relationships later in adolescence (De Goede, Branje, Delsing, & Meeus, 2009; Kan, McHale, & Crouter, 2008). Taken together, the quality of adolescents' early romantic relationships is affected by the quality of the parent-child relationship. However, research has yet to address how changes in parent-child relationship quality beginning in childhood predict middle adolescent romantic relationship quality.

Another source of information about romantic relationships comes from the increasing rise in formal relationship and marriage education targeting adolescents (Adler-Baeder, Kerpelman, Schramm, Higginbotham, & Paulk, 2007; Gardner et al., 2004; Kerpelman et al.,

2009; 2010). A prominent aspect of life course theory is that social and historical context shape individual development. Recent focus on both the short-term and long-term effects of adolescent romantic relationships (Banyard & Cross, 2008; De Goede et al., 2012) has led to the development of curricula and programs that inform high school-aged youth about healthy romantic relationships (e.g., Pearson, 2007/2013). Formal relationship education programs appear to result in promising outcomes such as improved conflict management, reduced faulty relationship beliefs, increased disapproving attitudes about dating aggression and, for some, improved resistance to sexual pressure (Adler-Baeder et al., 2007; Gardner & Boellaard, 2007; Kerpeiman, Pittman, & Adler-Baeder, 2008; Morrison, Adler-Baeder, & Bub, 2015; Pittman & Kerpeiman, 2013).

Although several studies show individual variations in program outcomes (Kerpeiman et al., 2008; 2010; Ma, Pittman, Kerpeiman & Adler-Baeder, 2014), no evaluation studies of youth-focused relationship education programs have explored parent-adolescent relationship quality as a moderator of program outcomes. Adolescents' relationships with parents may shape their mental schemas about relationships (Bandura, 2011; Reis, Collins, & Berscheid, 2000), in turn affecting what they learn from a YRE intervention. Additionally, adolescents with varying dating experience may respond to a relationship education program differently, but this has not been explored empirically. Adolescents report that their ideas about dating relationships are greatly shaped by firsthand experience (Adams & Williams, 2011), so program participants may perceive the content of a curriculum differently based on their social cognitive framework, potentially influenced by their level of dating experience. From a life course perspective, it is important to understand the nuances of program effectiveness because the targeted program

outcomes (e.g., dating aggression, conflict) in middle adolescence can influence relationship outcomes in adulthood (Rauer et al., 2013).

Within the burgeoning field of adolescent romantic relationships, some limitations exist in the current literature. From a developmental perspective, several studies show the importance of longitudinal associations between the parent-child relationship and adolescent romantic outcomes (De Goede et al., 2009; Longmore, Eng, Giordano & Manning, 2009), yet these studies either do not include parent-child relationship quality in childhood or they focus on relational outcomes in emerging adulthood rather than during adolescence (e.g., Longmore et al., 2009; Rauer et al., 2013). For example, studies of parent-adolescent relationship quality trajectories include longitudinal data beginning in early adolescence and continuing into late adolescence or emerging adulthood when romantic relationship quality is then assessed (Longmore et al., 2009; Seiffge-Krenke, Overbeek, & Vermulst, 2010). In terms of applied evaluation studies of youth relationship education (YRE) programs, variability in participant outcomes has been explained by several moderators related to individual and contextual factors like identity exploration, classroom context, or socio-demographic variables (Kerpelman et al., 2008; 2010; Ma et al., 2014). Yet YRE evaluation studies have yet to include variables such as the adolescents' experience or involvement in other relationships (i.e., with parents or romantic partners) as moderators. This matters because, within the life course, individuals have linked lives with parents and peers that can shape their interpretation of information presented in a YRE program (Furman & Simon, 1999; Johnson et al., 2011).

The two studies in this dissertation address these limitations by taking both basic and applied approaches to understanding adolescent romantic relationships. Study 1 is a longitudinal study of parent-child relationship quality, across late childhood to middle adolescence. The

primary aim of this study is to determine whether changes in closeness and conflict within mother- and father-child relationships predict both positive and negative qualities of adolescent romantic relationships at age 15. The secondary aim of this study is to determine whether adolescents' perceptions of parent-child relationship quality operate as an intervening variable between parent-reported relationship change and adolescent romantic relationship quality. Study 2 takes an applied approach by evaluating a relationship education program targeting high school-aged youth. To better understand the nuances of what makes relationship education programs more effective for some youth than others, several potential moderators of program outcomes are explored. Parental support and psychological control serve as moderators in addition to whether an adolescent has dating experience. Importantly, results of the second study can inform YRE curriculum content and delivery by highlighting learner differences. Collectively, these studies contribute to literature on the importance of how parent-adolescent relationship quality influences adolescents' abilities to have healthy, high quality romantic relationships in middle to late adolescence.

II. Paper 1 - Change in mother-child and father-child relationship quality across early adolescence: Implications for adolescent romantic relationship quality.

Abstract

This study investigated whether change in parent-child relationships across childhood and early adolescence predicted middle adolescent romantic relationship quality (RRQ). We also explored whether changes operated indirectly through adolescents' perceptions of the parent-child relationship and whether child gender conditioned these associations. The analytic sample consisted of 178 adolescents who were currently in a romantic relationship. Adolescents were 15 years old at the final wave of data collection and had both father and mother reports on relationship quality beginning in 1st grade and continuing to adolescent age 15. Latent growth curve models were fit in MPlus; structural equation modeling and multi-group analyses were used to test study hypotheses. Both mother- and father-child closeness significantly declined and conflict significantly increased between ages 6 and 15. Associations between adolescent perceptions of the parent-child relationship and RRQ were stronger for females compared to males. The final level of conflict with mothers was marginally associated with less positive adolescent RRQ. However, change in mother-child conflict was associated with adolescents' perceptions of warmth and hostility, and only among females did warmth and hostility predict RRQ. Accounting for change in mother-child closeness, maternal hostility was associated with more negative RRQ for females. Accounting for changes in father-child closeness, females' perceptions of fathers' warmth and hostility predicted greater negative and positive RRQ,

respectively. Finally, a steeper increase in father-child conflict was associated with male and female adolescents' perceptions of more hostility, but only among females did warmth and hostility predict RRQ.

Change in mother-child and father-child relationship quality across early adolescence:
Implications for adolescent romantic relationship quality.

From a life course perspective, human development is influenced by relationships throughout the lifespan and an expansive literature indicates that relationships with parents can affect adolescents' romantic relationships (Beyers & Seiffge-Krenke, 2007; De Goede, Branje, van Duin, VanderValk, & Meeus, 2012; Longmore, Eng, Giordano & Manning, 2009). Several studies focus on how relationship quality with parents across early to late adolescence is associated with romantic relationship outcomes in late adolescence or emerging adulthood (e.g., Longmore et al., 2009; Seiffge-Krenke, 2003); however, research has not yet addressed the effects of parent-child relationship changes that occur from late childhood up to middle adolescence. During this time, children transition to adolescence and the parent-child relationship must adjust as early adolescents strive for autonomy, begin puberty, and initiate romantic relationships (Collins, 2003; Montgomery, 2005). Adolescent romantic relationships have significant developmental importance due to their impact on individual well-being and relationships in adulthood (Collins, Welsh, & Furman, 2009; Conger, Cui, Bryant, & Elder, 2000; Karney, Beckett, Collins, & Shaw, 2007). Therefore, it is important to understand how parent-child relationship change can affect adolescent romantic relationship quality (RRQ).

In addition to life course theory, social cognitive theory lends support for explaining how relationships with parents shape adolescent romantic relationships. Social cognitive theory holds that individuals develop a mental schema of relationships through both direct experiences and by observing others (Bandura, 1986; 2011). From direct experiences, adolescents have expectations about the consequences of their actions within relationships. However, less is known about how change in parent-child relationship quality across late childhood through middle adolescence

affects adolescent romantic relationships. Overall, the aim of the current study is to use longitudinal data to determine how change in mother- and father-child relationship quality predicts RRQ during middle adolescence.

Adolescent Romantic Relationship Quality

Adolescent romantic relationships have increasingly gained empirical attention due to their developmental significance and associations with adolescent well-being (Collins et al., 2009; Joyner & Udry, 2000). Involvement in romantic relationships increases across adolescence; by the beginning of middle adolescence (age 15), approximately 50% of adolescents have had a romantic relationship, a figure that increases to approximately 70% by age 18 (Carver, Joyner, & Udry, 2003; Giordano, Manning, & Longmore, 2010). Within the current historical period, youth enter romantic relationships at younger ages yet the age of first marriage is rising, leading to an extended period of romantic involvement compared to previous generations (Carver et al, 2003; United States Census Bureau, 2014). Adolescent romantic relationships have the potential to affect relationships in later life stages by beginning trajectories of relationship patterns. For instance, romantic relationships in middle adolescence are similar in certain qualities (e.g., commitment) to romantic relationships in late adolescence (De Goede et al., 2012; Seiffge-Krenke, 2003) and experiences in these relationships can affect emerging adult relationships (Rauer, Pettit, Lansford, Bates, & Dodge, 2013).

The individual outcomes associated with adolescents' romantic relationship experiences can in part be explained by the quality of such relationships. RRQ is captured by both positive and negative experiences that can occur between romantic partners (Collins et al., 2009; Fincham & Rogge, 2010). The relationship quality variables addressed in the present study are considered central to adolescent romantic relationships (Collins et al., 2009; Furman & Collins, 2008;

Giordano et al., 2010), and include admiration, affection, intimacy, nurturance, and companionship. Negative dimensions of relationship quality include conflict, criticism, and antagonism.

Research indicates that adolescents seek relationships that provide mutual intimacy, emotional support, and bonding (Collins, 2003). Even by age 16, adolescents have expectations that a romantic partner will provide warmth, intimacy, trustworthiness, and loyalty (Ma, Pittman, Kerpeleman, & Adler-Baeder, 2014). RRQ matters greatly, as it has documented effects on current individual functioning and well-being (Collins et al., 2009). For instance, romantic relationships fraught with conflict and negativity are associated with adolescent depressive symptoms and anxiety (Banyard & Cross, 2008) whereas high quality, positive relationships are associated with better individual functioning (Beyers & Seiffge-Krenke, 2007). The quality of early romantic relationships can have lasting effects (Karney et al., 2007; Rauer et al., 2013); thus, it is important to examine relational quality during a developmental period in which romantic relationships are initiated. It is also important to examine precursors to adolescent relationships such as the quality of the parent-child relationship.

Parent-Adolescent Relationship Quality

Family relationships are influential throughout the life course because they can affect individual decisions and behaviors (Elder, 1998; Bandura, 2011). Social cognitive theory (Bandura, 1986; 2011) suggests that early socialization experiences within the parent-child relationship influence the adolescent's views about intimate relationships with peers. From their parents, individuals develop mental representations of relationships, expected patterns of interaction, and actual behaviors in relationships with romantic partners (Reis, Collins, &

Berscheid, 2000; Seiffge-Krenke, Overbeek, & Vermulst, 2010). These mental representations of relationships depend greatly on the quality of the parent-child relationship (Reis et al., 2000).

Two dimensions of relationship quality, closeness and conflict, capture both positive and negative interactions within the parent-child relationship (Aspy et al., 2007; Lam, Solmeyer, & McHale, 2012; Longmore et al., 2009). A close relationship may or may not be devoid of conflict and each relationship dimension may uniquely contribute to adolescent outcomes (e.g., McElwain & Bub, 2015). Close parent-child relationships are characterized by support, warmth, and emotional responsiveness, whereas conflictual parent-child relationships are characterized by arguments, criticism, and negativity. Closeness with parents can teach adolescents that relationships with others are a positive source of support and emotional intimacy (Conger et al., 2000). Within relationships with mothers and fathers, support and closeness are important for adolescents' individual development and emerging adult RRQ (McKinney & Renk, 2011; Seiffge-Krenke et al., 2010). Conversely, conflict and negativity within the parent-adolescent relationship may teach the adolescent that relationships can be volatile and hurtful (Bandura, 1986; 2011). Whereas some conflict is normative due to adolescent autonomy development (Paikoff & Brooks-Gunn, 1991), high levels of conflict can be harmful for adolescent individual and relational outcomes. For example, high parent-adolescent conflict is linked to more risky behaviors such as drug/alcohol use and early sexual initiation (Lam et al., 2012; Longmore et al., 2009). Parent-child relationship quality has clear implications for adolescent relationships.

In line with social cognitive theory (Bandura, 1986; 2011), both concurrent and prior relationship quality with parents might explain adolescent relationship quality. Adolescents' perceptions of support or closeness within relationships with parents and friends are positively associated at various time points across middle adolescence (De Goede, Branje, Delsing, &

Meeus, 2009). Furthermore, Kan, McHale, and Crouter (2008) found that adolescents who, at age 13, had high conflict and low closeness with parents had poorer quality romantic relationships at age 17. Another study showed childhood relationship quality with parents, assessed as attachment quality at age 2, predicted relationship quality in peer and romantic relationships in late adolescence at age 19 (Collins & Van Dulmen, 2006). Relationships with parents are clearly important, but does *change* in relationship quality across childhood to middle adolescence matter for adolescent RRQ?

Change in parent-child relationship quality. Life course scholars encourage empirical work addressing the life stages that both precede and follow adolescence because no life stage occurs in isolation (Elder, 1998; Elder, Johnson, & Crosnoe, 2003; Johnson, Crosnoe, & Elder, 2011). Furthermore, relationships demonstrate instability across developmental transitions (Fuligni & Eccles, 1993; McElwain & Bub, 2015; Scaramella & Conger, 2004). The transition to adolescence is a period marked by cognitive development, puberty, and initiation of dating and/or sexual relationships (Collins, 2003; Montgomery, 2005; Steinberg, 2007). These developmental milestones are associated with changes in the parent-child relationship (Fuligni & Eccles, 1993; Scaramella & Conger, 2004).

The parent-child relationship tends to become less hierarchical as the child's autonomy increases (Eccles et al., 1993; McGue, Elkins, Walden, & Iacono, 2005). Pubertal development signals a child's emerging reproductive maturity and parents often respond to their children's emerging sexuality by exerting more control in an attempt to protect their children (Eccles et al., 1993; Fuligni & Eccles, 1993; Paikoff & Brooks-Gunn, 1991). Maintaining too much control during this time may lead to increased conflict in the parent-child relationship. Indeed, conflict increases as adolescents mature from early to late adolescence (Scaramella & Conger, 2004) and

closeness declines from early to middle adolescence (De Goede et al., 2009; Seiffge-Krenke et al., 2010). Across late childhood through early adolescence, parent-child relationships become less close and more conflictual (McElwain & Bub, 2015; McGue et al., 2005), but research has yet to address how these changes might predict mid-adolescent RRQ.

A growing body of literature, however, has been addressing how change in parent-adolescent relationships influences adolescent/young adult romantic relationships. In one study addressing late adolescents' RRQ, parent-adolescent relationships that declined in closeness across ages 14-18 were associated with less support in late adolescent romantic relationships (Beyers & Seiffge-Krenke, 2007). Parent-adolescent relationship trajectories beginning in middle adolescence were associated with emerging adult romantic relationship outcomes, such that increasing support with parents was associated with more connectedness with a romantic partner (Seiffge-Krenke et al., 2010). This suggests that declining closeness may be associated with poorer quality adolescent romantic relationships. Increasing conflict with parents may leave the adolescent without models of conflict management, positive interactions, or support which may generalize to romantic relationships, resulting in lower quality relationships. Selection effects may be operating such that adolescents with high quality relationships with parents are more inclined to enter romantic relationships. Although these studies focus on relationship outcomes for young adults, instability in family subsystems may be influential for the quality of romantic relationships in mid-adolescence as well.

It is important to note that the vast majority of studies examining parent-adolescent relationship quality are based on adolescents' perceptions (e.g., Beyers & Seiffge-Krenke, 2007; De Goede et al., 2009; Seiffge-Krenke et al., 2010); however, studies assessing parent-child quality prior to adolescence rely on parents' reports (e.g., McElwain & Bub, 2015). Although

parent and adolescent perceptions of relationship quality have been shown to be moderately, positively correlated (Crosnoe & Elder, 2004; Kan et al., 2008), they tap different perceptions of relationship quality. Parents, in comparison to adolescents, provide a generally more positive evaluation of the relationship quality (Laursen & Collins, 1998). Adolescent perceptions of both positive and negative relationship quality with parents are important predictors of adolescent outcomes (Beyers & Seiffge-Krenke, 2007; Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013). It is possible that these perceptions differentially predict adolescent RRQ or that parent-child relationship quality operates indirectly through the adolescent's perception of the parent-child relationship.

Gender is another characteristic that may influence the dynamics within the parent-child subsystem. Although parenting skills and relationships with children are not entirely driven by gender (Biblarz & Stacey, 2010), adolescents have different relationships with their mothers and fathers (McKinney & Renk, 2011; Seiffge-Krenke et al., 2010). Specifically, during adolescence, higher levels of emotional closeness and conflict are found with mothers compared to fathers (Laursen & Collins, 1994; Scaramella & Conger, 2004; Seiffge-Krenke et al., 2010). Variation in adolescent romantic outcomes may also exist because males and females are socialized differently and gender roles can influence romantic relationships (Giordano et al., 2010). Research also suggests that family relationships have differential effects on adolescent romantic outcomes depending on adolescent gender. For example, female adolescent outcomes tend to be influenced more by family relationships than male adolescent outcomes (Beyers & Seiffge-Krenke, 2007). Clearly, parent-child relationships matter for adolescent romantic relationships but differences may exist depending on adolescent gender. Therefore, we will explore whether

gender conditions the associations between parent-adolescent relationship variables and adolescent RRQ.

Taken together, these studies indicate that adolescents and emerging adults form romantic relationships that are typically congruent with the parent-adolescent relationship (i.e., similar in the quality of closeness and conflict). Theoretical support for the congruence across relationships is provided by social learning theory (Bandura, 1986; 2011), in that interactions during early relationships are enacted within later close relationships. However, there also may be possible compensatory effects through which declining parent-child relationship quality (i.e., declining closeness and increasing conflict) leads adolescents to strive for better quality relationships with romantic partners. Increases in conflict and/or declining closeness within a parent-child relationship may represent a turning point for some adolescents as they experience other transitional events across childhood and adolescence (Johnson et al., 2011). Turning points can lead to a variety of potential outcomes and individuals vary in their responses to disadvantaged situations (Rutter, 1996). One potential result of declining quality in relationships with parents is an attempt to connect with a romantic partner, a trend evidenced among emerging adults (Schulman, Scharf, Livne, & Barr, 2013). The present study explores both congruence and compensation hypotheses while also accounting for the characteristics of the parent-child dyad.

Prior research indicates that several variables are associated with parent-child relationship quality and/or adolescent romantic relationships that are important covariates to consider. For example, family structure can influence parent-adolescent relationship quality and adolescent romantic relationships (Giordano et al., 2010), and may influence relationship instability. Family structure at age 15 will be used as a control in the current study. Romantic relationship duration is associated with the degree of positivity and negativity in a romantic relationship and is used as

a control in similar studies (e.g., Seiffge-Krenke et al., 2010). Finally, ones' ethnicity has been shown to influence relationship dynamics within the family and with adolescent's dating partners in terms of how exclusive the dating relationship is between partners (Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004; Manning et al., 2009; Reis et al., 2000). Therefore, ethnicity, family structure, and romantic relationship duration will be included as control variables in each model.

The Present Study

Theory and research indicate that relationships with parents can influence adolescent RRQ (Bandura, 1986; Beyers & Seiffge-Krenke, 2007; De Goede et al., 2012; Elder, 1998). Parent-child relationships decline in closeness and increase in conflict from childhood to adolescence (McElwain & Bub, 2015). Yet research is still needed to understand how *change* in relationships with parents influences adolescent RRQ in middle adolescence. The present study uses longitudinal data gathered from parents across childhood (beginning at age 6) through middle adolescence (up to age 15) to determine how change in mother- and father-child relationship quality predicts adolescent romantic relationship outcomes. Because change in parent-child relationship quality is only assessed from parents' reports, the adolescent's perception at age 15 of parental warmth and hostility (the most similar constructs to closeness and conflict assessed from the adolescent's perspective) will be included as separate variables to determine whether parent perceived change in parent-child relationship quality from ages 6 to 15 is directly or indirectly associated with adolescents' RRQ at age 15. That is, the adolescent's concurrent perception of parent-adolescent relationship quality at age 15 will be examined as an intervening variable. Finally, research has not examined whether the rate of change in closeness and conflict or the effects of relationship changes are similar or different according to the adolescent's gender. Therefore, the current study addresses the following research questions:

- 1) Do changes in mother-child or father-child closeness and conflict between first grade and age 15 predict adolescent RRQ at age 15? In line with the congruence perspective, declines in closeness and increases in conflict would be associated with more negative and less positive adolescent RRQ. Conversely, compensation would be supported if declines in closeness and increases in conflict are associated with more positive and less negative adolescent RRQ.
- 2) Does the adolescent's perception of parent-adolescent relationship quality at age 15 operate as an intervening variable when assessing the association between parent-perceived change in the parent-child relationship quality and adolescent perceptions of RRQ at age 15?
- 3) Are there gender differences in the associations between (a) change in mother- and father-child relationship quality and adolescent RRQ, (b) change in mother- father-child relationship quality and adolescent perceptions of mother/father warmth or hostility, or (c) adolescent perceptions of mother/father warmth or hostility and adolescent RRQ?

