Romantic Relationship Predictors of Adolescent and Adult Mental Health

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Abstract

In adulthood, romantic relationship quality is an important predictor of long-term mental health including lower rates of depression, anxiety, and externalizing problems. However, less is known about the function of earlier romantic experiences for long-term mental health despite evidence suggesting concurrent impacts of teen dating on well-being. Utilizing a 20-year multi-method, multi-reporter, community-based longitudinal study, the current study examined the role of specific romantic relationship qualities (hostile conflict, support, attachment, and intimacy) in predicting concurrent and future mental health symptoms (internalizing and externalizing). This study also considered whether certain contextual factors (gender, close friendship quality, relationship intensity, and relationship duration) moderate the relation between romantic quality and mental health. Participants provided self-report mental health data annually from ages 17 to 28. Participants and their romantic partners provided observational and self-report data about their relationship at age 19 (N=97), 22 (N=131), 25 (N=107), and 28 (N=109). Participants and their close friends provided self-report data about their friendship annually from ages 17 to 28.

Results suggest romantic relationship quality and mental health are strongly concurrently related. Secure attachment was associated with fewer internalizing and externalizing symptoms; dyadic conflict was related to greater internalizing and externalizing symptoms, and observed conflict was associated with greater externalizing symptoms. Several of the associations became stronger with age, and certain qualities had age-specific relations to mental health. Specifically, dyadic support and intimacy were not associated with fewer externalizing symptoms until adulthood, while observed support was only associated with greater internalizing symptoms in adolescence.

Only observed support emerged as a romantic quality with the potential to predict relative

changes (e.g., decreases) in internalizing symptoms over time; this effect was not mediated by later observed support. Importantly, post-hoc analyses reveal greater evidence for the reverse direction, namely that there is the potential of mental health to predict relative changes in romantic quality over time.

There was some evidence suggesting the association between romantic quality and mental health in young adulthood was stronger for males (e.g., attachment and intimacy each related to fewer externalizing symptoms for males) and for those with discontinuity in close friendship and romantic relationship quality. During the transition to adulthood, those who experience high quality friendships in the context of low quality romantic relationships (e.g., observed conflict), and vice versa (low quality friendships in the context of greater intimacy and dyadic support), may report greater externalizing symptoms. There was no evidence of relationship intensity or duration moderation.

Given that dyadic reported versus observed methods of assessing hostile conflict and support were related to different outcomes, results highlight the importance of utilizing multiple methods when assessing romantic quality. Future work may also seek to include observations of couples when giving support in addition to when in disagreements. Results have important implications for understanding the links between romantic experiences and mental health, and in particular the roles of gender, friendship quality, and observed support in the relation between romantic quality and mental health.

Introduction

One of the strongest predictors of mental health and well-being is the quality of one's social relationships (Diener & Seligman, 2002). In particular, initiating and maintaining romantic relationships becomes a key developmental task during the transition from adolescence to early adulthood, and its successful mastery becomes increasingly tied to mental health and well-being (Arnett, 2000; Barry, Madsen, Nelson, Carroll, & Badger, 2009; Schulenberg, Bryant, O'Malley, 2004). Although romantic experiences often come online earlier in adolescence, it is by late adolescence when they have gained sufficient intensity and duration that they are most likely to impact mental health and future relationship functioning. Yet, adolescents often lack the skills and experience needed to establish and maintain successful relationships (Connolly et al., 2014; Montgomery, 2005; Seiffge-Krenke, 2003).

Teen dating has been linked both to beneficial outcomes but also to problematic correlates ranging from immediate difficulties (e.g., pregnancy, sexual and physical abuse) to more enduring problems (e.g., poor emotional health, poor academic performance, and substance abuse) (Davies & Windle, 2000; Furman & Collins, 2008; Joyner & Udry, 2000; Raley, Crissey, & Muller, 2007; Thomas & Hsiu, 1993; Zimmer-Gembeck, Siebenbruner, & Collins, 2001). Yet, those with a dating history beginning in adolescence also generally report better adjustment and mental health in young adulthood (Collibee & Furman, 2015; Collins, 2003; Seiffge-Krenke, 2003) while those abstaining from dating into adulthood report greater mental distress (Connolly & Johnson, 1993; Lehnart, Neyer, & Eccles, 2010; Rauer, Pettit, Lansford, Bates, & Dodge, 2013; Roisman, Masten, Coatsworth, & Tellegen, 2004). Thus, late adolescence and young adulthood serve as critical windows during which romantic initiation and exploration is normative and common, yet little is known about the long-term impacts these relationships may

have on future mental health. Further, whether the relationship processes and qualities that are crucial for adult romantic relationships are similarly important for adolescent and young adult relationships remains unknown. This creates uncertainty regarding what defines a high quality romantic relationship at different developmental stages.

Developmental Changes in Romantic Relationship Involvement

The function and utility of romantic relationships change across the lifespan. Romantic exploration is a key task of late adolescence and early adulthood (Roisman et al., 2004). Successfully navigating intimate relationships during young adulthood is more closely tied to well-being than are even other important developmental goals (e.g., achieving financial independence, avoiding substance abuse, or maintaining close friendships) (Schulenberg et al., 2004). Delayed transition to dating in early adulthood is linked to poor outcomes including low self-esteem, poor mental health, and lower romantic competence (Lehnart et al., 2010; Rauer et al., 2013). In contrast, adolescents who are involved in, compared to abstaining from, romantic relationships by the end of high school are more likely to marry in adulthood (Raley et al., 2007). Reflective of the growing salience of romantic relationships to well-being and identity are findings suggesting that in early adulthood (compared to in adolescence), high quality romantic relationships are strongly and directly linked to healthy adjustment and mental health (Segrin, Powell, Givertz, & Brackin, 2003; Simon & Barrett, 2010; van Dulmen, Goncy, Hatdon, & Collins, 2008). Several specific relationship qualities of unmarried emerging adult couples such as emotional security, companionship, and conflict have been concurrently linked to well-being (Demir, 2008; 2010), but few studies have sought to identify whether these qualities predict *future* relationship quality and mental health.

Compared to research assessing relationship quality in unmarried younger individuals, more attention has been given to adult marital quality and well-being (Giordano, Longmore, & Manning, 2001; Umberson & Karaz Montez, 2010). Romantic relationship research in adulthood suggests that ultimately, successful committed social relationships (e.g., marriage) can buffer against future mental distress including depression, anxiety, and substance abuse (Umberson & Williams, 1999; Sampson, Laub, & Wimer, 2006). Prior findings explain this 'marriage benefit' as stemming from high quality marriages characterized by high levels of support, intimacy, and emotional security, and low levels of hostile conflict (Choi & Marks, 2008; Collins & Read, 1990; Gove, 1972; Horwitz, McLaughlin, & White, 1998; Montesi, Conner, Gordon, Lauber, Kim, & Heimberg, 2013; Waite, 1995).

The growing salience of romantic relationships over time for mental health highlights the need to identify the precursors of successful relationships and more closely identify specific relational qualities at different developmental stages that will predict future relationship quality and mental health (Collins, 2003; Collins, Welsh, & Furman, 2009; Connolly et al., 2014; Roisman et al., 2004). Although the literature on teen dating has historically highlighted primarily problematic correlates of adolescent romantic involvement, recent research supports the idea that certain *relationship qualities* at certain *developmental stages* within adolescence are related to positive outcomes (Kansky & Allen, 2018). In addition, romantic relationship research with adults suggests a more optimistic perspective of the benefit of intimate, committed relationships. Given that romantic relationships become increasingly tied to well-being over time as it emerges as a key developmental task of young adulthood, it is likely that the relation between romantic quality and mental health similarly becomes stronger with age. However, few

studies have assessed whether the relative importance of distinct relationship qualities changes with age as the developmental theory suggests.

Challenges to Understanding Developmental Changes in Relationships

The open question of the impact of adolescent and early adult romantic relationships on long-term mental health is compounded by findings pointing to a possible critical window in which romantic relationships are optimal for development. Both too-early sexual and dating relationships and a delayed transition into these relationships are linked to poor outcomes and problematic behaviors. Rather, the ability to develop and maintain intimacy within close relationships is widely recognized as a primary developmental task of *late adolescence and early adulthood* (Barry et al., 2009; Erikson, 1982). Partners' needs and goals within romantic relationships steadily change during the transition from adolescence into adulthood (Furman & Wehner, 1997) highlighting the developmental nature of romantic involvement. In essence, romantic involvement becomes a moving target for researchers trying to define what constitutes a relationship and what is healthy within different relationship stages.

Recent societal changes have delayed the age at which young adults commit to marriage, increasing the time spent exploring romantically (Arnett, 2000). Especially common in young adulthood is a series of relationships of varying degrees of commitment and intimacy (Cohen, Kasen, Chen, Hartmark, & Gordon, 2003). Although marriage is found to be strongly tied to well-being, less is known about how short-term partnerships during the 20's relate to mental health. Given findings that indicate a developmental cascade in romantic relationship functioning from adolescence to early adulthood to adulthood (Seiffge-Krenke, 2003), it is essential to understand the function of romantic experiences during this extended pre-marital exploration period for lifespan romantic patterns. Romantic experiences of unmarried young adults may have

significant consequences both for concurrent and later relationships and mental health, as this time of exploration becomes essential in allowing adults to make important romantic choices in selecting to remain single or choosing a marriage partner. It is imperative to assess the significance of early adult relationships to highlight their specific role in romantic and individual development.

Romantic Relationship Quality: Conflict, Support, Attachment, and Intimacy

Because there has been more research addressing what constitutes a healthy versus unhealthy romantic relationship in adulthood, there are key relationship qualities that have emerged as being important for predicting concurrent levels of, and changes in, mental health. For the purposes of this study, I am focusing on four key relationship qualities outlined below: hostile conflict, support, secure attachment, and intimacy.

Conflict

Conflict in adult marriages has been a primary relationship quality associated with relationship satisfaction and stability (Cramer, 2000; Gottman, 1993). Studies that demonstrate a link between negative conflict management strategies such as manipulation, coercion, or demand-withdrawal communication patterns and lower relationship satisfaction for married couples has been extensively replicated (Bertoni & Bodenmann, 2010; Bodenmann, Gottman, & Backman, 1997; Gottman & Levenson, 1992; Noller, Feeney, Bonnell, & Callan, 1994). Further, marital conflict has been linked to worsening externalizing behaviors and internalizing symptoms, such as depression, over time (Choi & Marks, 2008; DeLongis, Capreol, Holtzman, O'Brien, & Campbell, 2004). Therefore, hostile conflict has the potential to predict relative change in mental health symptoms in adult relationships.