Method

Sample

The present study uses data from phases I through IV of *The National Institute of Child Health and Human Development (NICHD), Study of Early Child Care and Youth Development (SECCYD)*, a prospective, longitudinal study of more than 1,000 children and their families. Families were recruited to participate through hospital visits to mothers shortly after the birth of their children in 1991. Hospitals were located in or near Little Rock, Arkansas; Irvine, California; Lawrence, Kansas; Boston, Massachusetts; Philadelphia, Pennsylvania; Pittsburgh,

Pennsylvania; Charlottesville, Virginia; Morganton, North Carolina; Seattle, Washington; and Madison, Wisconsin. A total of 8,986 women gave birth during the sampling period and 60% (5,416) of those women agreed to be contacted for a telephone interview (NICHD ECCRN, 2004). Of the women who agreed to participate, 56% (3,015) were selected on the basis of a conditional random sampling plan. A total of 1,525 families were selected as eligible, but only 1,364 completed the home interview when the infant was 1 month old (NICHD ECCRN, 2004). Although the families in this study do not comprise a nationally representative sample, participating families were similar to other families in the catchment areas on key demographic variables with two exceptions: mothers in the sample were slightly more educated and families had slightly higher income levels. At recruitment, 24% of the sample was below the poverty threshold and 13% of the sample was Black, non-Hispanic, figures quite similar to those in the United States at the time of data collection, which were 23% below poverty and 14% Black (NCES, *Children Born in 2001*, 2004, p. 9). Of the 1,364 children and their families originally enrolled in the study, 863 had both mother and father reports on parent-child relationship quality at all six time periods and the adolescents reported on parent-child relationship quality at age 15.

Of this subsample, 178 adolescents reported current involvement in a romantic relationship and only these currently dating adolescents provided responses on romantic relationship quality scales. These adolescents comprise our analytic sample. The analytic sample was 56% female and 44% male, with 80% European American, 14% African American, and 6% other ethnicity. When adolescents were 15 years old over 58% lived in a traditional nuclear family. Participants reported an average duration of three months for their current dating relationships. The proportion of participants who were non-European American was significantly higher in the analytic sample $\chi^2(1, N = 863) = 5.38, p < .05$.

Procedures

The present study uses secondary data collected by NICHD study investigators via adolescent- and parent-report questionnaires conducted when children were in first-grade and continuing until they were 15. Additionally, demographic information on the child was collected via maternal report when the child was one-month of age. Adolescents' reports of RRQ and adolescents' perceptions of the parent-adolescent relationship (warmth and hostility) were collected at age 15 years of age. Mothers' and fathers' reports of closeness and conflict with their child were collected when the study child was in 1st, 3rd, 4th, 5th, and 6th grade and at age 15 when the study child was in 9th grade. For a detailed description of the SECCYD visit <http://www.nichd.nih.gov/research/supported/seccyd/Pages/datasets.aspx>.

Measures

Romantic relationship quality. Adolescent report of RRQ was assessed using 23 items from the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985). Positive RRQ items measure admiration, affection, intimacy, nurturance, and companionship; negative RRQ items measure antagonism, conflict, and criticism. Higher scores indicate more of each dimension. An example item indicative of positive RRQ is "How much does this person treat you like you're admired and respected?" An example item indicative of negative RRQ is, "How much do you and this person get upset with or mad at each other?" The response values for these items were scored on a 5-point Likert scale where 1 = "Little or none," 2 = "Somewhat," 3 = "A lot," 4 = "A whole lot," and 5 = "The most!" A positive RRQ composite was created by summing the 14 items measuring admiration, affection, intimacy, nurturance, and companionship with scores ranging from 28 to 70 and excellent reliability ($\alpha = .91$). The negative RRQ

composite was created by summing the 9 items measuring antagonism, conflict, and criticism with scores ranging from 9 to 45 and excellent reliability ($\alpha = .93$).

Parent-child closeness and conflict. Relationship quality was assessed using the Child-Parent Relationship Scale (CPRS; Pianta, 1994) when children were in first, third, fourth, fifth, and sixth grade, and then not again until they were 15 years old. The CPRS, a 15-item survey adapted from the Student-Teacher Relationship Scale (Pianta, 1994), is designed to assess parents' perceptions of feelings and beliefs about their relationship with the study child and about the child's behavior toward the parent and measures both closeness (8 items) and conflict (7 items). For the current study, both mother and father reports were included. Items were rated on a 5-point, Likert-type scale (1 = "Definitely does not apply" to 5 = "Definitely applies"). Parent-child closeness assessed emotional responsiveness, support, and warmth and was computed as the sum of eight items. Sample closeness items include: "If upset, my child will seek comfort from me" and "It is easy to be in tune with what my child is feeling." Possible closeness scores ranged from 8 to 40, actual scores in the analytic sample ranged from 12 to 40, with higher scores indicating greater parent-child closeness.

Parent-child conflict assessed negative emotions, arguments, and criticism and was computed as the sum of seven items. Sample items include: "my child sees me as a source of punishment and criticism" and "my child easily becomes angry with me." Possible and actual conflict scores in the analytic sample ranged from 7 to 35, with higher scores indicating more parent-child conflict in the relationship (see Tables 1 and 2 for descriptive statistics and correlations). In the analytic sample of adolescents in romantic relationships, reliabilities ranged from $\alpha = .58$ to $\alpha = .85$ for mother-reported closeness and $\alpha = .63$ to $\alpha = .84$ for father-reported closeness (compare with the full NICHD sample: reliabilities ranged from $\alpha = .64$ to $\alpha = .78$ for

mother-reported closeness and $\alpha = .74$ to $\alpha = .82$ for father-reported closeness). Reliabilities ranged from $\alpha = .80$ to $\alpha = .88$ for mother-reported conflict and $\alpha = .74$ to $\alpha = .87$ for father-reported conflict (compare with the full NICHD sample: reliabilities ranged from $\alpha = .83$ to $\alpha = .87$ for mother-reported conflict and $\alpha = .78$ to $\alpha = .86$ for father-reported conflict). Although reliabilities for the mother- and father-child closeness scales were low in this sub-sample, these measures are established and commonly used instruments (e.g., Bell & Belsky, 2008; Nelson & O'Brian, 2012).

Adolescent perceived relationship quality with parents. At age 15, adolescents completed the Getting Along With My Parent questionnaire (Conger & Ge, 1999) to measure parental warmth/support and hostility for both mothers and fathers. Using the stem, “When you and your mother (father) spend time talking or doing things together, how often does your mother (father)...” adolescents responded to a 34 item questionnaire about their mother (17 items) and their father (17 items). The warmth subscale was comprised of nine items and the hostility subscale was comprised of eight items. An example hostility item is “Insult or swear at you?” and an example warmth item is “Understand the way you feel about things.” Responses ranged on a four-point Likert scale ranging from 1 = “Never” to 4 = “Always.” Possible and actual warmth scores range from 9 to 36 in the analytic sample. Possible hostility scores range from 8 to 32, whereas actual hostility scores range from 8 to 24 in the analytic sample. The raw items used to create the warmth composite score have high internal reliability in the analytic sample (9 items, mothers $\alpha = .92$, fathers $\alpha = .95$). Similarly, the raw items used to create the hostility composite score have good internal reliability (8 items, mothers $\alpha = .83$, fathers $\alpha = .82$). Composites were created by summing items for each dimension; higher scores indicate higher warmth and hostility.

Time. For all models, age at each assessment was converted into years and age was centered at the final assessment of parent-child relationship quality when the child was 15 to allow the intercept to be the final time point (i.e., 1st grade/6 years = -9, 3rd grade/8 years = -7, 4th grade/9 years = -6, 5th grade/10 years = -5, 6th grade/11 years = -4, and 15 years old = 0).

Control variables. The following control variables will be considered for inclusion in analyses based on whether they are significantly correlated with the outcomes. Ethnicity was coded European American = 1, non-European American = 0. Relationship duration will be calculated as the number of months adolescents reported being in their current dating relationship. Because family structure (correlations across waves ranged from .65 to .93) is quite stable across the study period, we will control for this indicator at age 15 by regressing this variable on the adolescent RRQ outcomes in each model. Finally, concurrent level (composites) of parent-child relationship quality with the parent and the other parent will be controlled (e.g., for the mother-child conflict growth model, mother-child closeness and father-child closeness and conflict at age 15 will be controlled).

Analytic Plan

Means, standard deviations, and intercorrelations among primary study variables were examined in preliminary analyses (see Tables 1-4). To address the study questions and hypotheses, latent growth curve analysis was used to model intra-individual change in mother-reported and father-reported closeness and conflict between first grade and age 15 to reveal within- and between-individual differences in relationship quality over time. Latent growth curve analysis was a particularly useful tool for the current study because, unlike typical growth modeling approaches, such as hierarchical linear modeling, latent growth curve models allowed us to specify a growth trajectory for change over time (linear or otherwise) in relationship quality

and then simultaneously estimate the relationship between the parameters of that individual change trajectory (i.e., intercept and slope) and adolescent RRQ (Willett & Bub, 2004).

We represented change over time for each index of relationship quality (i.e., mother-reported closeness; mother-reported conflict; father-reported closeness; and father-reported conflict) by linear growth and examine estimates of the population average final level and population average rate of change (see Figure 1). In the center of the Figure is a two-factor measurement model that represents the development of closeness or conflict (for mothers or fathers) over time. These measurement models link observed assessments of relationship quality to hypothesized latent constructs representing the true final status (“Final”) and true linear rate of change (“Slope”) in these constructs between first grade and age 15. By fixing the factor loadings from each observed indicator to intercept at a constant value of 1, we were able to obtain an estimate of the average value of mother (or father) closeness (or conflict) at age 15. Further, by fixing the factor loadings from each observed indicator to the linear slope to constant values of -9, -7, -6, -5, -4, and 0, we were able to obtain an estimate of the average linear rate of change between first grade and age 15 (Willett & Bub, 2004).

We then estimated the relationship between true final level and true linear rate of change in closeness or conflict over time and adolescent RRQ. The hypothesized effects of these latent growth constructs on RRQ are depicted by bolded arrows on the right side of Figure 1. All analyses were conducted using MPlus version 7 (Muthén & Muthén, 2009). Model-fit was assessed by examining three commonly used fit indices: chi-square, comparative fit index (CFI), and root mean square error of approximation (RMSEA). Model fit is considered adequate when the chi-square statistic is small and non-significant, CFI was .90 or greater and RMSEA is .10 or smaller (Muthén & Muthén, 2009). Missing data on key predictors were handled using Full

Information Maximum Likelihood procedures which uses a set of simultaneous equations and all available data to produce plausible estimates for missing data; in doing so, all individuals in the analytic sample were retained (Muthén & Muthén, 2009).

To address the first research question and its attending hypotheses, four main models were fit predicting adolescent RRQ: 1) mother-child closeness, 2) mother-child conflict, 3) father-child closeness, and 4) father-child conflict (see Tables 5-8, Model B). To provide a less biased estimate of the association between closeness or conflict and the outcomes and to account for the fact that parents and children can simultaneously experience some level of closeness and conflict, we controlled for concurrent (i.e., age 15) parent-child relationship conflict or closeness (i.e., we controlled for closeness in the conflict model and conflict in the closeness model) by including the age 15 composite variables in the models predicting RRQ. To account for potential interdependency between the relationships a child has with each parent, we also will regress the other parent's concurrent relationship closeness and conflict on the growth parameters (e.g., in the mother-child conflict model, father-child conflict and closeness will be regressed on the growth parameters). See Table 2 for correlations among age 15 mother- and father-child relationship quality variables.

Indirect effects were tested in Mplus (Muthén & Muthén, 2009) to address the second research question. The hypothesized model for indirect effects is presented in Figure 2. Finally, to address the third research question, we tested for moderation using multi-group analysis in Mplus (Muthén & Muthén, 2009) to determine whether child sex conditioned the strength or direction of the associations between the growth parameters, adolescent-perceived parental relationship quality, and positive and negative adolescent RRQ. Each path in the model was constrained to be equal for male and female groups. With each constraint imposed, a delta-chi

square test was conducted to determine whether the constraint causes the model fit to become significantly worse. A significant decrement to model fit indicated the two paths were significantly different across groups.

Results

Preliminary and Descriptive Analyses

Descriptive statistics for all study variables are presented in Table 1 and intercorrelations are displayed in Tables 3 and 4. Mean mother-child relationship closeness scores were high and decreased approximately four points (37.98 to 33.86), or an average of one standard deviation across time. Whereas conflict was moderately low and increased approximately two points (15.21 to 17.54), or approximately one half a standard deviation. Similarly, father-child closeness scores were high and decreased approximately five points (36.6 to 31.76), or one standard deviation across time. Whereas conflict was moderately low and increased approximately two points (14.24 to 16.98), or less than one half a standard deviation. For adolescent perceived parental relationship quality, means were similar for mothers and fathers with high mean warmth scores and low mean hostility scores. Finally, adolescents reported low levels of negative romantic relationship quality and moderately high levels of positive romantic relationship quality (see Table 1).

Correlations among the parent-child closeness and conflict relationship dimensions were significant and in the expected directions. Only a few of the parent-child closeness and conflict indicators were significantly correlated with adolescent RRQ (more for the mother-child variables than the father-child variables). Adolescents' perceptions of warmth were significantly correlated with closeness at only a few assessment periods, and conflict scores at most of the assessment periods were correlated with either adolescent perceived warmth or hostility. Finally,

warmth was positively correlated with positive RRQ and hostility was positively correlated with negative RRQ (see Tables 3-4).

Models were first fit that included the concurrent parent-child relationship quality control variables regressed on growth parameters. It was determined that multicollinearity among these variables was a potential problem that was producing untrustworthy parameters in mother- and father-child relationship quality models (see Model A, Tables 5-8 and Models A-1 to A-4 in Appendix A). Appendix A is provided as clarification for dissertation readers and would not be included in future efforts toward publication. Significant associations were found between growth parameters and RRQ only when concurrent controls were in the model. This suggests that these control variables were leading to significant associations driven by the high correlations among concurrent parent-child relationship quality and growth parameters. Additionally, other control variables were non-significant in all models (i.e., family structure and romantic relationship duration) or were significantly associated with one outcome but worsened model fit (i.e., ethnicity). Therefore, models were tested excluding control variables to obtain less biased parameter estimates (see Models B-C, Tables 5-8). Finally, mother- and father-child closeness growth curves models including adolescent perceptions of the parent-child relationship quality did not converge, likely due to low variability in the closeness growth indicator variables. As a result, sub-models C1 and C2 (Tables 5 and 7) were fit to determine whether significant associations exist between closeness growth parameters, adolescent-perceived parent-child relationship quality (examining warmth and hostility separately), and RRQ.

Due to the relatively small sample size and multiple parameter estimations involved in latent growth modeling, complications arose in multi-group analyses (using Models C for conflict, and Models C1 and C2 for closeness) testing for gender differences. Specifically, model

non-convergence occurred when paths were constrained to be equal across male and female groups (Male $n = 99$; Female $n = 79$). Due to this limitation, smaller sub-models were tested in multi-group analyses to determine if gender conditioned any paths among parent-child relationship growth parameters, adolescent-perceived relationship quality and RRQ. Specifically, when model nonconvergence occurred, a smaller model was fit with growth parameters and warmth/hostility predicting RRQ, then a separate model was fit with the growth parameters predicting warmth/hostility. A description of the issues encountered in model tests and tables with full models including all controls are presented in Appendix A. Results for each research question are described below first for mother-adolescent relationship quality and then for father-adolescent relationship quality.

Mother-Adolescent Relationship Quality

To address the first research question, two latent growth models were fit separately for mother-child closeness and conflict to determine whether there was significant change in each relationship quality dimension and whether that change predicted adolescent RRQ. Both closeness and conflict changed significantly between first grade and age 15. Mother-child closeness declined significantly over time ($\beta = -1.77, p < .001$) and closeness at age 15 (i.e., intercept) was significantly different from zero ($\beta = 10.57, p < .001$). However, the closeness growth curve model did not fit the data well ($\chi^2 = 96.96, p < .001, df = 16$; CFI = .76; RMSEA = .17, $p < .001$). In contrast, mother-child conflict increased significantly over time ($\beta = 1.15, p < .01$) and conflict at age 15 was again significantly different from 0, though relatively low ($\beta = 3.45, p < .001$) and the model fit the data well ($\chi^2 = 29.80, p < .05, df = 16$; CFI = .97; RMSEA = .07, *n.s.*). Each dimension of relationship quality was examined separately in latent growth curve models predicting adolescent RRQ.

Change in mother-child closeness and conflict. As presented in Table 5 (Model B), significant associations were not found between mother-child closeness growth parameters and adolescent RRQ. Mother-child closeness had very low variability across the six time points and this model had poor fit to the data, and standard errors were very large. As presented in Table 6 (Model B), the association between the intercept parameter (i.e., final level) for mother-child conflict and positive RRQ was negative and marginally significant. A higher level of conflict at age 15 with mothers was marginally associated with lower positive qualities in adolescent's romantic relationships. Mother-child conflict models predicting adolescent RRQ fit the data well; however, no significant variance in positive RRQ was explained by change in mother-child conflict.

Adolescent-perceived mother relationship quality. The second research question added the adolescents' perception of mother-adolescent relationship quality as a potential intervening variable between change in relationship quality and adolescent RRQ. Results are presented in Table 5 Models C1 (including perceived hostility) and C2 (including perceived warmth). Neither the slope nor intercept for mother-child closeness predicted adolescent RRQ. Associations were not found among the closeness growth parameters and hostility or warmth. Accounting for the closeness growth parameters, there was a significant positive association between adolescent-perceived hostility and negative RRQ; more maternal hostility predicted more negative RRQ (see Model C1). This model explained marginally significant variance in negative RRQ. In model C2, adolescent-perceived maternal warmth did not predict RRQ.

Next, models were fit with adolescent perceived maternal warmth and hostility as potential intervening variables between the conflict growth parameters and RRQ outcomes (see Table 6, Model C). The overall fit of the model to the data was adequate. A steeper increase in

conflict was associated with lower maternal warmth and higher maternal hostility. Accounting for growth in conflict, significant associations were not found between maternal warmth or hostility and RRQ. Thus, this model shows that mother-perceived change in conflict is associated with adolescent-perceived maternal warmth and hostility, but none of the parent-adolescent variables, from other mother's or adolescent's perspective, predict RRQ.

Gender moderation. Multi-group analyses were conducted to determine whether paths significantly differed for male and female adolescents. Gender differences were first explored for effects of the slope and intercept for mother-child closeness, in a model which included both mother- and adolescent-perceived relationship quality predicting RRQ (but excluding direct paths between the growth parameters and warmth/hostility). Results of delta chi-square tests indicated that one path significantly differed for males and females. Accounting for growth and intercept of maternal closeness, the association between maternal hostility and negative RRQ was significant and stronger for females ($\beta = .41, p < .001$), but not significant for males ($\beta = .10, p = .31; \Delta\chi^2 = 6.47, p < .05$). Significant variance in negative RRQ was explained for females ($R^2 = .17, p < .05$) but not for males ($R^2 = .02, p = .55$). Significant gender differences were not found among associations between growth parameters and RRQ, nor were they found for associations between growth parameters and maternal warmth and hostility.

Next, we tested whether gender conditioned paths in the model including mother-child conflict growth parameters and maternal warmth and hostility predicting adolescent RRQ. Delta chi-square tests revealed that two paths were significantly different between adolescent-perceived relationship quality and RRQ. Accounting for growth and intercept for maternal conflict, the path from maternal warmth to positive RRQ was significant and stronger for females ($\beta = .44, p < .001$) and non-significant among males ($\beta = -.02, p = .89; \Delta\chi^2 = 8.15, p <$

.05). Additionally, the path from hostility to negative RRQ was significant and stronger among females ($\beta = .41, p < .001$) and non-significant among males ($\beta = .09, p = .50; \Delta\chi^2 = 5.91, p < .05$). However, significant variance in RRQ was not explained in the female group (positive RRQ: $R^2 = .21, p = .14$; negative RRQ: $R^2 = .29, p = .76$). Two additional sub-models were fit to test for gender differences in associations between growth parameters and warmth/hostility. In a sub-model including conflict growth parameters predicting maternal warmth, significant differences were not found. Similarly, gender differences were not found for paths between the conflict growth parameters and hostility. Finally, a significant indirect effect was found in the female group such that the conflict intercept operated through maternal hostility in its effect on negative RRQ ($\beta = .14, p < .05$; total indirect effect: $\beta = .15, p < .05$).