Similarly, the most common relationship quality of adolescent romantic relationships studied is conflict. Adolescents report greater conflict within their romantic relationships compared to within their family and friend relationships (Furman & Shomaker, 2008), and dating aggression has been linked to adolescent distress (Jouriles, Garrido, Rosenfield, & McDonald, 2009). Poor conflict management strategies such as self-silencing during romantic conflict are related to higher levels of depression for adolescents (Harper, Dickson, & Welsh, 2006; Harper & Welsh, 2007). Further, negative interactions with romantic partners are associated with greater internalizing and externalizing problems both concurrently and over time (Beckmeyer, Coleman, & Proulx, 2018; Collibee & Furman, 2015). With few exceptions (Collibee & Furman, 2015; Kansky & Allen, 2018; La Greca & Harrison, 2005), studies have not addressed whether conflict in earlier, unmarried relationships predicts long-term changes in internalizing symptoms over time. Yet, it is likely that early romantic experiences lead individuals to begin forming cognitions and schemas about how romantic relationships function. Early conflictual romantic relationships may thus set in motion expectations of low quality relationships for future experiences, which in turn are associated with mental distress. However, no study has directly assessed whether the relative impact of romantic hostile conflict on mental health symptoms changes over time across different relationships during the transition to adulthood.

Support

As mentioned, high levels of support within marriages serve as a mechanism to decrease problematic, externalizing behaviors (Sampson et al., 2006) and protect against significant internalizing symptoms and mental distress (e.g., Horwitz et al., 1998; Waite, 1995). It is likely that support within adolescent and young adult romantic relationships may be especially influential on the development of mental health distress, as teens are increasingly turning to

romantic partners, rather than to parents or friends, for support (Furman & Shomaker, 2008). This emphasis on seeking support from romantic partners as early as during adolescence indicates the possible utility of support as a key relationship quality for establishing positive relationship expectations for future experiences. In addition, peer and parental support during adolescence has been strongly tied to mental health and well-being (Helsen, Vollebergh, & Meeus, 2000; Steinberg, 2001; Young, Berenson, Cohen, & Garcia, 2005) indicating the utility of support in earlier close relationships; yet the extension to understanding the utility of support in romantic experiences during this age has thus far been limited.

As romantic partners gain in importance to adolescents' sense of identity through the transition to adulthood, it is likely that being in a supportive romantic relationship becomes increasingly tied to both aspects of mental health (internalizing and externalizing symptoms). Further, a supportive relationship likely provides healthy coping skills and strategies for adolescents, which may lead to long-term changes in mental health as well. Similarly, early supportive relationships provide a positive relationship schema under which individuals may learn positive communication and coping strategies within a romantic relationship for future relationship experiences. Yet, no study has directly assessed whether the association between partner support and mental health changes over time from adolescent romantic experiences to more committed relationships resembling marriages in early adulthood, or whether the positive relationship schema theory holds true.

Secure Attachment

Attachment theory maintains that secure parent-child relationships provide ideal developmental context for offspring to optimally develop (Bowlby, 1969; 1973). Bowlby's attachment theory has been extended to adulthood in that individuals develop similar patterns of

attachment to romantic partners (Hazan & Shaver, 1994). Specifically, the attachment features of a secure base, safe haven, and proximity-seeking are transferred from parents to romantic partners as a romantic partner becomes a primary attachment figure (Hazan & Shaver, 1994). Attachment behaviors are typically defined along two dimensions (anxiety and avoidance) with low levels of both dimensions representing secure attachment (Brennan, Clark, & Shaver, 1998). According to attachment theory, there are three types of attachment styles in adulthood: secure attachment which is characterized by comfort with intimacy, closeness, and dependency on partners, avoidant attachment which reflects a fear of intimacy and inability to depend on partners, and anxious/preoccupied attachment which is characterized by preoccupation with partners and a desire to be closer to a partner than what a partner prefers.

Attachment behaviors strongly impact relationship functioning (Banse, 2004; Creasey, Kershaw, & Boston, 1999; Li & Chan, 2012). In adult romantic relationships, those with secure attachment styles tend to report greater relationship satisfaction, intimacy, and relationship stability, better relationship quality, and less mental distress compared to those with insecure attachment styles (Collins & Read, 1990; Feeney & Noller, 1990; Hazan & Shaver, 1987; Kirkpatrick & Davis, 1994). Alternatively, beginning in adolescence, those with insecure attachment styles have difficulties managing conflict with romantic partners (Creasey & Ladd, 2004; Kobak & Sceery, 1988), which can exacerbate relationship and mental distress. Although studies applying attachment theory to adolescent romantic relationships have been limited, insecure attachment behaviors within other close relationships in adolescence (i.e., parents) have demonstrated the potential to predict changes in internalizing symptoms over time (Rönnlund & Karlsson, 2006). Further, changing from insecure to secure attachment behaviors is associated with decreases in both internalizing and externalizing symptoms in adulthood (Mikulincer &

Shaver, 2013) pointing to the utility of attachment behaviors in predicting changes in mental health over time. Whether attachment behaviors become more salient for mental health in adulthood, or whether earlier attachment style in adolescent romantic relationships can predict positive changes in long-term mental health over time has yet to be determined.

Intimacy

Intimacy is often defined as a process that includes acceptance, understanding of, and paying attention to one's partner and oneself (Thomson & Walker, 1989). Thus, intimacy can take on many forms beyond sexual intimacy (i.e., social, emotional, intellectual, physical, recreational; Greef & Malherbe, 2001). Prior research has identified a strong link between marital intimacy and marital satisfaction (Greef & Malherbe, 2001; Shaefer & Olson, 1981). Further, lower levels of intimacy in adult romantic relationships have been associated with an increase in internalizing symptoms (i.e., anxiety) and decreases in relationship satisfaction (Montesi et al., 2013). According to Erikson's (1968) theory of psychosocial development, intimacy emerges as a critical developmental task of young adulthood. Thus, it is unsurprising that in adulthood, the ability to confide in and disclose personal information to a partner serves to maintain intimacy and thus benefit mental health as well.

However, whether intimacy shares a similar role in adolescent romantic relationships is unclear. High levels of sexual intimacy in adolescent romantic relationships have been associated with delinquency and mental distress (Zimmer-Gembeck & Helfand, 2008). It is likely that these relationships may be too intense and rely on under-developed skill sets leading to problematic relationships. In addition, adolescent romantic relationships tend to be of shorter duration as compared to adulthood relationships (Feiring, 1999), potentially making it difficult to establish intimacy. Further, romantic relationships tend to gradually become more intimate and salient to

one's self-competence during the transition to adulthood (Furman & Wehner, 1994). Thus, intimacy in romantic relationships during adolescence as compared to in adulthood may be less strongly tied to mental health, as teens have not yet developed the capacity for intimacy nor is intimacy a salient goal of early romantic experiences. Indeed, prior findings point to adolescents striving to form a sense of identity rather than focusing on building intimacy, mirroring Erikson's stage model (Lacombe & Gay, 1998).

It also seems plausible that intimacy in one romantic relationship may not carry forward into future relationships and affect long-term mental health, but rather maintain only a concurrent impact on well-being. Further, it is not until adulthood that relationships take on a more committed, intimate role that intimacy becomes developmentally appropriate and thus beneficial for well-being. Indeed, romantic relationships become characterized by intimacy and passion during the transition to adulthood, rather than during adolescence (Connolly & Goldberg, 1999). Therefore, understanding whether the relative impact of intimacy for mental health changes with age warrants further analyses.

The Role of Gender in Romantic Experiences and Mental Health

There has been a wealth of research suggesting that males and females may experience romantic relationships differently. Much prior research has focused on gender differences in response to major relationship transitions such as marriage and divorce. Findings suggest that males benefit more from marriage and suffer more from divorce compared to females (Belle, 1987; Bloom, White, & Asher, 1979; Gove, 1973). However more recent research suggests females tend to experience stronger benefits from close relationships generally (i.e., not only romantic relationships) as compared to males (Cross & Madson, 1997; Saphire-Bernstein & Taylor, 2013). Attempts to understand gender differences that emerge during relationship

transitions lie in the broader social context. Specifically, females tend to pay more attention to close relationships with friends and report having several close friendships in adulthood, whereas males tend to report fewer intimate close friendships besides their spouse or partner (e.g., Ryle, 2011). However, more recent research has found few gender differences for number of intimate friendships or level of emotional disclosure within close friendships (Greif, 2009; Gillespie, Lever, Frederick, & Royce, 2015). Yet, the trend for males who are married to report fewer close friendships remains significant (Birditt & Antonucci, 2007; Gillespie et al., 2015). Nonetheless, in adulthood when males' social circles are possibly shrinking, the quality of their primary close relationship (i.e., romantic partner) may be especially strongly related to their mental health compared to the impact of romantic quality on mental health for women.

Gender differences in adolescent romantic relationships have been identified as well. For example, adolescent females are influenced by their partners to engage in deviant behavior more so than males (Haynie, Giordano, Manning, & Longmore, 2005). Further, adolescent girls tend to view their romantic relationships as more intimate and caring compared to boys, which is similar with adult findings of females' greater importance, awareness, and value of close relationships (Connolly & Johnson, 1996; Haugen, Welsh, & McNulty, 2008; Shulman & Scharf, 2000). Indeed, prior research has found that adolescent females interact with the opposite sex more often and spend more time thinking about both opposite-sex and same-sex peers (Richards, Crowe, Larson, & Swarr, 1998). It appears then that females may reach social and emotional maturity faster compared to their male peers, which may increase their susceptibility of the impact of romantic relationship experiences on mental health during adolescence.

Taken together, prior findings highlight potential gender differences in the experience of romantic relationships and the impact these relationships may have on mental health. Thus,

females in adolescence and males in adulthood may experience greater impacts on their mental health from their romantic experiences. However, to the best of my knowledge, no study has directly addressed this possibility within the same cohort of individuals followed across the transition from adolescence into adulthood.

The Role of Friendships in Romantic Experiences

According to a developmental stage theory approach of social relationships, different social contacts emerge as being most influential for development over the lifespan. The development of social interactions is linked to distinct tasks within each developmental stage, with earlier failure to thrive or success in relationships impacting subsequent relationships (Collins & Sroufe, 1999; Connolly, Furman, & Konarski, 2000). Specifically, parents and caregivers are the primary sources of social interaction in infancy through childhood. Peers begin taking an increasingly important role in social development from the school age years through adolescence. By the end of adolescence, individuals begin interacting with potential dating and romantic partners, who ultimately become the primary social context of close relationships in adulthood. Research suggests a relationship cascade effect in relationship development in which peer relationships in early adolescence predict the development of romantic relationships in late adolescence (Collins & Sroufe, 1999). Specifically, high quality peer relationships are linked to high quality romantic experiences in adolescence partially due to peer networks serving as a context of potential romantic partners (Connolly, Furman, & Konarski, 2000). Further, teens with close friendships of high quality ultimately report greater romantic relationship satisfaction in adulthood (Allen, Narr, Kansky, & Szwedo, 2019). Adolescents who are able to establish intimacy within close friendships ultimately are more prepared to later transfer similar skills to romantic relationships (Seiffge-Krenke, 2000). Alternatively, teens with poor peer relationships

may turn to romantic partners to fulfill their need to connect with same age-peers, yet these romantic relationships tend to be of lower quality and linked to problematic outcomes (Brendgen, Vitaro, Doyle, Markiewicz, & Bukowski, 2002).

As mentioned above, navigating intimate relationships in the form of romantic relationships does not emerge as a salient developmental task until early adulthood, while establishing close friendships is critical during adolescence (Roisman et al., 2004). Thus, the impact of peer relationships on romantic relationship development may be most powerful during adolescence compared to in adulthood, during which time peers carry less influence over development more broadly. Further, those with poor quality friendships may ultimately experience greater mental health difficulties stemming from romantic relationships due to lack of external social support and pervasive social difficulties. It is likely poor friendship exacerbates mental distress associated with poor romantic quality, and that this is especially true for adolescents as compared to adults.

The Role of Relationship Intensity and Duration in Romantic Experiences and Mental Health

A potential key differentiation between romantic relationships and other close relationships is the emotional intensity experienced within the romantic context (Collins, 2003). For this reason, romantic relationships of higher intensity, as compared to lower intensity, may be more impactful on mental health symptoms due to the emotional challenges and capacities associated with the relationship. Prior research suggests that more emotionally-intense adolescent relationships are predictive of teen depressive symptoms, although positive coping skills moderate this link (Szwedo, Chango, & Allen, 2015). Individuals who consider their relationship to be intense may experience greater impacts on mental health depending upon their

relationship qualities. However, the extent to which relationship intensity plays a role in attenuating the effects of relationship characteristics on mental health beyond adolescence has yet to be determined.

Related to intensity of a relationship, relationship duration has been identified as a significant relationship characteristic linked to a variety of aspects of relationship functioning including increased risk for relationship violence (Gaertner & Foshee, 1999; Giordano, Soto, Manning, & Longmore, 2010) yet also linked to increased support (Connolly & Johnson, 1996). Further, romantic relationship duration has been associated with both internalizing symptoms (Joyner & Udry, 2000; Madsen & Collins, 2005) and externalizing behaviors (Haynie et al., 2005; Loeb, Kansky, Narr, Fowler, & Allen, 2020; Zimmer-Gembeck et al., 2001) in adolescence, such that frequent shorter relationships are related to worse mental health. Similarly, longer duration relationships in adulthood have been linked to decreased mental distress (Barrett, 2000). Thus, relationship duration may be a key characteristic related to individual mental health. Whether duration moderates the strength of the relation between romantic quality and mental health has not been fully explored previously.

In sum, more specifically defining the nature of romantic relationship success during different developmental stages (i.e., adolescence, young adulthood, and adulthood) is key. Although healthy romantic relationships in adulthood are linked to a host of mental health benefits, less is known regarding the impact of earlier romantic experiences on similar outcomes. Without understanding 1) the qualities that are most important for each age, 2) whether the relative importance of these qualities for mental health changes over time, and 3) how the context (i.e., gender, friendship quality, intensity, and duration) may affect the interplay between mental health and romantic qualities over time, interventions and education programs are likely

to fail to accurately target and assist unmarried young individuals struggling in their romantic relationships.

Overall Strategy

With longitudinal data across 20 years, the current study assesses the development and long-term outcomes of romantic involvement from adolescence into adulthood. The study focuses on identifying problematic (i.e., hostile conflict) and positive (i.e., support, intimacy, secure attachment) relationship qualities at different developmental stages to determine whether similar or different qualities emerge as being most closely linked to concurrent and future mental health (i.e., internalizing symptoms such as depression and anxiety and externalizing symptoms such as aggression and delinquency) at distinct ages.

The current dataset is ideal for the purposes of the proposed study for several reasons. It has: 1) intensive multi-method and informant assessments of romantic relationship quality with repeated assessments from participants, romantic partners, and coded observed interactions, which reduces risk of bias resulting from shared method variance and provides opportunities for accurate measurement through formation of more parsimonious constructs; 2) repeated assessments of romantic relationship quality (e.g., intimacy, attachment, support, and conflict) across developmental stages from age 17 to 28 which allows for modeling approaches of the longitudinal associations of relationship processes and mental health, and 4) measurements that span the entire length of adolescence to adulthood facilitating a rigorous developmental approach to address my proposed hypotheses and employ longitudinal data analysis techniques.

Hypotheses

Specifically, the study will examine the following hypotheses:

Hypothesis 1: Different romantic relationship qualities will be concurrently related to internalizing vs. externalizing symptoms.

Hypothesis 1a: High levels of hostile conflict will be concurrently related to greater internalizing symptoms; high levels of support, secure attachment, and intimacy will be concurrently related to fewer internalizing symptoms.

Hypothesis 1b: High levels of hostile conflict will be concurrently related to greater externalizing symptoms; high levels of support and secure attachment will be concurrently related to fewer externalizing symptoms;

Hypothesis 1c: The concurrent association between relationship qualities and mental health will be stronger in adulthood compared to in adolescence.

Hypothesis 2*:* Gender will influence the strength of the association between romantic relationship quality and mental health.

Hypothesis 2a: Females will demonstrate greater internalizing symptoms while males will demonstrate greater externalizing symptoms before accounting for relationship quality.

Hypothesis 2b: Gender will be assessed as a potential moderator of the relation between romantic quality and mental health. The impact of relationship quality on mental health symptoms will be stronger for females than for males in adolescence, but stronger for males than for females in adulthood.

Hypothesis 3*:* Contextual factors (i.e., close friendship quality) will influence the strength of the association between romantic relationship quality and mental health. Close friendship quality will be assessed as a potential moderator of the relations between romantic quality and mental health. The association between romantic quality and mental health will be

stronger for those with low friendship quality in adolescence, but close friendship quality will not moderate adult relationships.

Hypothesis 4*:* Relationship intensity and duration will influence the strength of the association between romantic relationship quality and mental health.

Hypothesis 4a: Relationship intensity will be assessed as a potential moderator of the relation between romantic quality and mental health. The association between romantic quality and mental health will be stronger for those with more intense relationships.

Hypothesis 4b: Relationship duration will be assessed as a potential moderator of the relation between romantic quality and mental health. The association between relationship quality and mental health will be stronger for longer duration relationships.

Hypothesis 5: Specific relationship qualities will predict relative change in mental health symptoms over time to the subsequent data collection wave, while others will only have transient effects on mental health.

Hypothesis 5a: Earlier levels of high hostile conflict will predict relative increases in internalizing and externalizing symptoms over time.

Hypothesis 5b: Earlier levels of high support will predict relative decreases in both internalizing and externalizing symptoms over time.

Hypothesis 5c: Earlier levels of secure attachment will predict relative decreases in internalizing and externalizing symptoms over time.

Hypothesis 5d: Intimacy will only demonstrate transient (i.e., concurrent) effects on internalizing symptoms.

Hypothesis 6**:** For those relationship qualities that consistently predict relative change in mental health across the subsequent data collection wave, the qualities will also be predictive of

relative change in mental health over longer periods of time. Both the direct effects pathway from earlier romantic relationship qualities and adult mental health as well as mediated pathways via the effect on subsequent romantic relationship qualities will be tested as needed.

Hypothesis 6a: Adolescent romantic relationship qualities (age 19) will be predictive of relative change in mental health from adolescence to adulthood (age 25).

Hypothesis 6b: Adolescent romantic relationship qualities (age 19) will be predictive of relative change in mental health from adolescence to adulthood (age 28).

Hypothesis 6c: Young adult romantic relationship qualities (age 22) will be predictive of relative change in mental health from young adulthood to adulthood (ages 28).

Attrition Analyses

Attrition analyses were completed for those participants who did not complete all assessment across time points (i.e., adolescence, both young adult time points, and adulthood) to assess differences on all measures of interest. Attrition analyses were used to determine if participants who did versus did not participate on any wave differ on gender, baseline family income, or earlier levels of the variable measures. Attrition analyses for participation across all four time points revealed that participants who did not provide romantic partner data at all four waves were more likely to report higher baseline family income (p = .009). Those who had a romantic partner but did not participate across all four waves did not differ based on gender or baseline family income. In addition, participants who did not provide mental health assessments across all four waves and those who did not have close friend data across all four waves did not differ based on gender or baseline family income.

Of the 184 original participants, 174 (95%) provided mental health data at least once during Time 1 (ages 17-19), 164 (89%) provided mental health data at least once during Time 2 (ages 20-22), 160 (87%) at Time 3 (ages 23-25), and 157 (85%) at Time 4 (ages 26-28). In addition, 148 (80%) had a close friend who provided data about their relationship with the target participant at ages 17-19, 150 (82%) at ages 20-22, 147 (80%) at ages 23-25, and 134 (73%) at ages 26-28.