Father-Adolescent Relationship Quality

We fit a parallel set of models for fathers examining first whether father-adolescent relationship quality (i.e., closeness and conflict) changed over time and whether that change predicted adolescent RRQ at age 15. Both closeness and conflict changed significantly between first grade and age 15. Father-child closeness declined over time ($\beta = -1.55, p < .001$), closeness at age 15 (i.e., intercept) was significantly different from 0 ($\beta = 5.99, p < .001$) and model fit was adequate ($\chi^2 = 30.69, p < .05, df = 16$; CFI = .96; RMSEA = .07, $p = .16$). In contrast, father-child conflict increased over time ($\beta = .95, p < .001$), conflict at age 15 was again significantly different from 0 ($\beta = 3.07, p < .001$), and model fit was marginally adequate ($\chi^2 = 44.65, p < .001, df = 16$; CFI = .93; RMSEA = .10, $p = .01$). Each dimension of relationship quality was examined in latent growth curve models predicting adolescent RRQ.

Change in father-child closeness and conflict. As presented in Table 7 Model B, neither the slope nor intercept parameters for father-child closeness significantly predicted

positive or negative adolescent RRQ. Similarly, the effect of change in father-child conflict on adolescent RRQ was tested, but significant associations were not found (see Table 8, Model B). Father-child closeness had very low variability across the six time points and standard errors were very large in father-child closeness and conflict models.

Adolescent-perceived father relationship quality. Although neither father-child closeness nor conflict growth parameters were significantly associated with adolescent RRQ, we explored whether these change dimensions were associated with adolescents' perceptions of father-child relationship quality and whether adolescent-perceived relationship quality predicted RRQ. First, the effects of closeness on RRQ through paternal warmth and hostility were explored (see Table 7, Models C1 and C2). As presented in Model C1, changes in closeness did not predict adolescent's perceptions of father-child relationship quality. However, accounting for change in closeness, hostility was associated with negative RRQ. This model had good fit to the data but did not explain significant variance in the RRQ variables. Next, as presented in Model C2, we found that changes in closeness were not associated with paternal warmth. However, paternal warmth was marginally associated with positive RRQ. Similar to Model C1, Model C2 fit the data well but did not explain significant variance in the outcome variables.

Next, a model was fit to test whether adolescent perceived parental relationship quality was an intervening variable between father-child conflict and adolescent RRQ (see Table 8, Model C). The slope parameter significantly predicted paternal hostility such that a sharper increase in conflict with fathers was associated with more adolescent-perceived paternal hostility. RRQ was not significantly predicted by paternal warmth, hostility, or the conflict growth parameters. Significant variance was not explained in paternal hostility, warmth or RRQ; model fit was adequate.

Gender moderation. Multi-group analyses were conducted to determine whether gender conditioned any paths in either father-child closeness or conflict models. Gender differences were first explored for father-child closeness (Models C1 and C2, Table 7). Convergence problems emerged when constraining paths across groups, so sub-models were tested. In a model including closeness growth parameters and adolescent-perceived relationship quality as predictors of RRQ (but not including direct paths from the growth parameters to hostility and warmth), results of delta chi-square tests indicated that two paths significantly differed between males and females. The association between paternal warmth and positive RRQ was significant and stronger for females ($\beta = .51, p < .001$) but non-significant among males ($\beta = -.10, p = .34; \Delta\chi^2 = 17.87, p < .05$). The association between paternal hostility and negative RRQ was significant and stronger for females ($\beta = .37, p < .001$) and non-significant for males ($\beta = -.08, p = .47; \Delta\chi^2 = 9.30, p < .05$). Significant variance in positive RRQ, but not negative RRQ, was explained in this model, but only among females (positive: $R^2 = .39, p < .05$). Another sub-model was fit testing for gender differences in paths between closeness growth parameters and warmth and hostility; however, differences were not found between the male and female groups.

Testing for gender differences in the model including father-child conflict growth parameters predicting paternal warmth, hostility and adolescent RRQ also resulted in convergence problems, so sub-models were tested. In a model including conflict growth parameters and adolescent-perceived relationship quality as predictors of RRQ (excluding the direct paths between the growth parameters and warmth/hostility), delta chi-square tests revealed that two paths significantly differed for males and females between adolescent-perceived paternal relationship quality and RRQ. Almost identical to the findings presented for the model that included the father-child closeness growth parameters, the path from paternal warmth to

positive RRQ was significantly stronger among females ($\beta = .48, p < .001$) compared to males ($\beta = -.08, p = .45; \Delta\chi^2 = 14.06, p < .05$). Finally, the path from hostility to negative RRQ was significant and stronger for females ($\beta = .38, p < .001$) and non-significant among males ($\beta = -.08, p = .46; \Delta\chi^2 = 11.04, p < .05$). Furthermore, significant variance in both RRQ variables was explained only in the female group (positive RRQ: $R^2 = .22, p < .01$; negative RRQ: $R^2 = .15, p < .05$). The last sub-model, fit with the conflict growth parameters predicting warmth and hostility, did not yield gender differences.

Discussion

Adolescent development scholars have called for attention to life stages preceding and following adolescence while accounting for the role of close relationships in individual development (Johnson et al., 2011; Reis et al., 2000). Therefore, the current study aimed to examine change in parent-child relationship quality across middle childhood into adolescence in predicting adolescent romantic outcomes. In line with other research on changing parent-child relationship quality across childhood and adolescence, (De Goede et al., 2012; Fuligni & Eccles, 1993; McGue et al., 2005), conflict with parents significantly increased and closeness significantly decreased between first grade and age 15. We expected that these changes would have either congruent or compensatory effects on adolescent RRQ. We also hypothesized that these changes may operate through adolescent-perceived parental relationship quality and could differ for males and females. Results indicate that adolescents' perceptions of the parent-child relationship are more influential for RRQ in middle adolescence than parent-reported changes across childhood and early adolescence. Thus, only partial support was found for congruence between parent-adolescent and adolescent dating relationships in that adolescents' perceptions of parents generalized to their dating relationships. More perceived negativity with parents was

associated with more negative romantic relationship quality whereas more warmth with parents was linked to more positive romantic relationship quality, but only among female adolescents. Results are interpreted within the context of existing research and within both social cognitive and life course theoretical frameworks (Bandura, 1986; Elder et al., 2003).

Change in Parent-Child Relationship Quality

Parents reported relatively high closeness and low conflict across time points, and there was little variation in parent-reported closeness scores over time. It was expected that growth in parent-child closeness and conflict would predict adolescent RRQ by either generalizing to the romantic relationship or demonstrating compensatory effects. Changes in closeness with mothers and fathers did not predict adolescent RRQ. It is possible that low variability in the closeness change trajectories for both mothers and fathers limited the predictive power of the growth parameters. Another possible explanation is that warm, supportive, and close relationships with parents do not have a strong effect on middle adolescent romantic relationships. In comparison to early or late adolescence, middle adolescence is when closeness with parents is lowest and conflict peaks (De Goede et al., 2012; McGue et al., 2005). Additionally, adolescents seek individuation from parents during this stage in the life course (Grotevant & Cooper, 1986; Paikoff & Brooks-Gunn, 1991) and likely turn to friends and dating partners for emotional support (Beyers & Seiffge-Krenke, 2007), making closeness within the parent-child relationship less influential.

The current study investigated both positive and negative dimensions of the parent-child relationship. We found that a higher final level of conflict with mothers was associated with lower positive adolescent RRQ at age 15. However, variance in positive RRQ was not explained by growth in conflict, so this result must be interpreted with caution. If significant variance in

positive RRQ had been explained by high conflict with mothers, this would be consistent with existing studies showing that more negativity in the mother-child relationship is associated with less supportive relationships with romantic partners (Beyers & Seffge-Krenke, 2007). Emotional intensity and conflict with mothers is typically higher than with fathers (Laursen & Collins, 1994; Scaramella & Conger, 2004; Seiffge-Krenke et al., 2010) which is consistent with this finding. An increase in conflict in the parent-child relationship during adolescence might be normative and perhaps even beneficial for re-negotiating hierarchies and promoting adolescent autonomy development (Fuligni & Eccles, 1993; Grotevant & Cooper, 1986). In general, results from this study provide some indication that increasing conflict within this sample is not entirely maladaptive for the qualities of adolescent romantic relationships.

Two important distinctions exist between the current study and the similar longitudinal studies of parent-child relationship change (Beyers & Seffge-Krenke, 2007; De Goede et al., 2012; Longmore et al., 2009). First, we tested the effects of change in parent-child relationships on middle adolescent RRQ rather than late adolescent or early adult romantic relationship quality. The lack of associations may be due to how under-developed these romantic relationships are especially for males at age 15. For instance, emotional intimacy, provision of support, and conflict management may not occur until relationships are more developed, perhaps not until late adolescence or early adulthood (Connolly & McIsaac, 2011; Giordano, Manning, Longmore, & Flanigan, 2012). Second, we investigated change in relationship quality from the parents' perspective rather than the adolescents' perception of relational change as done in prior research (Beyers & Seffge-Krenke, 2007; De Goede et al., 2012; Longmore et al., 2009). A strength of the present study is the examination of several dimensions of parent-child relationship quality from multiple informants.

Adolescent Perceptions of Parent-Child Relationship Quality

Because adolescents' perceptions of the parent-child relationship may be a more proximal factor for their own outcomes (McElhaney, Porter, Thompson, & Allen, 2008) we explored adolescents' perceptions of positive and negative parent-adolescent relationship qualities as intervening variables in the associations between parent-perceived change in relationship quality and adolescent RRQ at age 15. Although indirect effects were not found in the full sample, several associations were found between parent-child growth parameters and adolescent-perceived parent-child relationship quality.

Decreases in closeness with mothers or fathers were not associated with adolescent-perceived parental warmth and hostility indicating that adolescents' perceptions are not associated with parent's reports of decreasing closeness in the relationship. Turning to conflict with parents, faster increases in mother- and father-child conflict was associated with adolescents' perception of more hostility. Additionally, an increase in conflict with mothers was associated with less adolescent-perceived warmth in the relationship. Changes in conflict may be more noticeable and salient for adolescent's perceptions of relationship quality, whereas declines in closeness may be more subtle from the adolescent's perspective. Overall, results indicate that for relationships with mothers and fathers, adolescents' perceptions are associated in some ways with the history of relationship change in conflict across childhood and early adolescence. These associations are in line with other research indicating that parent and adolescent perceptions of parent-child relationship quality are correlated (Crosnoe & Elder, 2004; Kan et al., 2008; McElhaney et al., 2008).

Consistent with other research, the most robust associations between parent relationship quality and adolescent outcomes occur when these reports come from the same informant

(McElhaney et al., 2008; Sweeting, 2001). It is noteworthy that most of the associations found in the current study were between adolescents' perception of parental relationship quality and the positive and negative qualities in dating relationships in middle adolescence. These results support life course theory (Elder et al., 2003; Johnson et al., 2011) that adolescents' lives are linked to people in their close relationships, but that their perception of the relationship is the more influential factor for their development. It is interesting to note that perceptions of maternal warmth were not linked to adolescent RRQ when accounting for changes in mother-child closeness, but that this association was found in the mother-child conflict model, and in the father-child closeness and conflict models. Although this should be interpreted with caution due to large standard errors, this finding is consistent with other work indicating that negative qualities in parent-child relationships are associated with adolescent outcomes more so than positive qualities (Kerpelman et al., 2013). Importantly, several associations between adolescent-perceived parent-child relationship quality and RRQ were conditioned by gender.

Gender Differences

Because adolescent relationships with both parents and romantic partners can be influenced by gender (Giordano et al., 2010; McKinney & Renk, 2011; Seiffge-Krenke et al., 2010), the third research question focused on whether gender differences existed in the associations between parent-child relationship quality and adolescent RRQ. Gender differences were found for associations between adolescents' perceptions of parent-child relationship quality and RRQ. Overall, results suggest that females' romantic relationships are more strongly influenced by their perceptions of parent-child relationship quality compared to males.

Specifically, we found stronger associations between warmth and positive RRQ and between hostility and negative RRQ among females. In partial support of the second hypothesis,

a significant indirect effect was found for females such that a higher final level of conflict at age 15 operated through adolescent perceived maternal hostility in its effect on negative RRQ. This indicates that only with mothers did change (i.e., an estimated trajectory ending at a higher level at age 15) affect female adolescents' negative RRQ and only through their perceptions of maternal hostility. Similar to gender differences found in mother-child models, significantly stronger effects were found for female adolescents between paternal warmth and positive RRQ as well as between hostility and negative RRQ. When variance was explained in RRQ across the closeness and conflict models, it was significant only for females. Although results should be interpreted with caution, this study provides some evidence that females and males are affected differently by their perceptions of parent-child relationship quality. Gender socialization can lead to important individual differences that can influence close relationships and females' individual development is affected more by interpersonal relationships (Gilligan, 1982). The current findings are similar to other research indicating that female adolescent outcomes tend to be influenced more by family relationships than are male adolescent outcomes. For example, Beyers and Seiffge-Krenke (2007) found that females were more strongly influenced by family relationships and their individual well-being (internalizing) was also more strongly affected by negative dynamics in peer and romantic relationships. The results of the current study also are consistent with other studies of adolescent RRQ (e.g., Giordano et al., 2010) and support congruence across relationships, but only for female adolescents. Taken together, adolescents' perceptions of the quality of their relationships with their parents appear to be more influential than mothers' or fathers' perceptions of the parent-child relationship in predicting concurrent RRQ for females prior to and into adolescence.

Study Limitations

Although this study has notable strengths, results of the present study should be interpreted with caution due to several limitations. First, although the sample is representative of the areas of data collection in the United States, the sample is not nationally representative. The sample is comprised of relatively high functioning families (e.g., higher income, mostly two-parent homes); therefore, our findings are not generalizable to all adolescents in the United States. The low-risk sample likely led to limited variability in all measures of relationship quality in that participants reported relatively low levels of conflict, hostility and negative RRQ, and relatively high levels of closeness, warmth and positive RRQ. Particularly within a relatively small sample, low variability in parent-reported relationship quality composite variables may have led to issues when fitting latent growth models and using growth parameters as predictors of adolescent outcomes.

Other methodological limitations were discovered during model testing which limit conclusions regarding the model estimates. First, we encountered possible multicollinearity among predictor and control variables when fit as structural equation models predicting adolescent RRQ. When concurrent relationship quality control variables were included in models several associations were significant and variance in RRQ explained by hypothesized predictors (see Appendix A, Tables A1-4). This is likely due to these control variables passing their effects through associations with predictor variables (growth parameters) on to the outcomes of interest. Results of analyses may not be trustworthy estimations of the effects within the population given poor model fit and large standard errors in the associations between growth parameters and RRQ. This was particularly an issue with mother-child closeness which had very poor model fit likely due to low variability in each indicator of the latent growth curve.

One final methodological limitation to note was the small sample size which prohibited four-way comparisons among models testing the effects of mother-daughter, mother-son, father-daughter, and father-son relationship quality on adolescent RRQ. Gender differences were tested indicating that, among female adolescents, associations between parent-child relationship quality and RRQ are stronger than for male adolescents. Comparisons of the strengths of associations were tested for mother-son and mother-daughter relationships as well as father-son and father-daughter relationships. However, we cannot conclude that associations are stronger/weaker for mother-daughter and mother-son relationships compared to father-daughter and father-son relationships due to the inability to fit multi-level models simultaneously within this sample.

In addition to methodological issues, non-significant associations may have occurred due to the nature of romantic relationships during middle adolescence. The analytic sample of adolescents in dating relationships at the age 15 assessment period is only 20% of the original sample. Considering the prevalence of romantic relationships across adolescence, this figure is relatively low. For instance, Carver and colleagues (2003), using a nationally representative sample, found that by age 15, 50% of adolescents reported having romantic relationships. Furthermore, the average length of the dating relationships in this sample was approximately three months, somewhat typical of adolescents between the ages of 14-16 (Connolly & McIsaac, 2011; Seiffge-Krenke, 2003). However, it is possible that the qualities assessed by the RRQ questionnaire were only superficially developed within middle adolescents' relationships. For example, intimacy, support, criticism and conflict may not occur until later in relationships or until more mature relationships in late adolescence (Connolly & McIsaac, 2011).

Relationships change as adolescents develop into adults when relationship duration is longer and both positive and negative qualities are more developed (Giordano et al., 2012).

Although both positive and negative relationship quality had excellent internal reliability, the negative RRQ was positively skewed such that adolescents reported very low conflict, criticism, and antagonism in their dating relationship. Skewness of this variable was not remedied by transformations. Romantic relationships at age 15 may not be sufficiently developed in comparison to late adolescent romantic relationships, so conflict and criticism are relatively superficial aspects of the relationship (Connolly & McIsaac, 2011). Additionally, adolescents who are engaged in romantic relationships by age 15 are likely to be more socially skilled than their non-dating counterparts (Simpson, Collins, & Salvatore, 2011) so it is possible that the quality of their relationships was influenced by social competence. Altogether, these limitations illuminate factors about the nature of both adolescent RRQ and changes in the parent-child relationship that suggest important next steps for future research.

Future Directions

It is important to consider the complexities of the contexts in which individuals develop across the life course (Elder et al., 2003; Johnson et al., 2011). Limitations associated with the relatively low-risk nature of our sample highlight the need for diverse samples of adolescents to understand a variety of social influences on relationships. One consideration is that family structure is becoming increasingly complex (Brown, 2010) and instability in structure could represent a turning point for adolescent relationships in general that transfers to romantic relationships (Rutter, 1996). Although family structure was a non-significant control variable in the present study, this should continue to be explored as a predictor of adolescent relationship qualities. Another potential influence could be from sibling relationships who can model relationship qualities that may be linked to adolescents' dating relationships (Connelly & McIsaac, 2011). Future studies should continue to explore influences of family structure (and

instability in structure), sibling relationships and peer relationships on adolescent romantic outcomes.

We acknowledge along with other scholars (e.g., Crosnoe and Elder, 2004; DeGoede et al., 2009; Simpson et al., 2011), that adolescence is a time when the peer group has considerable influence on adolescent socialization. In fact, during middle adolescence, dating relationships are likely to be embedded in peer groups (Connolly & McIsaac, 2011). Because adolescents who are involved in dating relationships by age 15 may have different social characteristics compared to non-dating peers (Simpson et al., 2011), it is prudent to explore interpersonal predictors of dating involvement. Future research with the current sample could test whether romantic involvement at age 15 may be predicted by change in parent-adolescent relationships and whether the qualities of close friendships generalize to adolescent romantic relationships.

Another consideration for future research is to better account for the specific nature of romantic relationships during middle adolescence. Specifically, these relationships tend to be relatively short in duration so it is important to study salient qualities of these relationships that may not be assessed by measures of romantic relationship quality typically used for late adolescent or early adult romantic relationships (Connolly & McIsaac, 2011). For example, measures assessing communication, interactions and activities with dating partners would be important for understanding the nature of these early relationships (Tuggle, Kerpelman, & Pittman, 2014). Finally, improvements in measurement of parent-child relationship change could involve measures of the child's perspective of the relationship from late childhood to adolescence. Selecting salient relationship qualities that are likely to vary across time may offer new insights into how change in the parent-adolescent relationship influences subsequent adolescent romantic relationship outcomes.

Conclusions

It is critical to continue investigating the qualities of adolescent relationships because individual development is shaped by social contexts and close relationships with others (Elder et al., 2003), and this has implications for individual well-being and functioning in adolescence and adulthood (Beyers & Seiffge-Krenke, 2007; Collins et al., 2009; Joyner & Udry, 2000).

Although research has investigated parent-adolescent relationship change across adolescence (e.g., Beyers & Seiffge-Krenke, 2007; De Goede et al., 2012), this study explored change across the life stage prior to and into adolescence. Using longitudinal data, growth trajectories for both mother and father-child relationship quality were mostly unrelated to middle adolescents' RRQ, indicating that linear trajectories of parent-child relationship quality do not generalize or demonstrate congruence with other adolescent relationships. Although longitudinal studies of parent-child relationship change are important for studying developmental trajectories of relationships across the life course (Elder et al., 2003), some findings in the current study indicate that concurrent perceptions of the relationship (from the adolescent's point of view) are more influential for adolescent outcomes. It would be beneficial to conduct studies of longitudinal change including both parent and child perspectives.

Among female adolescents, more recent interactions with parents may shape cognitive frameworks and perceptions of other relationships (Bandura, 1986; 2011). In line with existing developmental theory and research (Beyers & Seiffge-Krenke, 2007; Gilligan, 1982) females appear to be influenced more by the qualities of close relationships in comparison to males. Results of this study are in support of life course theory in that individual beliefs, behaviors, and experiences are linked to other close relationships and are important factors in shaping individual development (Johnson et al., 2011). As posited by Gilligan (1982), females develop a sense of

self in connection to others which may affect relationships across the life course. This is important for researchers and practitioners to consider, as males and females appear to experience relationships differently.

Table 1. Descriptive statistics for all predictor and outcome variables. (n = 178)

<i>Variables</i>	<i>M</i>	<i>SD</i>
Mother-child closeness 1	37.98	2.50
Mother-child closeness 2	37.19	2.82
Mother-child closeness 3	36.96	3.33
Mother-child closeness 4	36.56	3.25
Mother-child closeness 5	36.18	3.56
Mother-child closeness 6	33.86	4.44

Mother-child conflict 1	15.21	5.87
Mother-child conflict 2	16.13	6.05
Mother-child conflict 3	15.94	5.91
Mother-child conflict 4	16.37	5.99
Mother-child conflict 5	16.77	6.20
Mother-child conflict 6	17.54	6.46
Mother warmth	28.32	5.79
Mother hostility	11.95	3.21
Father-child closeness 1	36.60	3.30
Father-child closeness 2	35.15	4.05
Father-child closeness 3	34.75	4.35
Father-child closeness 4	34.11	4.25
Father-child closeness 5	34.18	4.44
Father-child closeness 6	31.76	4.99
Father-child conflict 1	14.27	4.99
Father-child conflict 2	14.98	5.11
Father-child conflict 3	15.18	5.47
Father-child conflict 4	15.92	5.40
Father-child conflict 5	16.34	5.78
Father-child conflict 6	16.98	5.97
Father warmth	26.45	7.27
Father hostility	11.36	3.14
Positive RRQ	54.47	9.55
Negative RRQ	12.78	6.09

Note: Scale ranges are as follows: Mother- and father-child closeness (12-40) and conflict (7-35). Mother and father warmth (9-36) and hostility (8-32). Adolescent positive RRQ (28-70) and negative RRQ (9-45).

Table 2. Correlations among parent-child relationship quality variables at age 15.

	1	2	3	4
1. Mother-child closeness	-			
2. Mother-child conflict	-.45**	-		
3. Father-child closeness	.38**	-.43**	-	
4. Father-child conflict	-.16	.58**	-.54**	-

** $p < .01$

Table 3. Correlations among mother-child variables and adolescent RRQ ($n = 178$).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Mother-child closeness 1	-															
2. Mother-child closeness 2	.48**	-														
3. Mother-child closeness 3	.51**	.66**	-													
4. Mother-child closeness 4	.46**	.59**	.64**	-												
5. Mother-child closeness 5	.45**	.55**	.59**	.64**	-											
6. Mother-child closeness 6	.27**	.34**	.38**	.46**	.48**	-										
7. Mother-child conflict 1	-.35**	-.26**	-.29**	-.27**	-.31**	-.17**	-									
8. Mother-child conflict 2	-.23**	-.33**	-.28**	-.25**	-.30**	-.18**	.66**	-								
9. Mother-child conflict 3	-.24**	-.28**	-.34**	-.29**	-.31**	-.19**	.67**	.77**	-							
10. Mother-child conflict 4	-.21**	-.27**	-.29**	-.35**	-.27**	-.18**	.63**	.67**	.75**	-						
11. Mother-child conflict 5	-.21**	-.27**	-.29**	-.30**	-.40**	-.20**	.60**	.65**	.69**	.71**	-					
12. Mother-child conflict 6	-.14**	-.18**	-.19**	-.20**	-.21**	-.35**	.48**	.56**	.57**	.59**	.62**	-				
13. Mother warmth	.02	.11	.13	.12	.24**	.21**	-.09	-.17**	-.12	-.12	-.18*	-.16	-			
14. Mother hostility	-.14	-.05	-.10	-.14	-.13	-.08	.13	.08	.17*	.13	.15	.15*	-.45**	-		
15. Positive RRQ	.10	.03	.11	.18*	.10	.05	-.12	-.14	-.09	-.16*	-.23**	-.02	.20**	-.05	-	
16. Negative RRQ	-.04	-.20**	-.24**	-.08	-.08	-.03	.05	.09	.03	.07	.11	.04	-.09	.26**	-.06	-

* $p < .05$; ** $p < .01$.

Table 4. Correlations among father-child variables and adolescent RRQ ($n = 178$).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Father-child closeness 1	-															
2. Father-child closeness 2	.55**	-														
3. Father-child closeness 3	.55**	.64**	-													
4. Father-child closeness 4	.51**	.66**	.70**	-												
5. Father-child closeness 5	.46**	.56**	.62**	.62**	-											
6. Father-child closeness 6	.39**	.48**	.45**	.55**	.55**	-										
7. Father-child conflict 1	-.32**	-.26**	-.26**	-.25**	-.25**	-.21**	-									
8. Father-child conflict 2	-.23**	-.34**	-.27**	-.28**	-.26**	-.19**	.58**	-								
9. Father-child conflict 3	-.25**	-.33**	-.40**	-.35**	-.35**	-.28**	.55**	.68**	-							
10. Father-child conflict 4	-.23**	-.30**	-.32**	-.36**	-.34**	-.30**	.52**	.64**	.70**	-						
11. Father-child conflict 5	-.26**	.30**	-.33**	-.32**	-.47**	-.32**	.49**	.60**	.68**	.72**	-					
12. Father-child conflict 6	-.18**	-.21	-.17**	-.23**	-.28**	-.47**	.44**	.48**	.53**	.57**	.62**	-				
13. Father warmth	.08	.08	.25**	.22*	.04	.33**	-.02	-.17*	-.23**	-.22*	-.13	-.35**	-			
14. Father hostility	-.07	-.09	-.16	-.18*	-.13	-.15	.11	.12	.25**	.15	.14	.17*	-.32**	-		
15. Positive RRQ	.08	.16	.07	.05	.10	-.02	-.07	-.10	-.04	-.01	-.07	-.09	.17*	-.06	-	
16. Negative RRQ	-.15	-.16	-.16	-.11	-.16	-.05	.06	.14	.17	.09	.21*	.12	-.11	.20*	-.06	-

* $p < .05$; ** $p < .01$.

Table 5. Mother-child closeness models

	Model A				Model B				Model C1				Model C2			
	B	SE	β	R ²	B	SE	β	R ²	B	SE	β	R ²	SE	β	R ²	
Positive RRQ predicted by:				.02				.03				.02			.06	
Closeness intercept	.80	.46	.26†		.53	.73	.18		.51	.73	.17		.79	.90	.27	
Closeness slope	-8.60	.40	-.21		-1.92	13.48	-.05		-1.95	13.45	-.05		-10.86	19.95	-.27	
Maternal warmth													.42	.32	.26	
Maternal hostility									-.10	.23	-.03					
Negative RRQ predicted by:				.09*				.02				.08†			.03	
Closeness intercept	-.48	.30	-.25†		-.54	.50	-.29		-.45	.48	-.24		-.57	.60	-.30	
Closeness slope	3.88	.99	.15		4.84	9.22	.19		4.76	8.98	.18		6.67	13.25	.26	
Maternal warmth													-.13	.21	-.12	
Maternal hostility									.47	.14	.25**					
Closeness intercept predicted by				.49***												
Mother conflict	-.26	.06	-.53***													
Father conflict	.26	.06	.55***													
Father closeness	.32	.07	.56***													
Closeness slope predicted by:				.87*												
Mother conflict	-.03	.01	-.76***													
Father conflict	.02	.01	.57*													
Father closeness	.03	.01	.70*													
Warmth predicted by:															.35	
Closeness intercept													-.62	.93	-.35	
Closeness slope													20.95	18.63	.86	
Hostility predicted by:												.03				
Closeness intercept									-.14	.26	-.15					
Closeness slope									-.34	4.90	-.03					
Model fit statistics																
χ^2				137.31***				110.12***				114.12***			113.01***	
df				42				24				28			28	
CFI				.76				.76				.76			.77	
RMSEA				.11***				.14***				.13***			.13***	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 6. Mother-child conflict models

	Model A				Model B				Model C			
	B	SE	β	R ²	B	SE	β	R ²	B	SE	β	R ²
Positive RRQ predicted by:				.02				.03				.14
Conflict intercept	-.30	.17	-.17†		-.35	.18	-.19†		-.59	.89	-.30	
Conflict slope	1.13	2.42	.05		3.18	5.42	.11		35.74	81.29	.56	
Maternal warmth									.79	1.07	.48	
Maternal hostility									-.28	1.03	-.09	
Negative RRQ predicted by:				.10*				.01				.07†
Conflict intercept	.06	.11	.06		.10	.12	.09		.05	.41	.04	
Conflict slope	.54	1.50	.04		.21	3.52	.01		1.10	44.10	.03	
Maternal warmth									.07	.59	.06	
Maternal hostility									.50	.62	.26	
Conflict intercept predicted by:				.56***								
Mother closeness	-.40	.09	-.55***									
Father conflict	.49	.07	.59***									
Father closeness	-.05	.09	.13									
Conflict slope predicted by:				.67***								
Mother closeness	-.05	.01	-.55***									
Father conflict	.04	.01	.63***									
Father closeness	.01	.01	.13									
Warmth predicted by:												.55†
Conflict intercept									.23	.48	.19	
Conflict slope									-32.51	22.30	-.83*	
Hostility predicted by:												.37†
Conflict intercept									-.08	.21	-.12	
Conflict slope									14.41	8.15	.67**	
Model fit statistics												
χ^2			70.13				42.05*				50.32*	
<i>df</i>			43				24				33	
CFI			.96				.97				.97	
RMSEA			.06				.06				.05	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 7. Father-child closeness models

	Model A				Model B				Model C1				Model C2			
	B	SE	β	R ²	B	SE	β	R ²	B	SE	β	R ²	B	SE	β	R ²
Positive RRQ predicted by:				.01				.08				.09				.16
Closeness intercept	.27	.38	.14		1.00	.74	.53		.99	.74	.52		1.10	.93	.55	
Closeness slope	-1.59	5.31	-.07		-14.77	12.75	-.60		-14.83	12.99	-.59		-19.30	17.71	-.72	
Paternal warmth													.35	.20	.26†	
Paternal hostility									-.45	.27	-.07					
Negative RRQ predicted by:				.03				.04				.07				.05
Closeness intercept	-.39	.24	-.33		-.47	.38	-.39		-.41	.38	-.37		-.45	.40	-.37	
Closeness slope	3.21	3.20	.23		4.62	6.39	.29		5.02	6.37	.31		4.68	7.12	.28	
Paternal warmth													-.09	.09	-.08	
Paternal hostility									.35	.15	.18*					
Closeness intercept predicted by:				.44***												
Father conflict	-.46	.08	-.60***													
Mother conflict	.03	.09	.04													
Mother closeness	.32	.10	.28***													
Closeness slope predicted by:				.57**												
Father conflict	-.05	.01	-.71***													
Mother conflict	.02	.01	.22													
Mother closeness	.05	.01	.47***													
Warmth predicted by:																.15
Closeness intercept													-.12	.60	-.08	
Closeness slope													8.98	10.45	.46	
Hostility predicted by:												.03				
Closeness intercept									-.13	.18	-.21					
Closeness slope									.36	2.88	.04					
Model fit statistics																
χ^2			63.22*				34.83				37.31				46.22	
<i>df</i>			42				24				28				28	
CFI			.95				.97				.97				.95	
RMSEA			.05				.05				.04				.05	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 8. Father-child conflict models

	Model A				Model B				Model C			
	B	SE	β	R ²	B	SE	β	R ²	B	SE	β	R ²
Positive RRQ predicted by:				.00				.01				.06
Conflict intercept	-.12	.20	-.07		-.11	.22	-.07		-.76	2.65	-.44	
Conflict slope	1.22	2.99	.06		.08	3.57	.01		21.82	79.58	.59	
Paternal warmth									.50	1.09	.38	
Paternal hostility									-.17	.46	-.06	
Negative RRQ predicted by:				.02				.02				.07
Conflict intercept	.23	.13	.21		.19	.15	.18		-.16	1.60	-.14	
Conflict slope	-2.34	2.01	-.16		-.66	2.72	-.05		9.07	48.49	.38	
Paternal warmth									.11	.67	.13	
Paternal hostility									.26	.32	.13	
Conflict intercept predicted by:				.69***								
Father closeness	-.49	.08	-.49***									
Mother conflict	.52	.07	.61***									
Mother closeness	.39	.10	.32***									
Conflict slope predicted by:				.72***								
Father closeness	-.04	.01	-.50***									
Mother conflict	.04	.01	.56***									
Mother closeness	.01	.01	.10									
Warmth predicted by:												.63
Conflict intercept									1.26	1.77	.95	
Conflict slope									-41.39	44.84	-1.46	
Hostility predicted by:												.16
Conflict intercept									-.19	.23	-.34	
Conflict slope									8.07	5.12	.66†	
Model fit statistics												
χ^2			83.99***				53.54***					67.26***
<i>df</i>			43				24					33
CFI			.92				.93					.92
RMSEA			.07†				.08*					.07*

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1. Hypothesized latent growth model of parent-child relationship quality predicting age 15 romantic relationship quality.

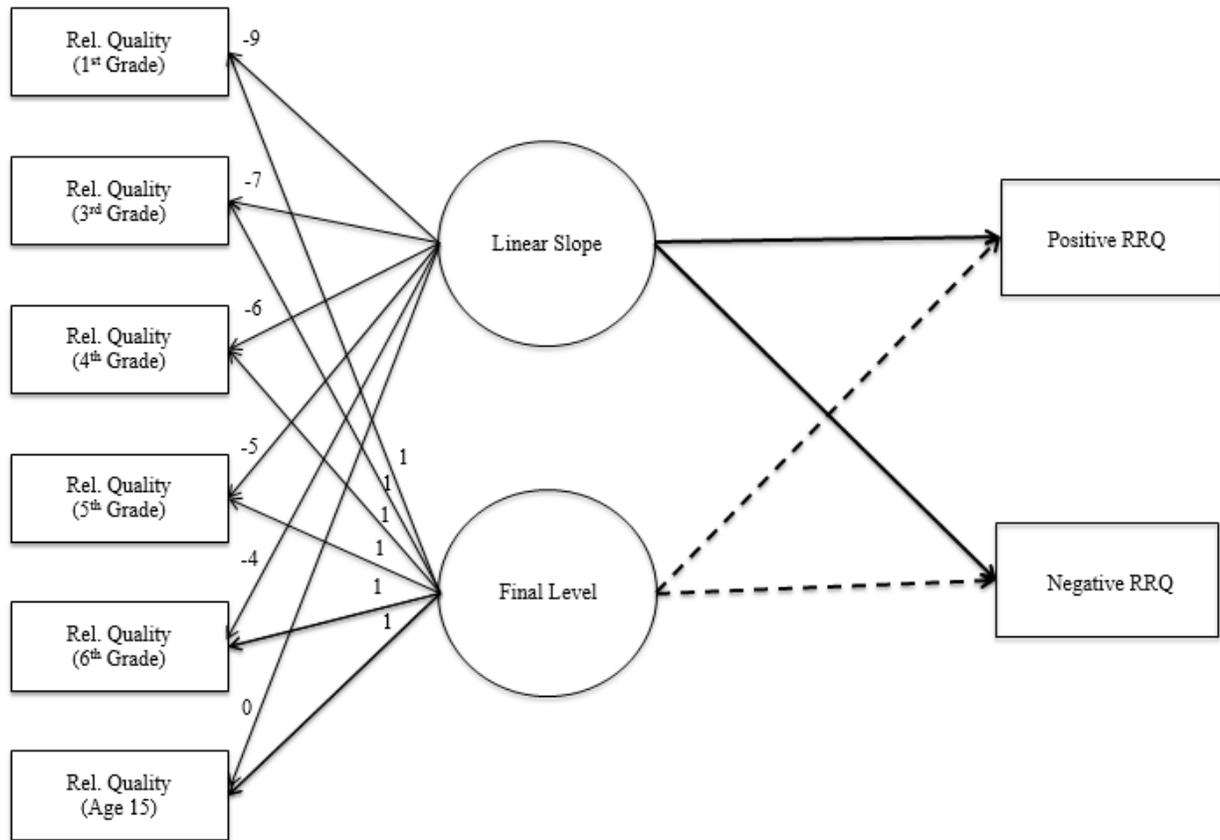
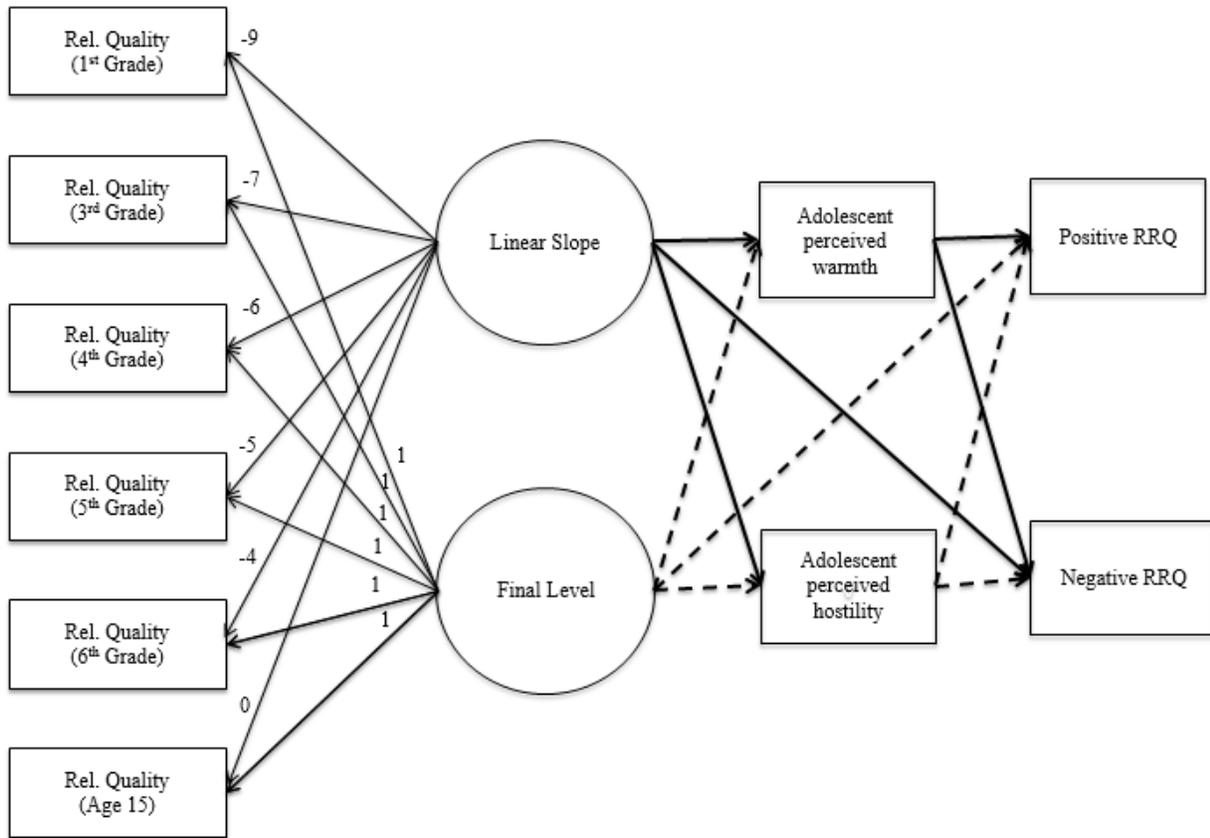


Figure 2. Hypothesized latent growth model of parent-child relationship quality predicting age 15 romantic relationship quality through adolescent-perceived parent-child relationship quality dimensions.



Appendix A

A number of issues were noted when initially fitting the models. These issues included poor fit for some of the models, low variability in the indicators of the latent growth parameters, large standard errors associated with the path coefficients, an overall lack of significant associations, and model convergence problems when testing indirect effects. Due to the small sample size, there also were concerns about power. Smaller models were tested to determine whether the small sample was contributing to some of the issues with the models. Several attempts at alternative analyses were made to determine whether there were effects of change in parent-child closeness/conflict on adolescent RRQ.