In addition, 97 (53%) provided romantic relationship data at ages 17-19, 131 (71%) at ages 20-22, 107 (58%) at ages 23-25, and 109 (59%) at ages 26-28. 86 (47%) had a romantic partner who provided questionnaire data at ages 17-19, 119 (65%) at ages 20-22, 101 (55%) at ages 23-25, and 99 (53%) at ages 26-28. 61 (33%) participated in the videotaped observational tasks with a romantic partner at ages 17-19, 100 (54%) at ages 20-22, 90 (49%) at ages 23-25, and 90 (49%) at ages 26-28. Typically, participants who do not complete all romantic relationship data collection waves do not participate because they do not meet the criteria of being in a relationship lasting at least three months. For those who are eligible, reasons for nonparticipation include: partners who decline the invitation to participate or inability to schedule an observational assessment in which both participants were willing and able to participate.

In order to best address any potential biases due to missing data within waves or attrition across waves in longitudinal analyses, Full Information Maximum Likelihood (FIML) methods was utilized for all analyses, including all variables that were linked to future missing data (i.e., where data were not completely missing at random). These procedures have been found to provide the least biased estimates when all available data are used for longitudinal analyses as compared to other approaches that use listwise deletion of cases with missing data (Arbuckle,

1996). Thus, all analyses reflect the entire sample; specifically this means the full sample of 184 adolescents was used for all analyses. Using the maximum sample provides the best possible estimates of variances and covariances in measures of interest and least chance for biases due to missing data. No data is estimated or imputed in this procedure; rather, it simply takes into account distributional characteristics of data in the full sample and corrects for biases due to missing data. Alternative longitudinal analyses using only those without any missing data (i.e., simple regression) yielded similar results as those using the FIML approach.

Method

Participants

To address these hypotheses, I used data from an ongoing 20-year longitudinal project of adolescent social, emotional, and psychological development including observational and multi-reporter (self, close friends, romantic partners) data. The sample consists of 184 individuals who have provided data since age 13 with yearly assessments resulting in more than 3500 collateral parties in addition to our target participants thus far (3% attrition). Participants were initially recruited via mailings in the 7th and 8th grades at a public school serving the entire suburban community in the Southeastern United States. This proposal will use existing data from age 17 through age 28 (see Appendix A for Table of Measures and Ages). Participants have provided mental health data annually at age 17 (*M*=17.32, *SD*=.88), 18 (*M*=18.38, *SD*=1.04), 19 (*M*=19.66, *SD*=1.07), 20 (*M*=20.84, *SD*=.98), 21 (*M*=21.68, *SD*=.95), 22 (*M*=22.80, *SD*=.96), 23 (*M*=23.78, *SD*=.97), 24 (*M*=24.65, *SD*=.96), 25 (*M*=25.69, *SD*=.99), 26 (*M*=26.63, *SD*=1.01), 27 (*M*=27.66, *SD*=.99), and 28 (*M*=28.59, *SD*=1.02).

Participants' peers have provided data about their friendship with the target participant annually during the study as well. Peers were on average age 17 (*M*=16.90, *SD*=1.28), 18

(*M*=18.47 *SD*=1.86), 20 (*M*=19.75, *SD*=2.65), not collected during Waves 8-10 or ages 20-22 of data collection, 26 (*M*=25.70, *SD*=4.94), 26 (*M*=25.98, *SD*=4.06), 26 (*M*=26.47, *SD*=5.06), 28 (*M*=27.53, *SD*=4.25), 29 (*M*=29.45, *SD*=6.31), and 30 (*M*=30.01, *SD*=5.46). During ages 17-19, participants reported knowing their closest friend for 7 years (*M*=7.00, *SD*=3.44), during ages 20-22 for 8 years (*M*=7.88, *SD*=4.34), during ages 23-25 for 10 years (*M*=10.14, *SD*=5.63), and during ages 26-28 for 12 years (*M*=11.8, *SD*=6.30).

If participants were in a romantic relationship lasting three months or longer at any point during ages 17-19, 20-22, 23-25, and 26-28, they were asked to provide the contact information for their partner during the designated three-year period. Therefore, there are up to four waves of romantic relationship data for each participant, as each participant and romantic partner participated once during each three-year window. On average, participants were age 19 (*M*=19.39, *SD*=1.34), 22 (*M*=22.02, *SD*=1.10), 25 (*M*=24.66, *SD*=1.70), and 28 (*M*=27.82, *SD*=1.39) during each romantic relationship data collection wave. On average, their romantic partners were age 19 (*M*=19.18), *SD*=2.94), 23 (*M*=23.17, *SD*=4.09), 26 (*M*=25.58, *SD*=3.90), and 28 (*M*=28.19, *SD*=4.15). Additionally, romantic relationships were on average 15 months (*M*=14.64, *SD*=13.50) at ages 17-19, 22 months (*M*=21.85, *SD*=19.89) at ages 20-22, 3 years (*M*=2.72, *SD*=2.37) at ages 23-25, and 4 years (*M* = 4.14, *SD*= 3.32) at ages 26-28.

Informed assent for each participant along with informed consent from the parents were obtained before each interview or questionnaire session until age 18 at which point participants provided informed consent themselves. The same informed consent process was used for friends and romantic partners. All participants along with their close friend and romantic partner were asked to complete questionnaires via mailings or in-person. Additionally, participants have

visited University offices to participate in video-recorded interaction tasks with their romantic partners.

The sample is representative of the southeastern US area it was recruited from with 63% of the sample identifying as European-American, 27% African-American, and 14% other ethnicities or mixed-race. Median baseline family income at the first assessment was in the $40,000 to $59,000 range. In addition, 63% of the teens' mothers were married, 14.4% divorced, 9.8% single, and 13.2% reported other (separated, widowed, or living with partner). Both gender interactions (Hypothesis 2) and baseline family income interactions (preliminary analyses) were analyzed to assess any potential moderating effects of these demographic factors.

Measures

Mental Health Measures

All mental health assessments are assessed annually. Thus, for each measure described below, I ultimately averaged the mental health construct (i.e. internalizing or externalizing symptoms) across ages 17, 18, and 19 for Time 1; 20, 21, and 22 for Time 2; 23, 24, and 25 for Time 3; and 26, 27, and 28 for Time 4 to create four distinct time points of assessments. This mirrors the three-year assessment windows given for the romantic relationship measures and provides a broader picture of mental health functioning during distinct developmental stages.

Internalizing Symptoms (Annually; Ages 17-28). Overall internalizing symptoms are measured via self-report using the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) and the Child Depression Inventory (Kovacs & Beck, 1977) at age 17. The Beck Anxiety Inventory is a 21-item self-report questionnaire of anxiety symptoms and is summed to provide a total anxiety score. The Beck Anxiety Inventory has shown high internal consistency, convergent and discriminant validity, and test-retest reliability and has strong support for use in an

adolescent outpatient sample (Beck et al., 1988; Fydrich, Dowdall, & Chambless, 1992; Steer, Kumar, Ranieri, & Beck, 1995). The Child Depression Inventory is a 27-item questionnaire used to assess depression severity. All items are rated on a 4-point scale ranging from 0 to 3 with higher scores indicating greater depression severity. The Child Depression Inventory has acceptable item-total score product-moment correlations, internal-reliability (split-half reliabilities, Pearson correlations of each item to the total score), test-retest reliability, and discriminant validity (Helsel & Matson, 1984; Kovacs & Beck, 1977; Smucker, Craighead, Craighead, & Green, 1986). The Beck Anxiety Inventory and Child Depression Inventory both have very good internal consistency (Cronbach's α = .94 and .84 respectively).

Internalizing symptoms from ages 18 to 28 are measured via the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), the Beck Depression Inventory (Beck & Steer, 1987), and the Adult Self Report (Achenbach & Rescorla, 2003). The 20-item trait subscale of the State-Trait Anxiety Inventory assesses overall individual differences in anxiety symptoms. All items are scored on a 4-point Likert scale where 1=almost never, 2=sometimes, 3=often, and 4=almost always. The total sum score provides an overall score for anxiety symptoms, with higher scores reflecting more anxious symptoms. The State-Trait Anxiety Inventory demonstrates high test-retest reliability and convergent validity with other validated measures of anxiety (Cattell & Scheider, 1963; Spielberger et al., 1970). The State-Trait Anxiety Inventory has excellent internal consistency across waves (Cronbach's α = .89-.93).

The Beck Depression Inventory is a 21-item questionnaire designed to measure depressed mood. Items are rated on a 4-point scale where 0 represents no experience of the symptom and 3 represents greater experience of the symptom. The Beck Depression Inventory is one of the most widely accepted instruments for detecting possible depression in normal populations (Steer,

Beck, & Garrison, 1985) and has demonstrated reliability & concurrent validity with observational ratings (Jolly, Wiesner, Wherry & Jolly, 1994). Higher scores on both the Child Depression Inventory and the Beck Depression Inventory represent greater depressive symptoms. The Beck Depression Inventory has very good internal consistency across waves (Cronbach's α = .83-.91).

The Adult Self Report measure is a 126-item measure with internalizing, externalizing, substance use, attention problems, and thought problems subscales. Items are scored on a three-point Likert scale where 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. The internalizing subscale on the Adult Self Report is composed of 32 items assessing anxiety, depression, withdrawal, and somatic complaints. The Adult Self Report Internalizing subscale has excellent internal consistency across waves (Cronbach's α = .90-.94). Higher scores on all three measures thus indicate greater internalizing symptoms.

A standardized average of the Beck Anxiety Inventory and Child Depression Inventory will serve as the initial baseline internalizing symptoms score for adolescents at age 17. A standardized average of the State-Trait Anxiety Inventory, Beck Depression Inventory, and Adult Self Report internalizing subscale for each individual age from 18 to 28 will serve as the internalizing symptoms score.

Externalizing Symptoms (Annually; Ages 17-28). Overall externalizing symptoms are measured using self-report on the Child Behavior Checklist (Achenbach & Edelbrock, 1981) at age 17 and the Adult Self Report (Achenbach & Rescorla, 2003) at ages 18-28. The Child Behavior Checklist is a 113 item measure assessing broad mental health functioning with 9 subscales including withdrawal, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior. Items are scored on

a three-point Likert scale where 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. Items from the 12-item aggression and 16-item delinquency subscales were summed to form an externalizing score. Items on the Child Behavior Checklist have been cross-validated with DSM-criteria and show moderate reliabilities across cultures and ages (Achenbach et al., 2008; Achenbach, Dumenci, & Rescorla, 2003a; Achenbach & Edelbrock, 1987). The Child Behavior Checklist externalizing subscale has moderate internal consistency at age 17 (Cronbach's $\alpha = .79$).

The Adult Self Report consists of 126 items assessing mental health functioning that similarly use a three-point Likert scale. The externalizing subscale consists of 35 items assessing rule-breaking, aggressive, and intrusive behaviors. This subscale has been validated with mental health professional raters and DSM-oriented criteria (Achenbach, Dumenci, & Rescorla, 2003b). The externalizing subscale of the Adult Self Report has moderate to good internal consistency across waves (Cronbach's $\alpha = .71$-$.90$).

A standardized score of the Child Behavior Checklist externalizing subscale will serve as the initial baseline externalizing symptoms score for adolescents at age 17. A standardized score of the Adult Self Report externalizing subscale for each individual age from 18 to 28 will serve as the externalizing symptoms score for each age.

Romantic Relationship Quality Measures

All romantic relationship quality measures are assessed once during a three-year period. This means that participants and their romantic partner complete the following assessments described below up to four times: once between the ages of 17 and 19; 20 and 22; 23 and 25; and 26 and 28).

Hostile Conflict (Once every 3 years; Ages 17-28). Participants and their romantic partners complete a variety of questionnaires regarding themselves, partners, and the relationship as a whole once every 3-year period from ages 17 to 28. Participants and their romantic partner complete an adapted version of the Conflict in Relationships Questionnaire (CIR; Wolfe, Reitzel-Jaffe, Gough, & Wekerle, 1994). The Conflict in Relationships Questionnaire is a well-validated 80-item measure to assess emotion, physical, and sexual abuse within the current romantic relationship committed by both the respondent and the respondent's partner. All items are rated on a 4-point Likert scale where 1=never, 2=rarely, 3=sometimes, and 4=often. Participants and partners completed an adapted 70-item version (i.e., excluding items about children as this was not applicable to our sample when first administered and retained similar form for consistency). There is a total overall positive and negative subscale on the Conflict in Relationships Questionnaire. The total negativity subscale consists of the average of the individual's reports of their own and their partner's abusive and harmful behaviors including blame, coercion, and physical and sexual abuse (54 items total). The items of the negativity subscale in particular have shown acceptable partner agreement, test-retest reliability, and correlation between observer ratings and measure scores (Wolfe et al., 1994; Wolfe et al., 2001). The averaged negativity subscale of the Conflict in Relationship Questionnaire demonstrates very good internal consistency for the participant report (Cronbach's α = .93-.94) and excellent internal consistency for the romantic partner report (Cronbach's α = .93-.95).

In addition, participants and their partners complete the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) about their current romantic relationships. The Network of Relationships Inventory is a 45-item measure assessing positive and negative qualities in close relationships. This measure consists of 15 subscales including qualities such as

conflict, antagonism, intimacy, affection, companionship, and nurturance. All items are scored on a 5-pont Likert scale where 1=little or none, 2=somewhat, 3=very much, 4=extremely much, and 5=the most, such that higher scores indicate greater endorsement of the assessed quality. For the purposes of this study, the conflict and antagonism subscales (3 items each) will be used to assess negative interactions between participants and their partners. Conflict and antagonism have been identified as a second-order factor within the Network of Relationships Inventory. The averaged conflict and antagonism subscale of the Network of Relationships Inventory demonstrates excellent internal consistency for target report (Cronbach's α = .90-.94) and for romantic partner report (Cronbach's α = .87-.94).

In addition, participants and romantic partners engage in an 8-minute recorded observational task in which couples were asked to discuss a relationship issue on which they had reported disagreement. Two trained coders used the Autonomy and Relatedness Coding System (Allen et al., 2000) to code the recorded interactions for hostile and rude behaviors. These behaviors include interrupting, steamrolling, distracting, ignoring, or other statements that are rude, hostile, mean, or devaluing of the other person. The average of both the individual and his/her partner's hostile scores creates a dyadic sum score. Inter-rater reliability for hostile interactions has an intraclass coefficient ranging from .68 to .90 for the target's hostility and from .60 to .93 for the romantic partner's hostility.

A standardized average of the participant and partner reports of both the Conflict in Relationships negative subscale and the Network of Relationships Inventory negative interactions factor (conflict and antagonism subscales) as well as the participant and partner hostility scores will serve as the dyadic hostile conflict construct for each age period.

Support (Once every 3 years; Ages 17-28). Support within romantic relationships will be assessed via self- and romantic partner-reports of the Network of Relationships Inventory and via observed behaviors during a support-seeking task. Participants and their romantic partners complete the Network of Relationships Inventory about their current relationship. Support will be assessed via the 3-item (each) instrumental aid and support subscales. Therefore, the support factor will be comprised of the average of the participant and the partner's responses to 6 items each. The Network of Relationships Inventory 6-item support scale demonstrates very good internal consistency for the participant report (Cronbach's α = .85-.92) and moderate consistency for the romantic partner report (Cronbach's α = .81-88).

Participants and their romantic partners participated in a supportive behavior task in which they were instructed to discuss a problem they were having and wanted advice about. The task was videotaped and lasted 6 minutes total. The videotapes were then coded using the Supportive Behavior Coding System (Allen et al., 2001) based on several other similar systems (Crowell et al., 1998; Haynes & Fainsilber Katz, 1998; Julien et al., 1997). Observed support was reliably coded as the extent to which the adolescents appeared to be connected and engaged with their romantic partner during the interaction based on both quantity and quality of signs of connection. Low levels of support are indicated by little eye contact, turning away from the partner, ignoring or not responding to the partner, looking bored, or interrupting the partner. High levels of support include a sincere effort to connect with the partner, finishing sentences, evidence of understanding the partner's statements, responding with genuine interest and enthusiasm, asking open-ended questions to draw the support seeker out, following up on what the partner says, and using non-verbal cues to indicate understanding such as nodding, facing each other, and eye contact. An average of the scores provided by two trained raters blind to the

rest of the data in the study comprised the supportive score for each interaction. Ultimately, the average of both the individual and his/her partner's supportive scores creates a dyadic sum score. Inter-rater reliability for supportive interactions has an intraclass coefficient ranging from .60 to .75 for the target's engagement and from .68 to .80 for the romantic partner's engagement during the support-seeking task.

A standardized average of the participant and partner report of the Network of Relationship support factor and the participant and partner observed support will serve as the overall romantic support construct for each age period.

Secure Attachment (Once every 3 years; Ages 17-28). Secure attachment will be assessed using participant self-report of the Experiences in Close Relationships questionnaire (Brennan et al., 1998). The Experiences in Close Relationships questionnaire is a 36-item measure, which assesses avoidant (18 items) and anxious attachment (18 items) to a current romantic partner. Items are scored on a 7-point Likert scale where 1=disagree strongly, 4=neutral/mixed, and 7=agree strongly, where several items are reverse coded so that higher scores indicate greater anxious or avoidant behaviors. For the purposes of this study, the total sum score of all items will be reversed so that higher scores will reflect more secure attachment to remain consistent with the other variables (i.e. higher scores reflect greater or more of that particular construct). The Experiences in Close Relationships questionnaire has demonstrated strong validity with theoretical accounts of attachment dimensions (Bartholomew, 1990). The total sum score of the Experiences in Close Relationships questionnaire demonstrates excellent internal consistency (Cronbach's α = .93-.96).

Intimacy (Once every 3 years; Ages 17-28). Intimacy within a current romantic relationship will be assessed via self- and romantic partner- reports of the Network of

Relationships Inventory. Participants and their romantic partners complete the 3-item intimacy subscale and the 3-item affection subscale of the Network of Relationships Inventory. A total sum score of all six items will serve as the overall intimacy score. The participant and partner reports will be averaged to form a dyadic intimacy score and serve as the intimacy construct for this study. The Network of Relationships dyadic intimacy score has very good internal consistency for the target report (Cronbach's α = .83-.92) and for the romantic partner report (Cronbach's α = .86-.89).

Close Friendship Measures

All nonromantic relationship quality measures are assessed annually. Thus, for each measure described below, we ultimately average the global friendship quality construct across ages 17, 18, and 19; 20, 21, and 22; 23, 24, and 25; and 26, 27, and 28 to create four distinct time points of assessments. This mirrors the three-year assessments given for the romantic relationship measures and provides a broader picture of friendship quality during distinct developmental stages.

Friendship Quality (Annually; Ages 17-28). At ages 17-19, participants and their close friend completed the Friendship Quality Questionnaire (Parker & Asher, 1993). This 40-item measure consists of 6 subscales including caring/validating, conflict resolution, conflict and betrayal, help/guidance, companionship/recreation, and intimate exchange. All items are scored on a 5-point Likert scale where 1=not at all true, 2=a little true, 3=somewhat true, 4=pretty true, and 5=really true. Negative-valenced items are reverse scored so that higher scores reflect more positive friendship quality (i.e., greater caring, conflict resolution, help, companionship, intimacy, and less conflict betrayal). The averaged total sum score from participant and friend reports is used to represent overall friendship quality from the Friendship Quality Questionnaire

for ages 17-19. The total Friendship Quality Questionnaire score demonstrates excellent internal consistency for both target reports (Cronbach's α = .95-.96) and close friend reports (Cronbach's α = .95).

The Network of Relationships Inventory was administered to participants and their closest friend to assess the quality of their friendship from ages 20-28 and replaced the administration of the Friendship Quality Questionnaire. The 45-item measure assesses positive and negative qualities among 15 subscales. The total positive subscale is composed of the following subscales of 3-items each: companionship, instrumental aid, intimacy, nurturance, affection, admiration, reliable alliance, support, and satisfaction. The participant and friend positive subscale scores will be averaged to create an overall account of positive relationship quality within close friendships for ages 20-28. The Network of Relationships positive subscale has excellent internal consistency for both target reports (Cronbach's α = .94-.96) and close friend reports Cronbach's α = .94-.95).

At ages 17-28, participants' close friends also completed the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1989) to assess perceptions of closeness versus isolation within their friendship. The overall attachment score of the Inventory of Parent and Peer Attachment is composed of all 25 items assessing trust, quality of communication, and alienation in the relationship. Each item is scored on a 5-point L

ikert scale where 1=Never true to 5=Always true. Higher scores reflect higher quality attachment. The Inventory of Parent and Peer Attachment overall attachment score has excellent internal consistency (Cronbach's α = .90-.95).