- When attempting to fit the full model including controls on the growth parameters, too much variability was explained by the concurrent relationship control variables. Fitting large models with controls on the closeness slope overtaxed to model and subsequently lost predictive power of the closeness growth parameter because a large, significant amount of variance in the slope was predicted by controls. This was also an issue testing for indirect effects; there were convergence issues in Mplus because of low variability in the closeness growth (slope) parameter. Therefore, models were fit excluding controls to test for indirect effects.
- Reduced submodels (e.g., mother/father change in closeness/conflict predicting positive and negative RRQ separately; mother/father change in closeness/conflict predicting adolescent perceived parental warmth and hostility separately) were tested to determine if the full model was masking individual paths among predictor and outcome variables. However, the closeness growth parameters were not significantly associated with adolescent perceived parental

relationship quality or RRQ in any of the smaller models. Only adolescent perceived parental warmth or hostility had significant associations with positive or negative RRQ, similar to the full models. Specifically, adolescents' perceptions of mother and father warmth was positively associated with positive RRQ and mother and father hostility was positively associated with adolescents' perceptions of negative RRQ.

- It was also explored whether concurrent levels of parent-reported closeness and conflict were associated with adolescent-perceived warmth and hostility and subsequently, positive and negative RRQ. However, for both mothers and fathers, there were no significant correlations between age 15 conflict or closeness and the romantic relationship outcomes. Path analysis models indicated that mother and father closeness at age 15 significantly predicted warmth and positive but not negative RRQ. Age 15 conflict with mothers and fathers was associated with hostility and hostility predicted negative but not positive RRQ. This indicates that current levels of relationship quality are associated with adolescents' perceptions and RRQ and will be explored in future work.
- Another alternative involved the removal of the first assessment period in 1st grade. This time point had the lowest variability for both mother- and father-child closeness. Furthermore, middle childhood (i.e., 3rd grade) may be an appropriate time to begin testing trajectories of change as others have done (e.g., Furman & Buhrmester, 1992). However, with this time point removed from closeness models, the models did not retain enough variability in the latent growth parameters and models predicting adolescent RRQ did not converge.
- Finally, a difference score was created by subtracting age 15 closeness from the 3rd grade closeness scores. This score was included as a predictor of adolescent RRQ in path analysis models simultaneously accounting for adolescent-perceived parental relationship quality

dimensions. The father-child closeness difference score had a significant association with positive RRQ ($\beta = .40, p < .05$) but not negative RRQ and explained only a marginally significant amount of variance in positive RRQ ($R^2 = .07, p = .07$). The mother-child closeness difference score was not a significant predictor of either positive or negative RRQ. Difference scores were also created for change in conflict with mothers and fathers. Neither mother- nor father-child conflict difference scores predicted adolescent RRQ, accounting for adolescent-perceived parental relationship quality.

Table A-1. Mother-child closeness full model.

	B	SE	β	R ²
Positive RRQ predicted by:				.07
Closeness intercept	1.70	3.46	.56	
Closeness slope	-32.20	78.63	-.67	
Maternal warmth	.74	1.06	.44	
Maternal hostility	.01	.43	.01	
Negative RRQ predicted by:				.08
Closeness intercept	-.63	1.95	-.33	
Closeness slope	8.83	44.46	.29	
Maternal warmth	-.03	.59	-.03	
Maternal hostility	.55	.27	.29*	
Closeness intercept predicted by:				.20**
Mother conflict	-.14	.05	-.30**	
Father conflict	.19	.06	.39	
Father closeness	.22	.06	.40***	
Closeness slope predicted by:				.15*
Mother conflict	-.01	.01	-.26*	
Father conflict	.01	.01	.21	
Father closeness	.01	.01	.33**	
Warmth predicted by:				.73**
Closeness intercept	-2.04	1.36	-1.12	
Closeness slope	49.18	23.93	1.68*	
Hostility predicted by:				.27**
Closeness intercept	.64	.40	.64	
Closeness slope	-16.14	6.31	-.99**	
Model fit statistics				
χ^2			173.74***	
<i>df</i>			57	
CFI			.75	
RMSEA			.11***	

* $p < .05$; ** $p < .01$; *** $p < .001$

Table A-2. Mother-child conflict full model.

	B	SE	β	R ²
Positive RRQ predicted by:				.07
Conflict intercept	-.27	.17	-.15	
Conflict slope	2.09	2.42	.10	
Maternal warmth	.35	.14	.21*	
Maternal hostility	.16	.25	.05	
Negative RRQ predicted by:				.08†
Conflict intercept	.06	.11	.05	
Conflict slope	-.29	1.57	-.02	
Maternal warmth	.05	.09	.04	
Maternal hostility	.52	.15	.27***	
Conflict intercept predicted by:				.55***
Mother closeness	-.39	.09	-.33***	
Father conflict	.48	.07	.57***	
Father closeness	-.06	.08	-.06	
Conflict slope predicted by:				.67***
Mother closeness	-.05	.01	-.55***	
Father conflict	.04	.01	.62***	
Father closeness	.01	.01	.11	
Warmth predicted by:				.10*
Conflict intercept	-.17	.11	-.16	
Conflict slope	-2.58	1.54	-.20†	
Hostility predicted by:				.06
Conflict intercept	.11	.06	.18†	
Conflict slope	.58	.84	.08	
Model fit statistics				
χ^2			115.29***	
<i>df</i>			58	
CFI			.92	
RMSEA			.07*	

† $p < .10$; * $p < .05$; *** $p < .001$

Table A-3. Father-child closeness full model.

	B	SE	β	R ²
Positive RRQ predicted by:				.03
Closeness intercept	.26	.38	.13	
Closeness slope	-2.75	5.77	-.11	
Paternal warmth	.21	.12	.16†	
Paternal hostility	-.03	.25	-.01	
Negative RRQ predicted by:				.13**
Closeness intercept	-.32	.23	-.26	
Closeness slope	2.70	3.37	.18	
Paternal warmth	-.03	.07	-.04	
Paternal hostility	.30	.15	.15*	
Closeness intercept predicted by:				.42***
Father conflict	-.42	.08	-.56***	
Mother conflict	-.01	.08	-.01	
Mother closeness	.30	.09	.27**	
Closeness slope predicted by:				.63***
Father conflict	-.04	.01	-.70***	
Mother conflict	.01	.01	.16	
Mother closeness	.04	.01	.50***	
Warmth predicted by:				.21*
Closeness intercept	-.21	.34	-.14	
Closeness slope	10.62	4.87	.57*	
Hostility predicted by:				.06
Closeness intercept	-.01	.13	-.01	
Closeness slope	-1.93	1.83	-.24	
Model fit statistics				
χ^2			93.17*	
<i>df</i>			65	
CFI			.94	
RMSEA			.05	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table A-4. Father-child conflict full model.

	B	SE	β	R ²
Positive RRQ predicted by:				.03
Conflict intercept	-.06	.19	-.04	
Conflict slope	1.55	2.93	.07	
Paternal warmth	.22	.11	.17*	
Paternal hostility	-.05	.25	-.02	
Negative RRQ predicted by:				.12**
Conflict intercept	.15	.12	.17	
Conflict slope	-1.51	1.85	-.10	
Paternal warmth	-.04	.07	-.05	
Paternal hostility	.29	.15	.15*	
Conflict intercept predicted by:				.66***
Father closeness	-.48	.08	-.49***	
Mother conflict	.49	.07	.59***	
Mother closeness	.31	.10	.26***	
Conflict slope predicted by:				.74***
Father closeness	-.04	.01	-.53***	
Mother conflict	.03	.01	.45***	
Mother closeness	-.01	.01	-.07	
Warmth predicted by:				.11†
Conflict intercept	-.14	.16	-.11	
Conflict slope	-4.46	2.45	-.25*	
Hostility predicted by:				.04
Conflict intercept	.09	.06	.16	
Conflict slope	.55	.96	.07	
Model fit statistics				
χ^2			120.31***	
<i>df</i>			66	
CFI			.90	
RMSEA			.06†	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

III. Paper 2 – Parent-adolescent relationship quality and dating experience as moderators of youth-focused relationship education outcomes.

Abstract

The present study explored how improvements from a youth-focused relationship education program vary depending on close relationship experiences. Specifically, parental support, parental psychological control, and level of dating experience (i.e., none, past, or current) were used as moderators of programmatic change. A total of 1,937 participants, ages 13 to 21, completed evaluations before and after participating in either a treatment ($n = 1393$) or control ($n = 544$) condition. Results indicated that participants in the treatment group had significantly reduced faulty relationship beliefs after exposure to the RS+ curriculum. Of these faulty beliefs, there was a significant interaction between parental psychological control and the *One and Only* belief. Participants who began the program with high endorsement of this belief and had more psychologically controlling parents reduced their endorsement of this belief more than participants with less psychologically controlling parents. Dating experience significantly moderated faulty relationship beliefs such that adolescents in current dating relationships had the highest endorsement of faulty beliefs at both pre- and posttest assessments. A treatment effect was found for changes in intentions to delay sexual activity with those receiving the program increasing these intentions; however, this change was not moderated by parental support, psychological control, or dating experience. Treatment effects were not found for conflict management or endorsement of psychological or physical dating aggression.

Parent-adolescent relationship quality and dating experience as moderators of youth-focused relationship education outcomes

Once regarded as trivial or superficial, adolescent romantic relationships have important implications for individual and interpersonal development (Collins, 2003; Furman & Shaffer, 2003; Giordano, Phelps, Manning, & Longmore, 2008; Manning, Giordano, & Longmore, 2006). However, youth often lack models of healthy romantic relationships, have idealistic expectations, and lack important knowledge and skills necessary to build healthy relationships (Adams & Williams, 2011; Connolly, Friedlander, Pepler, Craig, & Laporte, 2010; Ma, Pittman, Kerpelman, & Adler-Baeder, 2014). Youth-focused relationship education (YRE) programs address these issues by promoting relational competencies, improving conflict management and reducing faulty relationship beliefs (Adler-Baeder, Kerpelman, Schramm, Higginbotham, & Paulk, 2007; Kerpelman, Pittman, Adler-Baeder, Eryigit, & Paulk, 2009; Kerpelman et al., 2010), yet research is still needed to explore potential interpersonal moderators of these effects.

Experiences within close interpersonal relationships, particularly with parents and dating partners during adolescence, can shape developmental trajectories (Collins, Welsh, & Furman, 2009), as romantic relationships during adolescence have implications for relationship and family formation in adulthood (Madsen & Collins, 2011; Raley, Crissey, & Muller, 2007; Rauer et al., 2013). The development of adolescent romantic relationships can be understood from the social cognitive perspective (Bandura, 1986; 2011). Relationships with parents and romantic partners provide opportunities to develop a cognitive framework about what it means to be in a close relationship. From the experiences and knowledge learned in relationships with others, adolescents may be more or less receptive to the information presented in a formal relationship

education program. This study examines whether parent-adolescent relationship quality or dating experience moderate the outcomes of a large-scale YRE program.

Adolescent Romantic Relationships

Adolescent romantic relationships have developmental significance (Collins, 2003; Furman & Shaffer, 2003; Madsen & Collins, 2011) because they provide a context for identity formation and sexual exploration (Montgomery, 2005; Tolman & McClelland, 2011), can improve interpersonal skills (Barber & Eccles, 2003), and influence academic achievement (Giordano et al., 2008). However, there are also negative outcomes associated with romantic relationships such as dating partner aggression, depression (Banyard & Cross, 2008) and consequences associated with having unprotected sex such as sexually transmitted infections and unintended pregnancy (Bouchey & Furman, 2003). Although progress has been made in understanding adolescent romantic relationships, continued attention to preventing or reducing negative consequences and promoting healthy relationships during adolescence is needed.

In middle adolescence, involvement in romantic relationships increases; by the time adolescents reach age 18, 70% have experienced a romantic relationship (Carver, Joyner, & Udry, 2003). Typically, adolescents learn how to begin and maintain romantic relationships from viewing other relationships or from their own experiences (Adams & Williams, 2011). However, relationship models adolescents have may not provide the best examples and many individuals lack knowledge and skills needed to have healthy relationships that include effective conflict management, positive relationship quality (e.g., support, trust), and the absence of abusive behaviors (Adams & Williams, 2011; Collins et al., 2009; Connolly et al., 2010). Recent focus on both the short-term and long-term effects of adolescent romantic relationships (Banyard & Cross, 2008; De Goede et al., 2012; Madsen & Collins, 2011) has led to the development of

curricula and programs that educate high school-aged youth about healthy romantic relationships (e.g., Pearson, 2007/2013).

Youth-Focused Relationship Education

During high school, a majority of adolescents gain experience with romantic relationships, yet many hold idealistic expectations for romantic partners and few receive direct education about how to form, maintain, and end relationships (Adams & Miller, 2011; Carver et al., 2003; Ma et al., 2014). Accordingly, relationship education programs targeting high school-aged youth has increased in recent years (e.g., Adler-Baeder et al., 2007; Gardner, Giese, & Parrott, 2004). Within these YRE programs, a range of outcomes are targeted by various curricula. This study focuses on the evaluation of *Relationship Smarts Plus* (RS+; Pearson, 2007/2013), a research validated curriculum that contains age-appropriate material for youth from diverse backgrounds in grades 8-12. Content of RS+ covers a range of topics to improve adolescent relationship knowledge and skills. Specifically, RS+ lessons provide information aimed to improve conflict management skills and reduce faulty relationship beliefs by clarifying misconceptions about love and relationships. Lessons also clarify risky relationship behaviors such as dating aggression and sexual behavior in dating relationships. Taken together, these targeted outcomes are associated with healthier relationship knowledge and skills (Adler-Baeder et al., 2007; Kerpelman et al., 2009) and are included as program outcomes in this study.

An important component of healthy romantic relationships is the ability to manage conflict constructively (Buhrmester, Furman, Wittenberg, & Reis, 1988). This competency is targeted in YRE programs by teaching youth constructive ways to communicate, cope with anger, and manage disagreements with dating partners (Kerpelman et al., 2009; Pearson, 2007). Adolescent relationship competence, including constructively managing conflict, is associated

with several indicators of well-being, including less depression and anxiety and improved peer relationship quality (Buhrmester, 1990; Collins et al., 2009). Conflict management is clearly important for adolescent romantic relationships and is expected to improve after exposure to a YRE program.

To some extent, adolescents hold unrealistic, faulty, or idealistic expectations for romantic relationships due to their developing social cognitive skills and limited experience (Ma et al., 2014; Montgomery, 2005; Steinberg, 2007). When relationship experiences match ideal relational expectations, positive outcomes likely follow, but frustration and disappointment ensue when these expectations are not met (Collins, 2003). From a social cognitive perspective (Bandura, 1986; 2011), adolescents' beliefs about partners, love, and dating can influence dating behavior so it is important to provide accurate information about dating and reduce misconceptions or unrealistic beliefs within YRE programs. Examples of unrealistic beliefs include "love will be enough to make a relationship work" or "there is only one person meant for me to be with." In relationship education studies, adolescents tend to enter the program with faulty beliefs about dating relationships but these beliefs are remediated by the YRE program (Adler-Baeder et al., 2007; Gardner et al., 2004; Kerpelman et al., 2009; 2010; Ma et al., 2014).

Another important cognitive aspect of romantic relationships are the attitudes adolescents hold about dating aggression. Dating aggression affects nearly a quarter of youth in dating relationships, can be physical (e.g., hit, push) and/or psychological (e.g., threaten, insult) and is associated with a variety of negative outcomes for youth including depression, physical health complaints, and substance use (Connolly et al., 2010; Haynie et al., 2013). Although related, psychological aggression is distinct from physical aggression and more common (Haynie et al., 2013; RTI International, 2012) and attitudes about physical versus psychological aggression are

differentially predicted by variables such as adolescents' parent and friend relationship quality, and self-esteem (Whitaker & Kerpelman, 2015). Attitudes that are accepting of relational aggression are predictive of relationally violent behaviors (Connolly et al., 2010) and these attitudes are targeted in YRE programs. Results indicate that YRE curricula may reduce adolescents' use of verbal aggression and violent behaviors in dating relationships (Antle, Sullivan, Dryden, Karam, & Barbee, 2011; Gardner et al., 2004; Kerpelman et al., 2009); the current investigation will focus on reductions in endorsement of physical and psychological dating aggression.

In addition to attitudes about relationship aggression, attitudes about sexual behavior also matter for adolescent dating relationships. Adolescent romantic relationships differ from platonic peer relationships in that there is greater emotional intensity, expressions of affection, and potential for engagement in sexual activity (Collins, 2003). Among adolescents who have sex, most engage in sexual behavior with romantic partners rather than in casual "hook up" relationships (Manning, Longmore, & Giordano, 2005). Therefore, learning about healthy romantic relationships is clearly applicable for navigating sexual experiences in relationships. Delaying sexual activity is a skill targeted in sexual health interventions as these intentions are associated with less risky sexual behaviors (e.g., later sexual debut, fewer sexual partners; Kirby, 2007; McElwain, Kerpelman, & Pittman, 2015). The importance of delaying sexual intimacy in relationships until a solid relationship foundation exists is addressed by the RS+ curriculum. Furthermore, other important skills and knowledge are presented in RS+ lessons about communication skills, setting personal boundaries, and establishing commitment in a relationship before having sex. The few studies that directly assessed whether YRE programs are effective in improving adolescents' intentions to delay sexual activity produce mixed results. For example,

Gardner et al. (2004) found an effect of treatment on intentions to resist sexual activity that was marginally significant, but Morrison, Adler-Baeder, and Bub, (2015) found no effects of treatment condition on this attitude. Because intentions to delay sexual activity may be different for males and females, as well as sexually experienced compared to sexually inexperienced adolescents (Peterson & Hyde, 2011), it is important to consider sexual experience (sexual experience is defined as ever had sexual intercourse yes or no) and gender. Given the different findings in the literature, the present study includes adolescents' intentions to delay sexual activity as one of its focal outcomes.

Taken together, conflict management and specific attitudes about dating relationships (i.e., sex, aggression, and faulty beliefs) can positively and negatively influence adolescent outcomes (Barber & Eccles, 2003; Bouchey & Furman, 2003; Buhrmester, 1990; Haynie et al., 2013; McElwain et al., 2015). Recent research indicates YRE is associated with reduced faulty relationship beliefs and relational aggression, improved conflict management, (Adler-Baeder et al., 2007; Kerpelman et al., 2009; 2010) and increased intentions to delay sexual activity (Gardner et al., 2004). YRE programs clearly have promising outcomes, but are they equally effective for all participants?

Moderators of Youth-Focused Relationship Education Outcomes

Research indicates that the outcomes for YRE programs vary in some ways for adolescent participants and variability has been explained by some demographic, contextual, and individual moderators (Kerpelman et al., 2008; 2010; Ma et al., 2014). For instance, after participating in a YRE program, improvements in conflict management skills were greatest for low SES, and minority youth, but adolescents from single-parent homes benefited the least from the program (Kerpelman et al., 2010). Adolescents who endorse an information-gathering style

of identity exploration are more open to the content of the curriculum and experience greater changes in desired program outcomes (Kerpelman et al., 2008). Classroom context also matters, as faulty relationship beliefs held by adolescents are influenced by classroom social climate (i.e., whether peers held similarly faulty beliefs; Ma et al., 2014). These studies indicate that treatment effects are conditional in some cases, yet to our knowledge, there are no studies addressing interpersonal factors that might moderate targeted outcomes of YRE programs.

One important interpersonal factor to examine is how relationships with parents affect adolescents' views about romantic relationships and the capacity to benefit from relationship education. Adolescents are in the process of constructing schemas for how intimate relationships operate, and parents typically are the first major models for relationships with whom adolescents have the most experience (Reis, Collins, & Berscheid, 2000). Relationships with parents lay the foundation for other relationships by forming cognitive representations of expected behavior (Bandura, 2011; Furman & Simon, 1999; Reis et al., 2000). Research indicates that the quality of parent-child relationships is linked to the quality of adolescent romantic relationships (De Goede et al., 2009), suggesting that relationship qualities generalize from one type of relationship to another (Furman & Simon, 1999). However, research has yet to take an applied approach to understanding the implications of parent-child relationship quality for investigating differences in YRE program outcomes. Therefore, our focus is on two dimensions of the parent-child relationship, parental support and psychological control, that are strongly associated with adolescent well-being (Barber & Harmon, 2002; Longmore, Eng, Giordano & Manning, 2009) and have the potential to shape how adolescents explore information about healthy dating relationships provided in a YRE program (Kerpelman et al., 2013).