A standardized average of the Friendship Quality Questionnaire dyadic sum score and peer-report of the Inventory of Parent and Peer Attachment overall attachment score will provide

the overall friendship quality construct at ages 17-19. A standardized average of the Network of Relationship dyadic positive subscale and the peer-report of the Inventory of Parent and Peer Attachment overall attachment score will serve as the overall friendship quality constructs at ages 20-22, 23-25, and 26-28.

Other Measures

Relationship Intensity (Once every 3 years; Ages 17-28). The intensity of the current romantic relationship is assessed via target participant self-report on two items. First, participants are asked, "How important is the relationship to you?" with responses scored on a 4-point Likert scale where 1=Not very important, 2=Somewhat important, 3=Important, and 4=Very important. Second, participants are asked, "How serious would you say your relationship is with your romantic partner?" with responses scored on a 5-point Likert scale where 1=Not very serious, 3=Somewhat serious, and 5= Very serious. A standardized average of the important and serious questions will serve as the intensity construct for this study. The correlation between relationship importance and seriousness ranges from .29 to .41.

Relationship Duration (Once every 3 years; Ages 17-28). Target participants reported the duration of their current romantic relationship once every three years, at the same time they completed the behavioral tasks and questionnaires about their relationship.

Data Analytic Plan

The data analytic plan for each set of hypotheses is proposed below. Although data is aggregated over three year periods for mental health variables and collected once during that same three year period for romantic relationship data, I will be using the average age of each romantic relationship time point for the remainder of this analysis. Specifically, this means that I will use

age 19 to represent Time 1, age 22 to represent Time 2, age 25 to represent Time 3, and age 28 to represent Time 4.

Hypothesis 1: Different romantic relationship qualities will be concurrently related to internalizing vs. externalizing symptoms. Hierarchical regression analyses using a Full Information Maximum Likelihood (FIML) approach which accounts for missing data were used to establish the relation between romantic quality and internalizing symptoms and romantic quality and externalizing symptoms after accounting for gender and baseline family income (Hypothesis 1a and 1b). See Appendix B, Figure 1 for an overview of the proposed model and Appendix B, Figure 2 for specific example of the association between intimacy and internalizing symptoms. In total, 12 regression analyses were conducted in which each relationship quality (i.e., intimacy, attachment, support (dyadic and observed), and conflict (dyadic and observed)) was aggregated across ages 17-28 and individually included as predictors of mental health. Separate models were assessed for internalizing and externalizing symptoms to determine whether there is a relation between each romantic quality and mental health. All analyses were conducted using SAS statistical packages (Sas Institute, 2015).

In addition, regression analyses using nested path models were assessed to determine if relations between romantic relationship quality and mental health symptoms were different across each pair of time points (i.e., age 19 to 22, 25, and 28; 22 to 25 and 28; and 25 to 28), or whether the effect is the same between each pair of time points (Hypothesis 1c). I conducted a chi-square difference test (6 tests for internalizing and 6 tests for externalizing symptoms for each pair of time points) comparing two nested models where in one model the effect of romantic quality on mental health is held constant (i.e., constrained or fixed) for two time points, and in the second model the effect of romantic quality on mental health is not held constant (i.e.,

unconstrained). These tests are done separately for each romantic quality at a time comparing one pair of time points at a time. See Appendix B Figure 3 for example of testing the effect of intimacy on internalizing symptoms for ages 19 and 22.

I tested one pair at a time in order to assess whether the association between romantic quality and mental health is different between each of the two time points assessed. If there was a significant difference between the two models for any given pair of time points, then I conducted hierarchical regression analyses using a FIML approach to assess the relation between romantic quality and mental health for each of the two time points individually to determine whether the relationship appears to strengthens or weakens between time points.

Hypothesis 2: Gender will influence the strength of the association between romantic relationship quality and mental health. T-test analyses were completed in order to examine potential gender differences in all key variables of interest to determine whether there were gender differences amongst mental health symptoms and relationship qualities at baseline and concurrent associations (Hypothesis 2a). In addition, gender was assessed as a moderator of the relation between romantic quality and mental health (Hypothesis 2b). Moderation was assessed for all analyses by creating interaction terms based on the product of the centered main-effects variables (i.e., relationship quality construct X gender). I initially examined the interactions as a block by conducting chi-square difference tests in which I included all romantic qualities and their interaction with gender in a model in which the interaction terms were fixed at zero, and compared to a model in which the interaction terms were unconstrained predicting internalizing and externalizing symptoms in separate models for each of the four time points (4 tests for predicting internalizing and 4 for predicting externalizing symptoms in total). See Appendix C

Figure 4 for sample of the constrained proposed model for predicting internalizing symptoms at age 19.

For those where there was a significant difference between the two models, I next examined the interactions individually by romantic quality by adding in an interaction term to regression analyses where each romantic quality and its interaction with gender were included in separate analyses (6 total analyses per follow-up) predicting the outcome of interest. See Appendix C, Figure 5 for overview of proposed model and Figures 6 and 7 for a specific example of gender moderating the relation between intimacy and internalizing symptoms in adolescence. If the interaction term was significant (at $p \leq .05$), then I conducted follow-up analyses in which I assessed regressions separately by gender. Further, if significant gender differences emerged for concurrent relationships, I conducted post-hoc gender moderation analyses of Hypotheses 5 and 6.

Hypothesis 3: Contextual factors (i.e., friendship quality) will influence the strength of the association between romantic relationship quality and mental health. Close friendship quality was assessed as a moderator of the relation between romantic quality and mental health. Moderation was assessed for all analyses by creating interaction terms based on the product of the centered main-effects variables (i.e., relationship quality construct X close friendship quality). Similar to Hypothesis 2, I initially examined the interactions as a block by conducting chi-square difference tests in which I included all romantic qualities and their interaction with close friendship quality in a model in which the interaction terms were fixed at zero and compared to a model in which the interaction terms were unconstrained predicting internalizing and externalizing symptoms in separate models for each of the four time points (4 tests for

predicting internalizing and 4 for predicting externalizing). See Appendix D Figure 8 for sample of the constrained proposed model for predicting internalizing symptoms at age 19.

For those where there was a significant difference between the two models, I next examined the interactions individually by adding in an interaction term as well as friendship quality as a covariate to regression analyses where each romantic quality and its interaction were included in separate analyses (6 total analyses per follow-up) predicting the outcome of interest. See Appendix D, Figure 9 for overview of proposed model and Figures 10 and 11 for a specific example of close friendship quality moderating the relation between intimacy and internalizing symptoms in adolescence. If the interaction term was significant (at the $p \leq .05$), I then conducted follow-up analyses via simple slopes analysis using the PROCESS macro, version 3.3 (Hayes, 2009) in SAS (Sas Institute, 2015). Further, if significant close friendship quality differences emerged for concurrent relationships, I conducted post-hoc close friendship quality moderation analyses of Hypotheses 5 and 6.

Hypothesis 4: Relationship intensity and duration will influence the strength of the association between romantic relationship quality and mental health. Relationship intensity and duration were each assessed as potential moderators of the relation between romantic quality and mental health using all aggregated variables from ages 17-28 (Hypothesis 4a and 4b respectively).

Similar to Hypotheses 2 and 3, moderation was assessed for all analyses by creating interaction terms based on the product of the centered main-effect variables (i.e., relationship quality construct X intensity or relationship quality construct X duration). I initially examined the interactions as a block by conducting chi-square difference tests in which I included all romantic qualities and their interaction with intensity or duration in a model in which the

interaction terms were fixed at zero compared to a model in which the interaction terms were unconstrained predicting internalizing and externalizing symptoms in separate models for internalizing and externalizing symptoms (2 tests for intensity and 2 tests for duration). See Appendix E Figure 12 for sample of the constrained proposed model for intensity and internalizing symptoms and Appendix E Figure 13 for sample for the constrained proposed model for duration and internalizing symptoms.

For those where there was a significant difference between the two models, I next examined the interactions individually by adding in the interaction term as well as intensity or duration as a covariate to regression analyses where each romantic quality and its interaction were included in separate analyses (6 total analyses per follow-up) predicting the outcome of interest. See Appendix E Figures 14 and 15 for specific example of relationship intensity moderating the relation between intimacy and internalizing symptoms from ages 17-28. See Appendix E, Figures 16 and 17 for specific example of relationship intensity moderating the relation between intimacy and internalizing symptoms from ages 17-28. If the interaction term was significant (at the $p \leq .05$), then I conducted follow-up analyses via simple slopes analysis using the PROCESS macro, version 3.3 (Hayes, 2009) in SAS (Sas Institute, 2015). If significant intensity or duration differences emerged for concurrent relationships, I conducted post-hoc intensity or duration moderation analyses of Hypotheses 5 and 6.

Hypothesis 5: *Specific relationship qualities will predict relative change in mental health symptoms over time to the subsequent data collection wave, while others will only have transient effects on mental health.* Initially, I examined the effect of relationship quality on mental health over the short-term as a block for each romantic quality by evaluating nested path models in which the effect of the romantic quality on the outcome of interest (internalizing or externalizing

symptoms) was held constant across predictions to subsequent waves for all three short-term predictions simultaneously (i.e., relative change in mental health symptoms from age 19 to 22, age 22 to 25, age 25 to 28). These lagged predictions established whether there is an effect of each romantic quality on subsequent mental health as a block and provide an overarching analysis of short-term predictions.

I then conducted chi-square difference tests in which I compared this constrained model to an unconstrained model (again 6 tests for internalizing and 6 for externalizing symptoms because each romantic quality was tested in its own individual model). The chi-square difference tests help to determine whether there was evidence of differential relations across all three short-term predictions of each specific romantic quality on mental health when predicting relative changes from age 19 to 22, age 22 to 25, and age 25 to 28 individually versus as a block. See Appendix F Figure 18 for overview sample of the full constrained proposed model for predicting relative change in internalizing symptoms, and Figure 19 for specific example of a constrained model assessing the effect of intimacy on internalizing symptoms for all three short-term predictions in the same model. Separate analyses for each romantic quality were conducted.

For those where there was a significant difference between the two models, I next used hierarchical regression analyses using a Full Information Maximum Likelihood approach for handling missing data to establish the relative change in mental health predicted by romantic quality after accounting for gender, baseline family income, and the baseline level of mental health separately for each time point comparison (3 analyses per follow-up). See Appendix F, Figure 20 for a specific example of the hierarchical regression analysis in which intimacy predicts relative change in internalizing symptoms from age 19 to 22 while accounting for

gender, baseline family income, and age 19 internalizing symptoms. Each romantic quality will be included in its own regression analysis.

Hypothesis 6: For those relationship qualities that consistently predict relative change in mental health across the subsequent data collection wave, the qualities will also be predictive of relative change in mental health over longer periods of time. Both the direct effects pathway from earlier romantic relationship qualities and adult mental health as well as mediated pathways via the effect on subsequent romantic relationship qualities will be tested as needed. Based on the results from Hypothesis 5, further analysis of specific romantic relationship qualities predicting relative change in mental health symptoms over time were conducted to determine when and how long-term predictions begin to take hold. Initially, hierarchical regression analyses using a Full Information Maximum Likelihood approach for handling missing data were used to establish the relative change in mental health predicted by earlier romantic quality after accounting for gender, baseline family income, and baseline level of mental health. See Appendix G, Figure 21 for a specific example of the hierarchical regression analysis in which intimacy predicts relative change in internalizing symptoms from age 19 to 25 while accounting for gender, baseline family income, and age 19 internalizing symptoms (Hypothesis 6a). See Appendix G, Figure 22 for a specific example of the hierarchical regression analysis in which intimacy predicts relative change in internalizing symptoms from age 19 to 28 while accounting for gender, baseline family income, and age 19 internalizing symptoms (Hypothesis 6b). See Appendix G, Figure 23 for a specific example of the hierarchical regression analysis in which intimacy predicts relative change in internalizing symptoms from age 22 to 28 while accounting for gender, baseline family income, and age 22 internalizing symptoms (Hypothesis 6c).

If the results are significant ($p \leq .05$), then follow-up analysis was conducted using a path model in order to determine whether earlier relationship qualities predict directly vs. have predictions mediated by later experiences. I assessed two potential pathways. The direct effects pathway from relationship quality in adolescence to mental health in young adulthood was tested via hierarchical regression analyses in which the specific relationship quality being tested at ages 19, 22, and 25 are all included within the same model along with accounting for gender, baseline family income, and age 19 baseline mental health (Hypothesis 6a). If the direct effects pathway is not significant, I conducted mediation analyses to determine whether the relationship quality at age 19 to mental health at age 25 effect is mediated by relationship quality at ages 22 and 25. See Appendix G, Figure 24 for an overview model of the follow-up analysis for Hypothesis 6a in which the green pathway represents the direct effects pathway and the blue pathway represents the mediated model. See Appendix G, Figure 25 for a specific model of the follow-up analysis in which intimacy is predicting relative change in internalizing symptoms over time for Hypothesis 6a. Relationship qualities will be assessed independently in Hypothesis 6, rather than including all relationship constructs within the same model.

A parallel set of analyses will be conducted to determine the relation between relationship qualities at age 19 to mental health at age 28. Specifically, this means the direct effects pathway from relationship quality in adolescence to mental health in adulthood was tested via hierarchical regression analyses in which the specific relationship quality being tested at ages 19, 22, 25, and 28 are all included within the same model along with accounting for gender, baseline family income, and age 19 baseline mental health (Hypothesis 6b). If the direct effects pathway is not significant, I will conduct mediation analyses to determine whether the relationship quality at age 19 to mental health at age 18 effect is mediated by relationship quality

at ages 22, 25, and 28. See Appendix G, Figure 26 for an overview model of the follow-up analysis for Hypothesis 6b in which the green pathway represents the direct effects pathway and the blue pathway represents the mediated model. See Appendix G, Figure 27 for a specific model of the follow-up analysis in which intimacy is predicting relative change in internalizing symptoms over time for Hypothesis 6b.

A parallel set of analyses will be conducted to determine the relation between relationship qualities at age 22 to mental health at age 28. Specifically, this means that the direct effects pathway from relationship quality in young adulthood to mental health in adulthood will be tested via hierarchical regression analyses in which the specific relationship quality being tested at ages 22, 25, and 28 are all included within the same model along with accounting for gender, baseline family income, and age 22 baseline mental health (Hypothesis 6c). If the direct effects pathway is not significant, I will conduct mediation analyses to determine whether the relationship quality at age 22 to mental health at age 28 effects is mediated by relationship quality at ages 25 and 28. See Appendix G, Figure 28 for an overview model of the follow-up analysis for Hypothesis 6c and Figure 29 for a specific model of the follow-up analysis in which intimacy is predicting relative change in internalizing symptoms over time for Hypothesis 6c.

Results

Preliminary Analyses

Factor Analysis

Factor analytic techniques were used to generate more parsimonious constructs from the multiple relationship quality measures based on an iterative principle factor analysis approach. However, factors were consistently being clustered by method rather than by construct (e.g. self report variables together, partner report variables together, observed variables together), which

was determined to reflect the correlated error of measurement as shown in Appendix H for ages 19 and 22. The decision was made to try grouping measures conceptually by construct, while separating variables by method (i.e., self and partner reported as a concept and observed as a concept), using factor analysis to determine whether this was an appropriate grouping. A test then was conducted to see if each of the construct groupings could in fact be considered a single factor by the proposed groupings (e.g., partner and self report variables together; observed variables together). Each test confirmed that the proposed groupings could be considered one factor.

Thus, the most significant change in the initially proposed constructs following the factor analysis was in regard to conflict and support. Because observed variables consistently grouped together separately from the teen and partner reported variables, I decided to create observed variables and dyadic reported variables. Therefore, there are two constructs measuring conflict: dyadic conflict, which consists of target participant and romantic partner report of the NRI Conflict and Antagonism subscales and the CIR negativity subscale (Cronbach's α = .83 at age 19, .82 at age 22, .92 at age 25, and .90 at age 28) and observed conflict, which consists of the dyadic hostility score from the Autonomy and Relatedness Task (Cronbach's α = .54 at age 19, .66 at age 22, .73 at ages 25-25, and .72 at age 28). Similarly, there are two constructs measuring support: dyadic support, which consists of target participant and romantic partner report of the NRI Support and Instrumental Aid subscales (Cronbach's α = .69 at age 19, .55 at age 22, .57 at age 25, and .67 at age 28) and observed support, which consists of the dyadic supportive score from the Supportive Behavior Task (Cronbach's α = .80 at age 19, .84 at age 22, .79 at age 25, and .85 at age 28).

In addition, the intimacy construct remained comprised of the target participant and romantic partner report of the NRI Intimacy and Affection subscales (Cronbach's α = .72 at age 19, .68 at age 22, .60 at ages 25-25, and .77 at age 28). The attachment construct remained comprised of the target participant report of the entire Experiences in Close Relationship questionnaire (Cronbach's α = .54 at age 19, .47 at age 22, .61 at age 25, and .54 at age 28). In sum, there are 6 romantic quality constructs that are assessed – intimacy, secure attachment, dyadic support, dyadic conflict, observed support, and observed conflict. These six factors were then incorporated into all analyses as individual predictors of mental health.

Regarding moderation variable constructs, the close friendship quality variable demonstrated good consistency (Cronbach's α = .85 at age 19, .76 at age 22, .83 at ages 25-25, and .84 at age 28). The intensity variable consists of two items assessing relationship importance and seriousness which were moderately correlated (r =.29, p < .01 at age 19; r = .33, p < .01 at age 22; r =.41, p < .001 at age 25; and r = .40, p < .001 at age 28).

Univariate Statistics

Means and standard deviations for all variables of interest examined in the study were standardized such that all variables had a mean of 0 and standard deviation of 1. T-tests were conducted to examine potential gender differences in all variables of interest. The observed dyadic support score was higher for the male participants compared to the females at age 22 (t(100) = 2.41, p = .02, Cohen's d = .47) and at age 25 (t(90) = 2.18 p = .03, Cohen's d = .45). At all time points, close friendship quality was higher for females compared to males: (t(177) = -7.01, p < .0001, Cohen's d = -1.08) at age 19; (t(177) = -4.11, p < .0001, Cohen's d = -.62) at age 22; (t(177) = -5.22, p < .0001, Cohen's d = -.74) at age 25; and (t(166) = -3.81, p = .0002,

Cohen's d = -.58) at age 28. Finally, relationship intensity was higher for females compared to males at age 19 ($t(147)$ = -3.07, p = .02, Cohen's d = .53).

Correlational Analyses

The simple univariate correlations among all variables of interest are included in Table 1. Autocorrelations for all key variables of interest across time at all four time points are presented in Table 2.

Baseline Family Income Moderation

Baseline family income was assessed as a potential moderator of the relation between romantic quality and mental health using romantic quality variables aggregated across ages 17-28. Potential moderating effects of baseline family income were assessed by creating interaction terms based on the product of the centered main-effects variables (i.e., relationship quality construct X baseline family income). Because there were no *a priori* hypotheses regarding the baseline family income moderation of the effect of romantic quality on mental health based on age, aggregated variables from ages 17-28 were used to assess moderation. I initially examined the interactions as a block by conducting chi-square difference tests in which I included all romantic qualities and their interaction with baseline family income in a model in which the interaction terms were fixed at zero compared to a model in which the interaction terms were unconstrained. Separate models predicted internalizing and externalizing symptoms (2 tests total). This allows for an overarching test of whether baseline family income moderates the relation between romantic quality and mental health. The chi-square difference tests comparing constrained and unconstrained models of aggregated variables from ages 17-28 for predicting internalizing and externalizing symptoms were both not significant (df = 6, χ^2 = 5.23 and df=6, χ^2 = 1.32, respectively). Thus, results indicate no support for baseline family income moderation

of the effect of romantic quality on mental health. Potential moderating effects of gender, the other covariate, were assessed in Hypothesis 2 because there were specific predictions regarding the impact of gender on the relation between romantic quality and mental health.

Primary Analyses

Hypothesis 1: Different romantic relationship qualities will be concurrently related to internalizing vs. externalizing symptoms.