Supportive relationships with parents matter for a variety of adolescent outcomes including dating relationships, sexual behavior, and internalizing/externalizing behaviors (Barber & Harmon, 2002; De Goede et al., 2009; Kerpelman et al., 2013). From positive and supportive exchanges with parents, adolescents learn that relationships can be beneficial and rewarding (Conger, Cui, Bryant, & Elder, 2000). Adolescents are more likely to discuss personal matters, such as dating relationships, with a parent who is warm, nurturing, and supportive (Aspy et al., 2007). Furthermore, parental support is linked to behaviors relevant to content delivered in the RS+ curriculum such as sexual behavior and dating relationships. For example, parental support is associated with adolescents' experiences of support in romantic relationships (Conger et al., 2000; De Goede et al., 2009) and supportive parenting is associated with delayed sexual debut (Aspy et al., 2007; Kerpelman et al., 2013). Having a supportive parent may influence an adolescent's interest, openness, and engagement in a relationship education program. In a related line of research, parent involvement in sexual health educational programs is associated with improved program outcomes above and beyond the outcomes of control groups without parental involvement (Blake, Simkin, Ledsky, Perkins & Calabrese, 2001). Although parents may not be directly involved in a YRE program, supportiveness is one aspect of the parent-adolescent relationship that might matter for YRE program outcomes.

Whereas parental support is linked to positive youth outcomes, parental psychological control is documented to be particularly detrimental to adolescent well-being. Psychological control involves parenting that is manipulative, constraining, and intrusive (Barber & Harmon, 2002). This type of parenting interferes with adolescents' development of autonomy by inhibiting exploration, independent thinking, and self-discovery (Barber & Harmon, 2002; Oudekerk, Allen, Hessel, & Molloy, 2014). Not only do youth with psychologically controlling

parents engage in less identity exploration, they also have lower academic achievement (Barber, 1996). This psychological inhibition appears to affect adolescents as learners and would likely impact what they gain from an educational intervention program. Further, psychological control is linked to adolescents' risky sexual behavior and greater endorsement of attitudes about relational aggression (Kerpelman et al., 2013), indicating that parental psychological control may be relevant for the specific outcomes of a YRE program.

Another potential moderator worth exploring is whether or not an adolescent has been involved in dating relationships. An adolescent's understanding of the RS+ curriculum might vary depending on dating experience because one's emotional and cognitive frameworks are influenced by experiences with relationships (Bandura, 2011; Reis et al., 2000). Adolescents who have never experienced a romantic relationship may be disinterested, have difficulty connecting with the curriculum content, or alternatively, may be open to information about a novel type of relationship (Furman & Simon, 1999). Learning about healthy relationships may also be received differently depending on whether one is reflecting on a current versus a past romantic relationship. To our knowledge, research on the effectiveness of YRE programs has yet to address whether dating experience matters for targeted program outcomes; thus, the present study aims to explore this subject.

Previous research indicates that several variables are associated with adolescents' relationship education outcomes and these variables will be used as controls in the current study. Participant age is commonly controlled because with age comes more experience with dating relationships (Carver et al., 2003). Participant gender is associated with baseline levels of YRE targeted outcomes in some cases (Kerpelman et al., 2009). Additionally, participants from various family structures experience gains from the program differently and racial/ethnic status

also has been associated with some outcomes of relationship education. For example, Kerpeleman et al., (2010) found that adolescents from single parent households experienced less of a reduction in faulty relationship beliefs and Adler-Baeder et al (2007) found that African American youth engage in more aggressive conflict resolution strategies. Therefore, we will examine outcomes of a YRE program while controlling for age, sex, ethnicity, and family structure.

The Present Study

To better understand the nuances regarding the effectiveness of YRE programs, the current study has two major goals. First, we will compare treatment and control groups on the outcomes of conflict management, expectations to delay sexual activity, faulty relationship beliefs, and dating aggression attitudes. Second, three potential moderators of program outcomes will be explored for the treatment group: parental support, parental psychological control, and adolescent experience with romantic relationships. The following research questions and attending hypotheses will be addressed:

- 1) What are the effects of a YRE program on adolescents' conflict management, faulty relationship beliefs, attitudes endorsing dating aggression, and intentions to delay sexual activity?

H1: The treatment group, but not the control group, will show a significant change in the expected direction for each of the targeted outcomes from pre- to posttest. Compared to the control group, the RS+ treatment group will have higher conflict management and intentions to delay sexual activity scores at posttest, and lower endorsement of dating aggression attitudes (both psychological and physical) and faulty relationship beliefs scores at posttest.

2) Does parental support or psychological control moderate change in program outcomes?

H2a: Adolescents who report higher parental support will show greater pre to post program change than adolescents with lower parental support.

H2b: Adolescents who report having a more psychologically controlling parent will show less pre to post program change than adolescents who report having a less psychologically controlling parent.

3) Does dating experience moderate these outcomes? Does having no dating experience, past-only dating experience, or current dating experience matter for differences in relationship education outcomes? The moderation tests based on dating experience are exploratory in nature due to a lack of research addressing associations between dating experience and YRE implementation or outcomes; therefore, no specific hypotheses are posed.

Method

Sample

The present study used pre- and posttest evaluation data from the Project Year Four of the Healthy Couples, Healthy Children: Targeting Youth (HCHCTY) project (Kerpelman et al., 2009). A total of 1,937 participants completed evaluations before and after participating in either a treatment ($n = 1393$) or control group ($n = 544$). Participants' ages ranged from 13 to 21 ($M = 15.6$, $SD = .95$). The sample was fairly evenly distributed by gender (47% male, 53% female) and ethnically diverse with 51% African American, 41% European American, 3% Hispanic, 1% Asian American and 1% Native American participants. Participants were in 9th (26%), 10th (58%), 11th (11%), and 12th (5%) grades at the time of the program evaluation. In terms of dating experience, 36% reported having a dating relationship in the past that lasted more than a month and 16% reported having no dating experience. At the time of the study, 48% were currently

dating someone. Due to the short-lived nature of adolescent romantic relationships, one month was used to determine involvement in a dating relationship (Collins, 2003). Participants in the treatment group were significantly older $t(1868) = 3.87, p < .001$. The proportion of participants who were currently dating $\chi^2(1, N = 1855) = 13.13, p < .001$ and who were non-European American $\chi^2(1, N = 1868) = 158.86, p < .001$, were significantly higher in the treatment group than the control group.

Procedure

The present study employed secondary analysis of data gathered from the fourth project year (i.e., cohort 4) of a large youth-focused relationship education project. After schools were assigned to treatment or control conditions, teachers received a 2-day training for the curriculum and evaluation protocol and were supported by the HCHCTY project staff during the Spring 2009 semester. In the treatment classes, RS+ lessons were taught during a six week period within regularly scheduled class periods. All teachers, treatment and control, received pre- and posttest materials contained in individualized envelopes labeled with their students' names who were identified on surveys only by the student's unique identification number. Consent/assent forms were signed by parents and adolescents prior to data collection. Pre-tests were given in class on the day before starting the curriculum (Treatment condition) or at the beginning of Spring semester 2009 (Control condition). Posttests were completed in class the day after the curriculum was complete (Treatment condition) or six weeks after the pre-test (Control condition). When pre- and posttest data collections were completed, surveys were mailed in a pre-addressed, postage-paid envelop to the researchers.

Measures

The following measures assessed outcomes the RS+ curriculum was expected to influence, including conflict management, faulty relationship beliefs, physical and psychological dating aggression attitudes, and intentions to delay sexual activity collected at both pre- and post-test. Additional measures were collected at pre-test including demographic variables, dating experience, parental support, and parental psychological control. All measures are described below. With the exception of control variables, all other variables were created as an average composite score.

Conflict management. Five items from the Buhrmester, et al. (1988) interpersonal competence scale assessed conflict management. This subscale was developed as an 8 item measure but shortened using a factor analysis in an independent sample of college students. The five item subscale has comparable reliability (8-item $\alpha = .74$, 5-item $\alpha = .78$) and is highly correlated with the 8-item subscale ($r = .92$; see Kerpeleman et al., 2009). Example items are, “I am able to deal with disagreements openly and directly” and “I can work out ‘everyday’ problems with a partner.” Participants responded on a scale ranging from “1 = Strongly disagree” to “5 = Strongly agree” with higher scores reflecting greater perceived conflict management. Reliability was good (pre-test: $\alpha = .78$; posttest: $\alpha = .83$).

Faulty relationship beliefs. Two subscales from the Cobb, Larson, and Watson (2003) faulty relationship beliefs scale assessed two faulty relationship beliefs. The four items of the first subscale assessed restrictive beliefs that only one ideal mate exists for each person. An example One and Only item is, “There is only one true love out there who is right for me to marry.” The second subscale included four items which captured the idea that love should “trump” all other factors in the decision to marry. An example Love is Enough item is, “In the

end, our feelings of love should be enough to sustain a happy marriage.” All items were answered on a scale ranging from “1 = Strongly Disagree” to “5 = Strongly Agree” with higher scores representative of more faulty beliefs. Reliability was acceptable for the One and Only faulty belief at pre-test ($\alpha = .66$) and posttest ($\alpha = .72$) and reliability for the Love is Enough faulty belief was good (pre-test: $\alpha = .76$; posttest: $\alpha = .78$).

Dating aggression attitudes. Endorsement of dating aggression was assessed using seven physical dating aggression attitudes items and four psychological dating aggression attitudes items, respectively (adapted from Foshee, 1996). Using the stem “how acceptable would the following behaviors be for a person if they were really angry with their partner?” participants responded on a 4-point Likert-type scale (1 = Never acceptable; 4 = Always acceptable). A sample item for physically aggressive behavior is, “slamming the partner against a wall” and a sample item for psychologically aggressive behavior is “threatening to hurt a partner.” Higher scores indicate greater endorsement of aggression in dating relationships. Reliability for psychological aggression attitudes was good (pre-test: $\alpha = .76$; post-test: $\alpha = .77$). Reliability for physical aggression attitudes was excellent (pre-test: $\alpha = .93$; post-test: $\alpha = .94$).

Intentions to delay sexual activity. Two items from an evaluation of a relationship and marriage curriculum (Gardner et al., 2004) measured adolescents’ intentions to delay sexual activity. Items used the stem: “In future dating relationships, I plan to: ‘Wait to have sex until after I really get to know the person I am dating’; ‘Wait to have sex until I really feel emotionally close to my partner.’” Responses ranged from “1 = strongly disagree” to “5 = strongly agree” with higher scores indicating greater intentions to delay sexual activity in relationships. Reliability for the two item composite was good (pre-test: $\alpha = .76$; posttest: $\alpha = .81$)

Parental support. The Quality of Relationships Inventory (QRI; Pierce, Sarason, & Sarason, 1991) assessed adolescents' perceptions of available social support from parents at the pre-test assessment. The seven-item scale was reduced to five items selected based on a prior factor analysis conducted by Pittman and Kerpelman (personal communication, January 20, 2015) with a sample of college students ($\alpha = .83$; accounted for 94% of the variance in the 7-item scale). Responses ranged on a 4-point Likert-type scale (1 = Not at all to 4 = Very much) with higher scores indicating more parental support. An example item is, "How comfortable are you turning to a parent figure for help with problems?" Reliability was very good at pre-test ($\alpha = .86$)

Parental psychological control. The Psychological Control Scale—Youth Self-Report (PCS-YSR; Barber, 1996) assessed parental psychological control. Five items were selected based on a prior factor analysis conducted by Pittman and Kerpelman (personal communication, January 20, 2015) with a college student sample ($\alpha = .85$; accounted for 95% of the variance in the 8-item scale). Sample items include "My parents (parent figures) are people who: (a) change the subject whenever I talk, (b) often interrupt me." Response options ranged from 1 = "not like them (their parents)" to 3 = "a lot like them." Higher scores indicate greater parental psychological control. Reliability was good at pre-test ($\alpha = .76$)

Dating experience. Adolescents reported dating experience with yes/no responses to two items that asked: "Are you currently dating (going out) with someone?" and "Have you ever had a dating relationship (going out) that lasted a month or more?" Response options were coded yes = 1 and no = 0. Three groups, never dated ($n = 305$), dated in the past ($n = 660$), and currently dating ($n = 885$) were created to test moderation of program effects using multi-group analyses.

Demographic control variables. Gender was coded male = 0, female = 1 and age was coded in years. The sample was primarily European American (41%) and African American

(51%). Due to the small proportion of other ethnicities in the sample (8%), race was coded European American = 0, Non-European American = 1. For family structure, two dummy-coded variables were created: single parent (1 = single parent; 0 = not single parent) and stepfamily (1 = stepfamily; 0 = not stepfamily); 2-parent intact families were the reference group as these three groups have been used as controls in prior work (Adler-Baeder et al., 2007).

Analytic Plan

Path analysis in MPlus (Version 7; Muthén & Muthén, 2009) was used to determine whether outcome variables were associated with treatment/control membership, controlling for pretest and control variables. Each outcome of the relationship education curriculum was predicted in a separate model, similar to other evaluation studies of YRE programs (e.g., Kerpelman et al., 2009). First, each posttest outcome variable, in some cases represented by more than one variable (e.g., psychological and physical aggression attitudes), was regressed on the corresponding pre-test variable(s) with control variables included in each model. The effect of treatment was entered in the regression as a dichotomous variable, with group status coded treatment = 1, control = 0. Paired sample t-tests were conducted to confirm mean change between pre- and posttest assessments for each outcome variable among the treatment and control groups. Independent sample t-tests were used to confirm whether treatment and control groups scored similarly on pre-test variables.

To test for moderation by the parenting variables, interaction terms were created using the parental support variable and the parental psychological control variable with each of the pre-test targeted program outcome variables. Then, each posttest outcome variable was regressed on the pre-test variable, the pre-test parenting variable and the interaction term with the corresponding pre-test parenting variable and pre-test outcome variable. For instance, to test moderation of

parental support with improvement in conflict management, T2 conflict management would be regressed on T1 conflict management, T1 parental support, and T1 parental support x T1 conflict management. To test dating experience as a moderator, multi-group analysis was conducted comparing constrained and freely estimated means for the three dating experience categories (none, current, past) followed by delta-chi square tests to confirm moderation. A significant decrement to the chi square statistic indicated groups significantly differ.

Results

Descriptive statistics for each variable at each wave of data collection for treatment and control subsamples are presented in Table 1. Participants reported low endorsement of both dating aggression attitudes, and relatively high levels of conflict management skills, faulty relationship beliefs, and intentions to delay sexual activity. Adolescents reported moderate levels of parental psychological control ($M = 1.77$, $SD = .55$) and moderately high levels of parental support ($M = 2.83$, $SD = .84$). Intercorrelations of pre-test, posttest, and parental moderator variables are presented in Table 2. Associations among the moderator and program outcome variables were in the expected direction. Age, gender, and ethnicity were controlled but family structure was not associated with any of the outcomes and was excluded from the models.

Treatment and Moderation Effects

Results are presented separately by outcome. Treatment effects were indicated when the treatment group was significantly different than the control group at posttest in the hypothesized direction, and when pre- to posttest mean change was confirmed for the treatment group. Moderation was tested only when treatment effects were found.

Conflict management. The path analysis model controlling for pre-test conflict management and control variables showed a marginally significant effect for treatment (one-

tailed test is significant at $p = .04$) indicating that participants in the treatment group had higher posttest conflict management scores compared to the control group (see Table 3). Although the groups did not differ at pretest, paired sample t-tests indicated that neither the treatment nor the control group showed a significant change in conflict management scores from pre- to posttest (See Table 1; a modest drop in the control group mean score at posttest accounts for the marginal significant effect for treatment in the path analysis). Thus, hypothesis 1 was not supported for conflict management and moderation was not tested.

Faulty relationship beliefs. Both faulty relationship beliefs were included in a path analysis model in which the posttest belief was predicted by the corresponding pretest variable and controls. There was a significant treatment effect for One and Only and Love is Enough, such that those in the treatment group had lower posttest endorsement of both beliefs than those in the control group (see Table 3). Treatment and control groups did not differ at pretest on either of the faulty relationship beliefs and, as predicted, paired sample t-tests indicated that the treatment group but not the control group showed a significant change (decrease) in faulty relationships beliefs from pre- to posttest.

Moderation tests were conducted with each faulty relationships belief, as they met the criteria of a significant treatment effect. Interactions tested with parental support as the moderator were non-significant. For parental psychological control, only the interaction term with the One and Only faulty relationship belief was significant ($\beta = -.14, p < .01$). This interaction was plotted using values one and a half standard deviations above and below the mean for both the moderator (parental psychological control; High: 2.59; Low: 0.95) and the program variable (One and Only; High: 4.80; Low: 2.00). A prototypical plot calculated when all values are statistically controlled is displayed in Figure 1. The distance between the posttest

scores when one started off low in the belief of One and Only under the condition of high versus low parental psychological control indicated that those in the low parental psychological control condition did not change their belief in One and Only. Those in the high parental psychological control condition experienced a slight increase in their endorsement of this belief. A significant difference was found for those who started high in their One and Only beliefs. In this case, the group with high parental psychological control lowered this beliefs more than the group with low parental psychological control ($\Delta\text{mean} = .34$).

Dating experience also was examined as a moderator of pre- to post-treatment change in faulty relationship beliefs. Estimated means for posttest assessments were constrained across groups and compared two at a time to identify significant differences across the dating groups in estimated change in each outcome. Delta chi-square tests were used to determine whether there was a significant decrement in model fit when means were constrained, indicating that the two estimated means were significantly different. Changes in the One and Only belief significantly differed across dating experience groups (see Figure 2A). Specifically, significant differences were found between none and current ($\Delta\chi^2 = 15.31$), and past and current experience groups ($\Delta\chi^2 = 13.12$). No differences were found between none and past experience ($\Delta\chi^2 = 5.34$). Currently dating participants had the highest endorsement of this belief prior to participating in the program and although their endorsement of this belief declined at posttest, it remained higher than past and no dating experience groups. Both past and no dating experience groups declined in their endorsement of this belief between assessments, but those with no dating experience had higher pre- and slightly lower posttest scores than those with past dating experience. For the faulty belief Love is Enough, changes significantly differed between none and current experience groups ($\Delta\chi^2 = 16.23$) and between past and current dating experience groups ($\Delta\chi^2 = 14.83$; see

Figure 2B). No significant differences were found between none and past dating experience groups ($\Delta\chi^2 = .65$). Currently dating participants had higher endorsement of the Love is Enough belief at both pre- and posttest compared to adolescents with past or no dating experience.

Dating aggression attitudes. The effect of treatment was not significant for attitudes endorsing psychological or physical dating aggression at posttest assessment period. Within the treatment group, mean scores of endorsement of psychological dating aggression attitudes declined significantly, but did not change in the control group; however at pretest, the treatment group had a higher mean than the control group for psychological aggression attitudes (see Table 1). For physical dating aggression attitudes, there also was a significant difference at pretest between treatment and control groups; however, mean levels of physical dating aggression attitudes did not change between assessment periods for either the treatment or control group. Thus, results indicate that although attitudes endorsing psychological dating aggression declined within the treatment group, this decline could not be credited to exposure to RS+.

As is typical for adolescent responses to dating aggression measures, social desirability may lead to a floor effect when testing for change in these attitudes (Lewis & Fremouw, 2001). That is, both dating aggression attitudinal variables were skewed (and could not be corrected through transformation) such that a substantial percentage of participants had the lowest endorsement of physical and psychological dating aggression possible (i.e., selected “never acceptable” in response to all questions). Specifically, 42% in the treatment group and 50% in the control group for psychological aggression, and 69% in the treatment group and 78% in the control group for physical aggression, had no possibility for improvement (according to the measures used) due to exposure to the RS+ curriculum as their answers for all items were the lowest possible at pretest. To investigate treatment effects for those who had some potential for

change in these attitudes, the sample was reduced to participants who endorsed at least one item on each pretest dating aggression subscale indicating they thought the aggressive behavior was at least slightly acceptable (e.g., responded “rarely acceptable” or higher to at least one item on each subscale). This reduced the sample for both treatment and control groups (see Table 1).

Within the reduced sample, path analysis models including pretest variables and controls, the effect of treatment was non-significant for psychological dating aggression ($\beta = -.06, p = .24$) and physical dating aggression attitudes ($\beta = -.03, p = .65$). For psychological dating aggression treatment and control groups did not differ at pretest, but treatment and control groups did differ at pretest for physical dating aggression (the treatment group was higher than the control group). Paired sample t-tests revealed significant declines in endorsement of psychological and physical dating aggression in the treatment group, as well as in the control group (see Table 1). Although dating aggression attitudes declined over time, there was no effect that could be attributed to exposure to the RS+ program. Moderation was not tested for the dating aggression attitudes.

Intentions to delay sexual activity. The final outcome examined was intentions to delay sexual activity. Treatment and control groups did not differ in their mean scores at pretest. In a path analysis model, controlling for pre-test intentions to delay sexual activity and control variables, there was a significant effect for treatment on the posttest attitude such that the treatment condition was linked to higher intentions at posttest to delay sexual activity in relationships (See Table 3). Paired sample t-tests indicated that this intention had marginally significant change (i.e., increase) between pre- and posttest for the treatment $t(911) = -1.82, p = .07$, but not the control group $t(417) = -.08, p = .43$. Interaction terms were non-significant for both parental support ($\beta = -.03, p = .41$) and psychological control ($\beta = -.04, p = .42$). Dating experience did not moderate changes in this belief.

Because intentions to delay sexual activity may be different for sexually experienced compared to sexually inexperienced adolescents, additional analyses examined whether there were differences based on sexual experience (sexual experience is defined as ever had sexual intercourse yes or no). The full groups of sexually experienced and sexually inexperienced adolescents were compared and no change between pre- and posttest was found. Because it is possible that intentions to delay sex may be further qualified by gender, we also tested for differences according to the interaction of gender and sexual experience. Two significant changes were found in the treatment group only. Sexually experienced male participants showed a significant increase in their intentions to delay sexual activity $t(213) = -2.38, p = .02$, as did sexually inexperienced females $t(271) = -1.99, p = .05$. None of the subgroups within the control group showed pre- to posttest change (see Table 1). However, path analysis models revealed non-significant treatment effects for either sexually experienced male or sexually inexperienced females when compared to their control group counterparts (see Table 3).

Discussion

An important agenda for relationship education research involves exploring for whom YRE programs are most effective. The primary aim of the present study was to determine whether change in the target YRE outcomes were moderated by parental support, parental psychological control or dating experience. The attending hypothesis of the first research question was partially supported in that RS+ had a significant effect on treatment group changes in two faulty relationship beliefs and marginal change in intentions to delay sexual activity, whereas other outcomes did not show change associated with YRE. Adolescents with low endorsement of the One and Only faulty belief did not differ whether they reported parents who were more or less psychologically controlling. Counter to expectation, adolescents who began

the program with high endorsement of the One and Only faulty relationship belief and had more psychologically controlling parents changed more than their counterparts with less psychologically controlling parents. Parental support did not moderate changes in faulty relationship beliefs. Finally, dating experience was found to moderate change associated with the faulty relationship beliefs. All participants had a significant decline in their endorsement of both faulty beliefs, but those who were currently dating someone had the highest levels of each belief even after exposure to the RS+ curriculum. In sum, the RS+ curriculum was effective in changing some attitudes and these effects differed somewhat depending on parental psychological control and dating experience.

Treatment Effects

In support of the first hypothesis, adolescents taught the RS+ curriculum (Pearson, 2007/2013) reported reductions in the beliefs that there is only one person they are meant to be with, and love alone can sustain a relationship. Similar to other studies, the present study provides evidence that youth relationship education is effective in reducing faulty relationship beliefs (Adler-Baeder et al., 2007; Kerpelman et al., 2009; Gardner et al., 2004). The RS+ curriculum, which includes lessons focused on correcting misperceptions about love and relationships, appears to be effective in adjusting adolescents' beliefs about relationships. For the belief there is one and only person meant for you, youth are exposed to research that indicates people experience multiple romances before marriage and that it is possible to be attracted to more than one person. Importantly, correcting this misperception may help adolescents cope with romantic relationship dissolution. The Love is Enough idea is corrected by focusing on the many important characteristics of a relationship that are necessary to sustain a healthy romantic relationship (e.g. communication, trust, commitment, shared values; Pearson, 2007). This belief

is important for helping youth understand the qualities of a relationship necessary to sustain long-term committed relationships.

Contrary to other studies (Antle et al., 2011; Gardner et al., 2004; Kerpelman et al., 2009; 2010), we did not detect changes in conflict management. Although Kerpelman et al. (2009) found increases in conflict management skills across multiple assessment periods, participants in the current study had relatively high self-reported conflict management skills at pretest and did not report significant changes after participation in the RS+ program. A potential explanation for this finding is that participants may have overestimated their conflict management abilities, limiting the capacity for change across assessment periods. This is a measurement issue common to program evaluation utilizing traditional pretest-posttest study design (Pratt, McGuigan, & Katzev, 2000). It is possible that changes in conflict management may occur among adolescents who have varying levels of social competence which points to an area for future research. Adolescents who have lower social competence may benefit more from lessons focused on important relationship skills such as communication and conflict management.

Participants in the current study had relatively high intentions to delay sexual activity at pretest and the treatment group, but not the control group, had marginally significant increases in this intention due to exposure to participation in the program. This result is similar to that of Gardner et al. (2004) who also found marginally significant changes in intentions to wait to have sex with a dating partner after participating in a relationship education program. Although sexual refusal skills are not directly addressed, the RS+ curriculum teaches participants to examine personal values, build intimate relationships slowly, communicate with partners, and delay sexual activity in relationships (Pearson, 2007/2013). Partner communication in general and discussions about sexual delay are important for promoting individual sexual health (DiClemente

et al., 2001). Finally, it is interesting to note that significant increases in intentions to delay sexual activity occurred within smaller subgroups (e.g., non-virgin males and virgin females); however, there were no significant effects that could be attributed to the RS+ curriculum for the pre to posttest change for these subgroups. Because we found differences for males and females with differing levels of sexual experience, it would be of value for future research to explore nuanced changes based on individual characteristics that may matter for specific outcomes.

Of the dating aggression attitudes, only endorsement of psychological dating aggression declined within the treatment group, however in a path analysis model accounting for controls and missing data, change in posttest psychological dating aggression attitudes was not due to exposure to RS+. In general, participants had very low endorsement of psychological and physical dating aggression and had little room for improvement. Psychological dating aggression (i.e., threatening to hurt the partner, not letting the partner do things with other people) is possibly not recognized as always unacceptable and tends to be more common than physical dating aggression (Haynie et al., 2013; RTI International, 2012). However, endorsement of both types of dating aggression was quite low suggesting a floor effect that may have been due to both low occurrence and to socially desirable responding (Lewis & Fremouw, 2001). This would lead to limited potential for change regardless of the type of intervention. For this reason, we reduced the sample to adolescents who affirmed at least one item on each subscale. Although this reduced sample had greater potential for change and declines were found in both the treatment and control groups for both attitudes, these changes were not associated with the RS+ intervention. This is perhaps due to reasons outside the influence of the curriculum, such as the effects of maturation or becoming aware between assessments from other sources that dating aggression is unacceptable. Messages about dating aggression are important in relationship education

curricula; however, they may matter more when working with groups at higher risk for experiencing aggression in their dating relationships (e.g., delinquent youth; youth in foster care; Antle et al., 2011).

Parental Psychological Control and Support as Moderators of YRE Outcomes

A novel contribution in the present study is the exploration of how parenting could influence what adolescents learn from a YRE program. Previous studies of relationship education and family variables included family structure (e.g., single parent, stepfamily; Kerpelman et al., 2010) but not qualities of the parent-child relationship. A strength of the current study is that adolescents reported on specific aspects of the relationship quality with their parents. Adolescents' perceptions of the parent-child relationship matter for a variety of adolescent outcomes (Beyers & Seffge-Krenke, 2007; Kerpelman et al., 2013); however, of the two parental moderators, only parental psychological control influenced changes experienced from a YRE program. As illustrated by other research, psychological control interferes with adolescents' autonomy development and academic achievement (Barber & Harmon, 2002; Oudekerk et al., 2014). This study provides preliminary evidence that it also affects YRE program outcomes.

There was a significant interaction with parental psychological control and the One and Only faulty relationship belief. An important finding is that psychological control moderated differences in the One and Only faulty relationship belief such that high psychological control was associated with more change among participants who entered the program with high endorsement of the One and Only belief. Significant change did not occur for participants who began the program with low endorsement of this belief under the condition of high compared to low parental psychological control. For those with high endorsement of One and Only, these

beliefs were least consistent at pretest with the message of the curriculum. Adolescents with more psychologically controlling parents, compared to those with less psychologically controlling parents, may have less independent thinking, a weaker sense of autonomy, and lower confidence in their beliefs and reasoning (Barber, 1996; Oudekerk et al., 2014). These participants may have doubted their beliefs more than those with low psychologically controlling parents, thus showing greater increase in their acceptance of the curriculum messages delivered by a teacher who is an authority figure. Although counter to our expectation that adolescents with psychologically controlling parents would change less from the YRE program, this suggests that perhaps an effect of psychological control is that youths' beliefs can be influenced more easily by teachers providing information from a curriculum. This may reflect a superficial change in beliefs to align with an authority figure rather than a change based on self-reflection regarding the messages from RS+. Future research could explore this possibility. It may be that, parental psychological control operates differently according to whether a youth receives a message from an authority figure that is or is not consistent with their beliefs. Greater psychological control from a parent may be more likely to prompt the adolescent to be receptive to messages from an authority figure, regardless of whether they are benign or harmful.

Developmentally, adolescents strive for independence and autonomy so psychological control may exert a more potent effect on adolescent outcomes in comparison to positive parenting traits such as parental support. It was unexpected that parental support did not moderate changes in program outcomes. We hypothesized that more supportive parents provide adolescents with positive mental representations of relationships which may in turn encourage openness to lessons about healthy relationship knowledge and skills. However, irrespective of level of perceived support, participants experienced changes in faulty relationship beliefs and

intentions to delay sexual activity due to participation in the treatment group. This finding is similar to that of Kerpelman et al. (2013) indicating that psychological control has a more direct influence on adolescent outcomes than does parental support. Kerpelman et al. found that parental support operated indirectly through individual variables (e.g., self-esteem) in its effect on adolescent outcomes. Having a warm, close, supportive relationship does not seem to shape one's mental representations of relationships in such a way that it impacts individual's learning in a YRE program. This may be because adolescents are seeking individuation from parents, and during this stage in the life course support is likely more influential when provided by peers (Beyers & Seiffge-Krenke, 2007) particularly pertaining to topics such as dating relationships. This finding is relevant for educators because adolescents can benefit from YRE programs regardless of support provided in the parent-child relationship. However, the role of peer support may warrant further investigation.

Dating Experience as a Moderator of YRE Outcomes

The present study also addressed whether dating experience mattered for outcomes of a YRE program because adolescents often learn about relationships from firsthand experience (Adams & Williams, 2011). All dating groups within the treatment group had significant declines in mean levels of endorsement of both types of faulty relationship beliefs. It is interesting to note that adolescents who were currently dating had the highest endorsement of both faulty relationship beliefs. Perhaps perceptions of their current relationships influenced beliefs about there being one and only person who is an ideal partner and that love is enough to sustain a healthy relationship. Adolescents' cognitive frameworks may be influenced by both idealism and feelings of infatuation, especially when a dating relationship is ongoing during YRE implementation (Adams & Williams, 2011; Reis et al., 2000). For both faulty beliefs, no

differences were found between the past and no dating experience groups. This is likely due to the salience of current relationship experiences which affect the social cognitive frameworks through which participants filter information (Bandura, 2011). Adolescent romantic relationships are characterized by emotional intensity (Collins, 2003; Collins et al., 2009) so those currently in dating relationships may be experiencing more positive perceptions of their partner and endorsement of the ideas that there is one ideal partner and that feelings of love can sustain a relationship. In sum, being in a current dating relationship seems to matter more for adolescents' beliefs in that they hold more faulty beliefs compared to adolescents with past or no dating experience.

Dating experience did not condition changes in intentions to delay sexual activity indicating that YRE programs can effectively increase adolescents' intentions to delay sexual activity irrespective of relationship experience. Results suggest that future evaluation studies should investigate nuanced moderators of each outcome (e.g., sexual experience, gender). For example, ethnicity and family structure are important variables to consider for adolescent sexual outcomes (Manning et al., 2006) and may moderate changes from YRE programs, particularly among diverse audiences.

Limitations, Future Directions, and Conclusions

These findings must be interpreted in light of several limitations. First, data were drawn from a population of adolescents in a Southeastern state so results are not generalizable to a national population. Next, due to study design, individual students could not be randomly assigned to classrooms. Instead, schools were assigned to treatment or control groups. Due to a lack of fully randomized control in the study design and several differences between our treatment and control groups, future studies could randomly assign adolescents to treatment and

control conditions by offering the relationship education after school or during the summer. Additionally, it is important to note that pretest and posttest assessments occurred six weeks apart. It is possible that several of the targeted outcomes did not show significant change due to a lack of time for the adolescents to implement knowledge and skills into their lives or assimilate information into mental schemas about dating relationships. Because of low variability in dating aggression attitudes, future studies could test effects of the RS+ curriculum on change in dating aggression attitudes in groups of youth who vary more widely in their endorsement of aggression in relationships (e.g., higher risk samples of youth) while including a measure to control for social desirability.

Some considerations about measurement in this evaluation study should be noted. For example, understanding and use of conflict management may be different among adolescents compared to adults in that conflict is not highly prevalent in romantic relationships in middle adolescence (Connolly & McIsaac, 2011). Participants may have had difficulty reflecting on this skill in the context of dating relationships. Additionally, response shift bias may have occurred by which adolescents overestimated or misrepresented their skills and attitudes on the pretest assessment and thus were unlikely to show significant improvements by the posttest assessment. This issue is especially relevant for variables in the present study. For example, participants entered the program reporting they had relatively high levels of conflict management and intentions to delay sexual activity. However, during the course of the program, they may have gained new knowledge that made them rethink how much they knew about these areas. Because they overestimated their knowledge at pretest, their actual gains in knowledge are not reflected at posttest. In future studies, the use of retrospective pretest-posttest measurements that have participants reflect at posttest what they knew about different topics before and after completing

the program can address issues with response shift bias (Goedhart & Hoogstraten, 1992; Pratt et al., 2000). Additionally, assessments of curriculum-relevant knowledge and skills (rather than only beliefs and attitudes) at pre- and posttest may show greater change associated with the relationship education program.

Another methodological improvement in measurement is to include follow-up assessments to understand long-term effects of YRE programs. Those studies with longitudinal results indicate that although programs are effective in improving targeted outcomes up to approximately one year post-program, non-participants “catch up” to participants on program outcome variables (e.g., faulty relationship beliefs, dating aggression attitudes) within two to four years (Gardner et al., 2007; Kerpelman et al., 2009). In addition to follow-up questionnaires, the delivery and evaluation of a “booster” program for participants should be conducted as adolescents transition to adulthood.

The present study indicates that parent-adolescent relationship quality has some effect on program-related changes in adolescents’ attitudes about relationships. In addition to adolescents’ perceptions of support and psychological control, future studies could investigate other aspects of the parent-adolescent relationship in YRE evaluations. For example, parent-adolescent conflict/arguments about dating relationships can influence adolescent relationship outcomes (Longmore et al., 2009) and communication about dating and sexuality with parents is important for adolescent health outcomes (Blake et al., 2001). Therefore, future studies should consider specific interactions (i.e., conflict and communication) within the parent-adolescent relationship as potential moderators of YRE program outcomes. Additionally, adolescents may have different relationships with mothers and fathers which could differentially affect outcomes of a YRE program. It is possible in the present study that adolescents selected their most positive

relationship to respond to survey items. Results may differ if reports of psychological control and support were collected about both parents.

This study also provides preliminary evidence that involvement in dating relationships can affect the changes youth experience in a YRE program. In addition to dating experience or involvement, future studies could focus on the role of romantic relationship quality as a moderator of program related change. The positive and negative dynamics within adolescent romantic relationships are important predictors of adolescent outcomes (e.g., sexual behavior, internalizing behaviors; Beyers & Seiffge-Krenke, 2007; Manning et al., 2006) and relationship quality may influence adolescents' perceptions of relationships and what they learn from a YRE program. For instance, it is possible that those in high quality relationships may be less likely to change their beliefs or behaviors because of what they learn from the curriculum than those in low quality relationships who find that the curriculum speaks to some of the negative dynamics in their relationships (e.g., communication, warning signs of dating aggression). Understanding relationship dynamics may be another key to improving relationship outcomes for youth participants in relationship education programs.

Due to recent scholarly work, we now have an increased understanding of adolescent romantic relationships; however, continued attention to preventing or reducing negative consequences and promoting healthy relationships during adolescence is needed. Positive results of YRE programs are apparent (Adler-Baeder et al., 2007; Gardner et al., 2004; Gardner & Boellaard, 2007), but it is imperative for the next stages of program evaluation to continue exploring potential moderators to determine for whom programs are most effective. A novel contribution of the present study is the exploration of two interpersonal moderators of program related changes. From a social cognitive framework, adolescents' relationships with parents have

the potential to shape adolescents relationship schemas (Bandura, 2011; Furman & Simon, 1999; Reis et al., 2000). Similarly, experience with dating relationships can affect adolescents' emotional and cognitive frameworks (Reis et al., 2000). Educators can focus on correcting misperceptions about relationships for youth who are in dating relationships or are likely to be currently dating and researchers can continue to explore the effects of interpersonal moderators in YRE program evaluation.

Table 1. Means, Standard Deviations, and Sample Size for *Relationship Smarts Plus* Program Outcomes by Treatment versus Control Group at Each Wave of Data Collection.

Conflict Management						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.85	.82	1323	3.82	.75	524
Posttest	3.84	.80	987	3.76	.78	440
Faulty Relationship Belief "One and Only"						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.40	.93	1306	3.39	1.01	517
Posttest	3.00***	.92	990	3.32	1.04	443
Faulty Relationship Belief "Love is Enough"						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.68	.91	1302	3.69	.94	518
Posttest	3.28***	.91	990	3.59	.92	443
Psychological Dating Aggression Attitudes						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	1.48	.62	1273	1.39	.56	508
Posttest	1.37**	.57	974	1.33	.50	443
Psychological Dating Aggression Attitudes (reduced sample)						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	1.82	.62	740	1.79	.58	252
Posttest	1.47***	.58	500	1.48***	.56	199
Physical Dating Aggression Attitudes						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	1.27	.60	1272	1.16	.45	507
Posttest	1.22	.54	974	1.14	.42	443
Physical Dating Aggression Attitudes (reduced sample)						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	1.91	.77	391	1.72	.73	112
Posttest	1.42***	.62	235	1.37***	.60	87
Intentions to Delay Sexual Activity						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.70	1.26	1298	3.63	1.25	513
Posttest	3.78	1.21	987	3.64	1.22	443

(Table 1 Continued)

Intentions to Delay Sexual Activity: Sexually Experienced Participants						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.59	1.19	429	3.62	1.18	150
Posttest	3.67	1.14	429	3.66	1.04	150

Intentions to Delay Sexual Activity: Sexually Inexperienced Participants						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.81	1.31	433	3.60	1.31	237
Posttest	3.91	1.26	433	3.70	1.34	237

Intentions to Delay Sexual Activity: Sexually Experienced Males						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.11	1.18	214	3.23	1.23	71
Posttest	3.33*	1.14	214	3.44	1.06	71

Intentions to Delay Sexual Activity: Sexually Experienced Females						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	4.08	1.00	205	4.01	.98	78
Posttest	4.05	1.02	205	3.89	.96	78

Intentions to Delay Sexual Activity: Sexually Inexperienced Males						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.78	1.24	174	3.43	1.13	105
Posttest	3.76	1.26	174	3.50	1.24	105

Intentions to Delay Sexual Activity: Sexually Inexperienced Females						
	Treatment Group			Control Group		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest	3.84	1.35	285	3.73	1.44	131
Posttest	4.00*	1.25	285	3.88	1.40	131

Bolded means significantly higher for the treatment group than the control group at pre-test. Significant difference from pre- to posttest: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 2. Bivariate correlations among program outcome and parent-adolescent relationship variables ($N = 1,937$).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. T1 Conflict management	-													
2. T2 Conflict management	.48**	-												
3. T1 One & Only belief	.20**	.14**	-											
4. T2 One & Only belief	.03	.08**	.56**	-										
5. T1 Love is Enough belief	.27**	.16**	.42**	.20**	-									
6. T2 Love is Enough belief	.11**	.22**	.26**	.40**	.48**	-								
7. T1 Delay sexual activity	.17**	.11**	.11**	.04	.18**	.07*	-							
8. T2 Delay sexual activity	.14**	.24**	.07*	.02	.10**	.09**	.50**	-						
9. T1 Physical aggression	-.17**	-.10**	-.02	.04	-.06**	.02	-.06*	.05	-					
10. T2 Physical aggression	-.09**	-.15**	-.04	.02	-.02	-.04	-.02	-.09**	.30**	-				
11. T1 Psych. aggression	-.14**	-.10**	.00	.02	-.02	.01	-.01	-.03	.71**	.26**	-			
12. T2 Psych. aggression	-.10**	-.14**	-.03	.04	-.02	-.03	-.02	-.08**	.23**	.74**	.33**	-		
13. Parental support	.55**	.23**	.12**	.08**	.12**	.06*	.12**	.11**	-.05*	-.06*	-.10**	-.07**	-	
14. Parental psych. control	-.05*	-.05*	.02	-.02	.07**	.05	.01	-.04	.11**	.10**	.15**	.08**	-.34**	-

* $p < .05$; ** $p < .01$

Table 3. Model results predicting posttest program outcome variables ($N = 1937$).

	B	SE	β	R^2
Conflict Management				
T2 Conflict management predicted by:				.25***
T1 Conflict management	.47	.02	.47***	
Treatment	.08	.04	.04†	
European American	-.11	.04	-.07**	
Age	-.03	.02	-.04	
Female	.15	.04	.09***	
Faulty Relationship Beliefs				
T2 One and Only predicted by:				.32***
T1 One and Only	.54	.02	.53***	
Treatment	-.35	.05	-.17***	
European American	.13	.04	.06**	
Age	-.04	.02	-.04	
Female	.06	.04	.03	
T2 Love is Enough predicted by:				.26***
T1 Love is Enough	.49	.02	.48***	
Treatment	-.32	.05	-.16***	
European American	.10	.04	.05*	
Age	-.05	.02	-.05*	
Female	-.03	.04	-.02	
T2 One and Only with T2 Love is Enough	.22	.02	.35***	
T1 One and Only with T1 Love is Enough	.37	.02	.42***	
Intentions to Delay Sexual Activity				
T2 Intentions predicted by:				.26***
T1 Intentions	.47	.02	.48***	
Treatment	.14	.06	.05*	
European American	-.19	.06	-.08***	
Age	-.00	.03	-.00	
Female	.22	.06	.09***	
Intentions to Delay Sexual Activity: Sexually experienced males ($n = 444$)				
T2 Intentions predicted by:				.19***
T1 Intentions	.36	.05	.38***	
Treatment	.09	.14	.03	
European American	-.44	.12	-.18***	
Age	.00	.06	.00	
Intentions to Delay Sexual Activity: Sexually inexperienced females ($n = 525$)				
T2 Intentions predicted by:				.26***
T1 Intentions	.50	.04	.51***	
Treatment	.11	.12	.04	
European American	-.13	.11	-.05	
Age	-.07	.06	-.05	

(Table 3 Continued)

Dating Aggression Attitudes				
T2 Psychological aggression attitudes predicted by:				
T1 Psychological dating aggression attitudes	.27	.02	.30***	.14***
Treatment	-.02	.03	-.02	
European American	.17	.03	.15***	
Age	.00	.02	.01	
Female	.03	.03	.03	
T2 Physical dating aggression attitudes predicted by:				
T1 Physical dating aggression attitudes	.29	.02	.32***	.13***
Treatment	.02	.03	.01	
European American	.16	.03	.15***	
Age	.00	.01	.00	
Female	-.03	.03	-.03	
T2 Psychological attitudes with T2 Physical attitudes	.17	.01	.72***	
T1 Psychological attitudes with T1 Physical attitudes	.24	.01	.71***	
Dating Aggression Attitudes (Reduced Sample; $n = 1495$)				
T2 Psychological dating aggression attitudes predicted by:				
T1 Psychological dating aggression attitudes	.21	.02	.24***	.09***
Treatment	-.07	.04	-.05	
European American	.14	.04	.12***	
Age	.02	.02	.04	
Female	.08	.04	.07*	
T2 Physical dating aggression attitudes predicted by:				
T1 Physical dating aggression attitudes	.24	.02	.31***	.14***
Treatment	-.02	.04	-.02	
European American	.16	.04	.13***	
Age	-.02	.04	.02	
Female			-.02	
T2 Psychological attitudes with T2 Physical attitudes	.20	.01	.67***	
T1 Psychological attitudes with T1 Physical attitudes	.34	.02	.69***	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

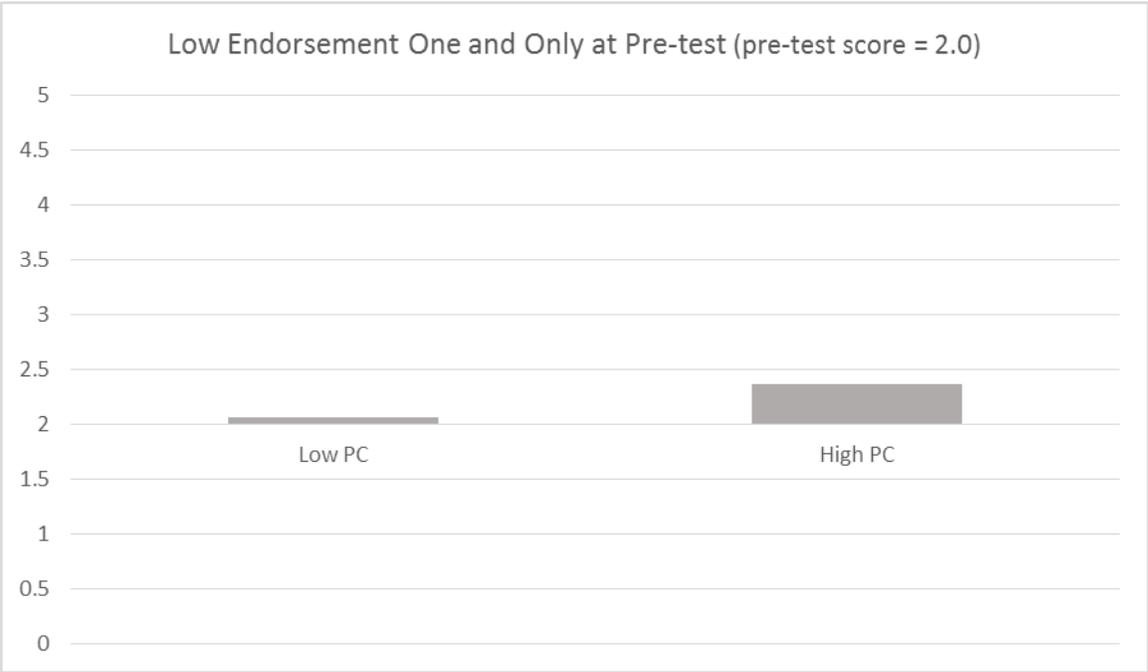


Figure 1. Plot of significant interaction between parental psychological control and One and Only faulty relationship belief representing post-test scores at high and low levels of psychological control.

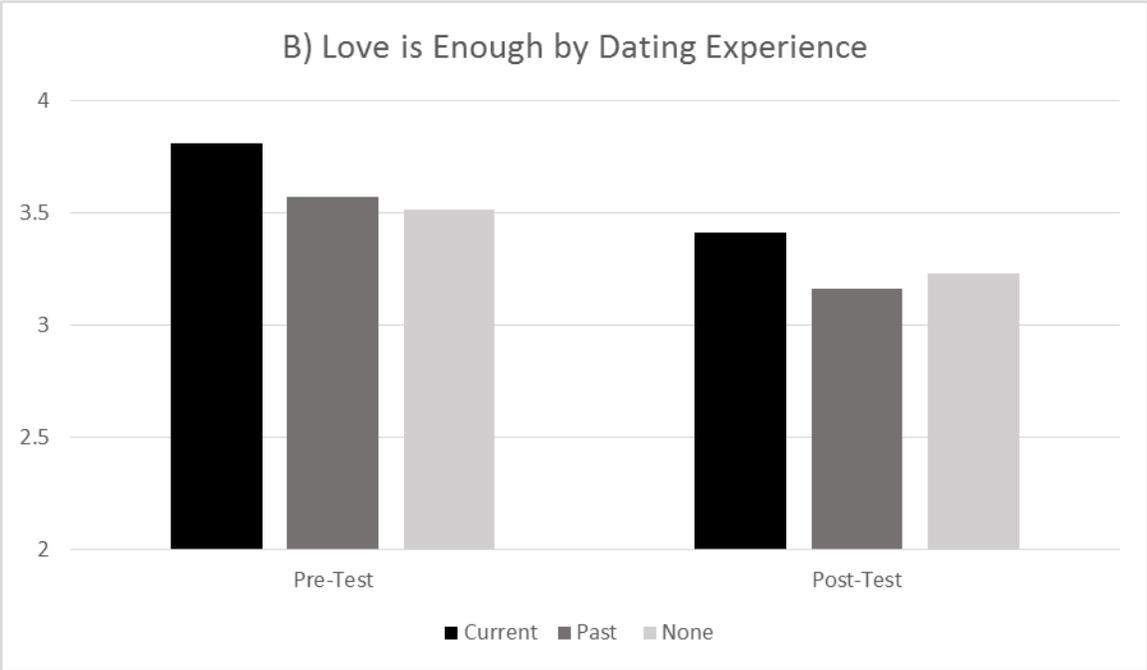
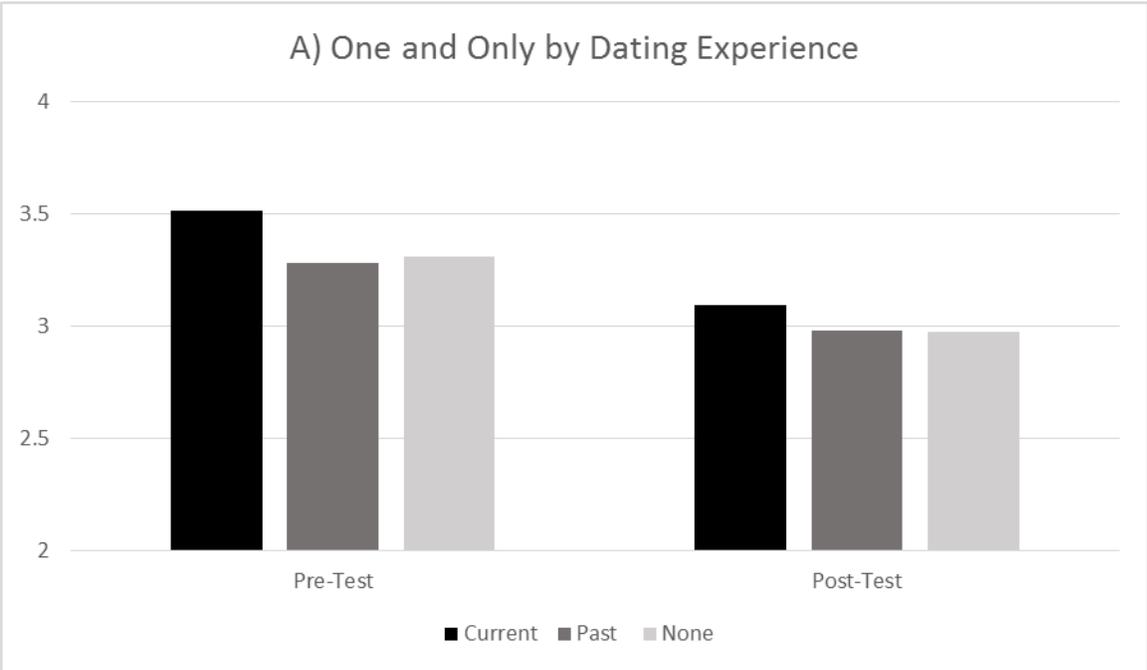


Figure 2. (A) Faulty relationship belief One and Only. (B) Faulty relationship belief Love is Enough.

IV. General Discussion

Guided by life course (Elder et al., 2003; Johnson et al., 2011) and social cognitive theories (Bandura, 1986; 2011), these studies provide important contributions to the literature on adolescent romantic relationships. Romantic relationships in adolescence are important to investigate as they can influence individual developmental outcomes and have enduring effects into emerging adulthood (Barber & Eccles, 2003; Collins, 2003; Madsen & Collins, 2011; Rauer et al., 2013). Although romantic experiences begin in adolescence (Collins, 2003; Montgomery, 2005), from a life course perspective, life stages cannot be understood in isolation (Elder, 1996). Experiences prior to adolescence can shape individual trajectories and are important to understand when predicting adolescent outcomes (Johnson et al., 2011). Additionally, individual development occurs within a given context, such that experiences with parents, romantic partners, and educational programs can influence adolescent and subsequent adult outcomes (De Goede et al., 2012; Gardner & Boellaard, 2007). The present work used both basic and applied approaches to examine interpersonal influences on adolescent relationships. Specifically, this research was conducted to better understand predictors of adolescent romantic relationship quality (RRQ) and the effectiveness of interventions aiming to improve adolescents' romantic relationship outcomes.

The first study provides several insights about how longitudinal change in parents' perceptions, and adolescents' concurrent perceptions, of parent-child relationship quality affect romantic relationships in middle adolescence. As expected, within a sample of romantically involved adolescents, mother- and father-child closeness declined and conflict increased between

childhood and adolescence; however, results indicate that changes reported by parents from childhood to adolescence may be less important for adolescent RRQ than adolescents' concurrent perceptions of the positive and negative qualities of their relationships with parents. In support of life course (Elder et al., 2003; Johnson et al., 2011) and social cognitive theories (Bandura, 1986; 2011), adolescents' lives were linked to their parents but the most important aspect of this linkage was their own mental representation of the parent-child relationship. Specifically, an increase in mother-perceived mother-child conflict was associated with adolescents' perceptions of less maternal warmth and more maternal hostility, and a steeper increase in father-perceived father-child conflict was associated adolescents' perceptions of greater paternal hostility. Moreover, associations between adolescent perceptions of the parent-child relationship and RRQ were stronger for females compared to males. Accounting for change in mother-child and father-child closeness and conflict, only among females was more warmth associated with more positive RRQ and more hostility associated with more negative RRQ. Overall, these results suggest that particularly for female adolescents, perceptions of mother- and father-adolescent relationships are linked to the qualities of romantic relationships in middle adolescence.

Due to the importance of adolescent dating relationships within the life course, recent cohorts of adolescents have been exposed to formal relationship education programs (e.g., Gardner et al., 2004; Kerpelman et al., 2009). This historical shift is also followed by evaluation studies that indicate some promising results for such programs (e.g., Adler-Baeder et al., 2007). The second study provides evidence consistent with prior research that faulty relationship beliefs and intentions to delay sexual activity are improved by a youth-focused relationship education program (Gardner et al., 2004; Kerpelman et al., 2009). Furthermore, support for a social

cognitive perspective (Bandura, 2011) was found where changes in individuals' faulty relationship beliefs were influenced by both dating experience and parental psychological control. Although parental psychological control typically is harmful for adolescent outcomes (Barber & Harmon, 2002, Oudekerk et al., 2014), it may prompt attitudinal change to align with messages from authority figures. This change may represent a superficial adjustment, but psychological control may not always be detrimental in cases where adolescents are exposed to positive messages that correct misperceptions. Because adolescents strive for individuation (Grotevant & Cooper, 1986), psychological control may be more powerful for shaping adolescents' beliefs than positive aspects of the parent-adolescent relationship such as parental support (which did not moderate gains from the YRE program). Also relevant for the outcomes of a YRE program are adolescents' experiences with dating relationships. Those who were currently dating had the highest endorsement of faulty relationship beliefs at both pre- and post-assessments. Current relationship experiences are clearly salient for adolescents' cognitive frameworks through which information is filtered (Bandura, 2011) when participating in a YRE program. The results of the second study indicate that gains from a relationship education program can be influenced by adolescents' relationships with parents and dating partners. Across the two studies, the collective results point to several directions for future research on adolescent romantic relationships.

Future studies should attend to the developmental characteristics of romantic relationships and the role of both romantic relationship involvement and quality of these relationships during middle adolescence. Although relatively short-lived and less emotionally developed compared to adult relationships, these romantic relationships in middle adolescence remain influential for shaping individual and relational developmental outcomes (Collins, 2003;

Madsen & Collins, 2011; Rauer et al., 2013). Due to the nature of middle adolescent romantic relationships, it is important to consider salient qualities of these relationships that may not be tapped by measures of romantic relationship quality appropriate for late adolescent or adult romantic relationships (Connolly & McIsaac, 2011). For instance, emotional intimacy, provision of support, and conflict management may not occur until relationships are more developed (Connolly & McIsaac, 2011; Giordano, Manning, Longmore, & Flanigan, 2012). Therefore, measures assessing methods of communication, types of interactions and activities with dating partners would be important to better understand the nature of these early relationships (Tuggle, Kerpelman, & Pittman, 2014). Furthermore, middle adolescents' cognitive frameworks may be influenced by the idealism, infatuation, and emotional intensity typical of adolescent romantic relationships (Collins, 2003; Collins et al., 2009). Consideration should be given to the assessment of relationship quality using observational data and qualitative methods to capture quality which may look different during this stage of individual development.

The two studies looked separately at relationship quality and dating experience using basic and applied investigations of adolescent romantic relationships. Positive and negative dynamics within adolescent romantic relationships are important predictors of adolescent outcomes (e.g., sexual behavior, internalizing behaviors; Beyers & Seiffge-Krenke, 2007; Manning et al., 2006); as such, relationship quality may influence what is learned in a YRE program. For instance, it is possible that those in high quality relationships may think it is unnecessary to change their beliefs or behaviors because what they learn from the curriculum is consistent with their experiences. In contrast, adolescents in low quality relationships might find that the curriculum speaks to some of the negative dynamics in their relationships (e.g., communication, warning signs of dating aggression) and may be motivated to change.

Understanding relationship dynamics may be another key to improving relationship outcomes for youth participants in relationship education programs. As aforementioned, these qualities differ across adolescence (Giordano et al., 2010), suggesting the need for intervention programs to be tailored to be developmentally appropriate in early, middle, and late adolescence.

At various points in the life course social influences differ with the sphere of influence shifting from family-of-origin to peer relationships to adult romantic family formations; therefore, consideration of parents and peers in relationship education is especially appropriate during adolescence. The interaction of the parent and peer domains for adolescent outcomes has previously been a focus of basic research (e.g., De Goede et al., 2009; 2012). Applied research could benefit from exploring this as well. Specifically future work could address whether parents' involvement with relationship education benefits adolescent program outcomes. One study of adolescent sexual health programs that involved parents found that these programs are more effective than programs that do not involve parents (Blake et al., 2001). Recent research exists on peer influence in YRE programs (Ma et al., 2014; Morrison et al., 2015) showing that peer beliefs and behavioral norms can affect YRE outcomes, but continued research on the role of both parents and peers at different points of intervention across adolescence is needed.

Past research indicates that the long-term outcomes of relationship education have received mixed results (Gardner & Baillard, 2007; Kerpelman et al., 2009) indicating that gains experienced from the program are lost over subsequent years or that non-participants catch up to participants on certain attitudinal and behavioral outcomes. Experiences with others allow individuals to build mental schemas for relationships that can influence their beliefs and behaviors (Reis et al., 2000). It may be that embedding healthy relationship knowledge and skills

within an adolescents close social context (e.g., peers, parents) may allow for more sustained impacts.

Improvements in measurement and the use of diverse samples could continue the advancement of scholarship on the role of interpersonal relationships in adolescent romantic involvement and relationship quality. Measures of change in relationships between adolescents and parents should include multiple perspectives (i.e., parent and child perspectives) on change in parent-adolescent relationship quality. Additionally, future studies should investigate how change in parent-child relationship quality might influence romantic relationship quality in adolescence using diverse samples across different cultures. Prior longitudinal research on changes in parent-adolescent relationships predicting middle to late adolescent romantic outcomes is primarily with German or Dutch samples (Beyers & Seiffge-Krenke, 2007; DeGoede et al., 2009). Diverse samples for both applied and basic research on adolescent relationships would provide more variation in social contexts, relational characteristics, and past experiences that could provide important insights on this topic.

The two studies comprising this dissertation have notable strengths in the use of longitudinal data to study how relationship instability over time can affect outcomes in middle adolescence and the investigation of outcomes from a YRE intervention. Taken together, these studies provide valuable information about the role of relationship experiences in affecting both the quality of adolescent romantic relationships and the outcomes of a youth-focused relationship education intervention. Overall, warm, supportive, and close relationships with parents did not have a strong effect on adolescent romantic relationships. Adolescents seek individuation from parents, and support is likely sought from friends and dating partners (Beyers & Seiffge-Krenke, 2007; Crosnoe & Elder, 2004; Grotevant & Cooper, 1986). On the other hand, conflict,

psychological control, and hostility were more consistently associated with adolescent outcomes. To a certain degree, conflict and emotional negativity can be developmentally appropriate (De Goede et al., 2012; Paikoff & Brooks-Gunn, 1991); however, psychological control affects autonomy development during adolescence (Oudekerk et al., 2014) which impacts change in beliefs after participation in a YRE program. As researchers addressing adolescent romantic relationships move forward, continued attention should be given to how relationship education programs and individual perceptions of family and peer relationships affect adolescent romantic outcomes.

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