Hypothesis 1a: High levels of hostile conflict will be concurrently related to greater internalizing symptoms; high levels of support, secure attachment, and intimacy will be concurrently related to fewer internalizing symptoms. A series of simple linear regressions with variables entered hierarchically was performed to examine whether higher aggregated levels of hostile conflict were related to greater internalizing symptoms and higher aggregated levels of support, secure attachment, and intimacy were related to fewer internalizing symptoms. Gender and baseline family income were entered together first in all models. The effect of gender and baseline family income on aggregated internalizing symptoms is presented in Table 3. Second, the specific relationship quality was entered in individual regressions. Regression results as shown in Table 4 include the standardized beta weights for 12 distinct models examining the effects of each romantic relationship quality predicting internalizing symptoms (and externalizing symptoms) after accounting for gender and baseline family income. Results revealed that greater dyadic hostile conflict was related to more internalizing symptoms. Greater secure attachment was related to fewer internalizing symptoms. Intimacy, dyadic support, observed support, and observed conflict were not significantly related to internalizing symptoms.

Hypothesis 1b: High levels of hostile conflict will be concurrently related to greater externalizing symptoms; high levels of support and secure attachment will be concurrently

related to fewer externalizing symptoms. A series of simple linear regressions with variables entered hierarchically was performed to examine whether higher aggregated levels of hostile conflict was related to greater externalizing symptoms and higher aggregated levels of support and secure attachment were related to fewer externalizing symptoms. Gender and baseline family income were entered together first in all models. The effect of gender and baseline family income on aggregated externalizing symptoms is presented in Table 3. Second, the specific relationship quality (i.e., attachment, dyadic support, dyadic conflict, observed support, and observed conflict) was entered in independent regressions such that each relationship quality was assessed individually.

Regression results as shown in Table 4 include the standardized beta weights for the effects of attachment, dyadic support, dyadic conflict, observed support, and observed conflict separately predicting externalizing symptoms after accounting for gender and baseline family income. Results indicate greater secure attachment was related to fewer externalizing symptoms. Additionally, results indicate that greater dyadic conflict and observed conflict were both related to more externalizing symptoms. Dyadic support and observed support were not related to externalizing symptoms.

Post-hoc Analysis for Hypothesis 1b. In addition to the proposed hypothesis, I also assessed the non-hypothesized aggregated relationship quality constructs (i.e., intimacy) as a predictor of concurrent externalizing symptoms. As hypothesized, intimacy was not related to externalizing symptoms.

Hypothesis 1c: The concurrent association between relationship qualities and mental health will be stronger in adulthood compared to in adolescence. Nested path models were assessed to determine if relations between each romantic relationship quality and mental

health symptoms were significantly different in magnitude across time points. The results including the chi-square difference tests and their significance for each analysis are presented in Appendix I Table 1 for internalizing symptoms and Appendix I Table 2 for externalizing symptoms. When the chi-square difference test between two time points was significant, follow-up hierarchical regression analyses were conducted to determine the standardized beta weight of romantic quality on mental health at each time point individually.

Internalizing Symptoms. Results indicate the association between observed support and internalizing symptoms was different at ages 19 and 22. Follow-up regression analyses as presented in Table 5 indicate observed support was significantly related to internalizing symptoms at age 19, but was not significantly related to internalizing symptoms at age 22; thus there was a weakening of the association between observed support and internalizing symptoms over time. Results suggest that all other associations between relationship qualities and internalizing symptoms were not significantly different in magnitude at ages 19 and 22.

Results also indicate the association between intimacy and internalizing symptoms was different at ages 22 and 28. Follow-up regression analyses as presented in Table 5 indicate intimacy was associated with greater internalizing symptoms at age 22 and to fewer internalizing symptoms at age 28, although not statistically significant. Results suggest that all other associations between relationship qualities and internalizing symptoms were not significantly different in magnitude at ages 22 and 28.

The association between the remaining relationship qualities (i.e., attachment, dyadic support, dyadic conflict, and observed conflict) and internalizing symptoms were not significantly different in magnitude across each time point comparison. Specifically, this means that the associations between each relationship quality and internalizing symptoms were the

same strength at ages 22 and 25; 25 and 28; 19 and 25; and 19 and 28. The chi-square difference tests revealed there was no significant difference between the constrained and unconstrained models for these associations.

Externalizing Symptoms. Results indicate there were significant differences in the associations between intimacy, dyadic support, and dyadic conflict and externalizing symptoms at age 22 compared to age 25. Follow-up regression analyses as presented in Table 6 indicate intimacy was related to greater externalizing symptoms at age 22, but was not significantly related to externalizing symptoms at age 25. Dyadic support was not significantly related to externalizing symptoms at age 22, but was significantly related to fewer externalizing symptoms at age 25, suggesting a strengthening of the association between dyadic support and externalizing symptoms over time. Finally, dyadic conflict was significantly related to greater externalizing symptoms at ages 22 and 25, however the results suggest this effect strengthens over time.

When comparing the effect of relationship qualities and externalizing symptoms at ages 19 and 28, only the chi-square difference test for intimacy was found to be significant. Follow-up regression analyses as presented in Table 6 indicate intimacy was not significantly related to externalizing symptoms at age 19, but was significantly related to fewer externalizing symptoms at age 28. This suggests intimacy becomes increasingly associated with externalizing symptoms with age.

When comparing the effect of relationship qualities and externalizing symptoms at ages 22 and 28, the effect of intimacy, attachment, and dyadic support were different at each time point. Follow-up regression analyses as presented in Table 6 indicate intimacy was related to greater externalizing symptoms at age 22 and to fewer externalizing symptoms at age 28. In addition, regression analyses indicate attachment was significantly related to fewer externalizing

symptoms at ages 22 and 28, however the effect on externalizing symptoms strengthens with age. Finally, results indicate dyadic support was not significantly related to externalizing symptoms at age 22 but was significantly associated with fewer externalizing symptoms at age 28, suggesting a strengthening of this association with age.

Results indicate the associations between each romantic quality and externalizing symptoms were not significantly different in magnitude when comparing age 19 to 22; 25 to 28; and 19 to 25.

Hypothesis 1 Summary:

- Aggregated Results:
    - Secure attachment is associated with fewer internalizing and externalizing symptoms, and there is some evidence suggesting the effect on externalizing symptoms becomes stronger with age.
    - Dyadic conflict is associated with greater internalizing and externalizing symptoms, and the effect on externalizing symptoms may become stronger with age.
    - Observed conflict is associated with greater externalizing symptoms but the effects did not significantly differ in magnitude across ages.
- Although not significant in aggregated form, there is some evidence suggesting:
    - The effect of observed support on internalizing symptoms is only associated with greater internalizing symptoms in adolescence, and not to symptoms in adulthood.
    - The effect of intimacy on externalizing symptoms may be related to more symptoms in early adulthood, and to fewer symptoms in adulthood.

- The effect of dyadic support on fewer externalizing symptoms becomes stronger with age.

Hypothesis 2: Gender will influence the strength of the association between romantic relationship quality and mental health.

Hypothesis 2a: Females will demonstrate greater internalizing symptoms while males will demonstrate greater externalizing symptoms before accounting for relationship quality. T-tests were conducted to examine potential gender differences in mental health symptoms. The t-test significance as well as the standardized means for internalizing and externalizing symptoms are presented in Table 7 for males and females separately. Results indicate that at age 19, females report more internalizing symptoms compared to males. Males report more externalizing symptoms compared to females at ages 19 and 22.

Hypothesis 2b: Gender will be assessed as a potential moderator of the relation between romantic quality and mental health. The impact of relationship quality on mental health symptoms will be stronger for females than for males in adolescence, but stronger for males than for females in adulthood.

Potential moderating effects of gender were assessed by creating interaction terms based on the product of the centered main-effects variables (i.e., relationship quality construct X gender). First, the interactions were examined as a block by conducting chi-square difference tests in which all romantic qualities and their interactions with gender were included in a model in which the interaction terms were fixed at zero compared to a model in which the interaction terms were unconstrained. This tests whether allowing all interaction terms as a group within the same model to be unconstrained versus constrained adds any additional explanation to the effect on the outcome as a broader overarching analyses and thus reduces the chances of finding

significant interaction effects from multiple independent interaction models by chance. For those cases where there was a significant difference between the two models, I next examined the interactions individually by adding in an interaction term to each regression analysis, followed by regressions run separately by gender as needed.

Only one chi-square difference test was significant as shown in Appendix I Table 3. Specifically, there was a significant difference between the two models for externalizing symptoms at age 25. Follow-up regression analyses in which each romantic quality and its interaction with gender were entered into separate regression analyses predicting externalizing symptoms are presented in Table 8. Results indicate significant interactions for both intimacy and attachment with gender in predicting age 25 externalizing symptoms. Follow-up analyses in which regressions were completed separately for males and females are also shown in Table 8 for the standardized effect of the relationship quality on externalizing symptoms presented separately for males and females. Results indicate intimacy was related to fewer externalizing symptoms for males but was not significantly related to externalizing symptoms for females (Figure 1). Further, secure attachment was related to fewer externalizing symptoms for both males and females; however the effect was stronger for males compared to for females (Figure 2).

Hypothesis 2 Summary:

- Females report more internalizing symptoms in adolescence at age 19 compared to males
- Males report more externalizing symptoms in adolescence at age 19 and young adulthood at age 22 compared to females.
- Gender does not moderate any of the associations between romantic quality and internalizing symptoms.

- At age 25, intimacy is related to greater externalizing symptoms for males only, while the effect of attachment on fewer externalizing symptoms is stronger for males compared to for females.

Hypothesis 3: Contextual factors (i.e., close friendship quality) will influence the strength of the association between romantic relationship quality and mental health.

Hypothesis 3: Close friendship quality will be assessed as a potential moderator of the relation between romantic quality and mental health. The association between romantic quality and mental health will be stronger for those with low friendship quality in adolescence, but close friendship quality will not moderate adult relationships. Moderation was assessed for close friendship quality using the same procedure described above, except the third follow-up step used simple slopes analysis using the PROCESS macro, version 3.3 (Hayes, 2009) in SAS (Sas Institute, 2015). Several significant differences were found in the chi-square difference tests as shown in Appendix I Table 4. Table 9 for internalizing symptoms and Table 10 for externalizing symptoms includes the standardized regression coefficients from follow-up analyses, again after covarying gender, baseline family income, and the direct effect of close friendship quality for all interaction terms. Tables 9 and 10 also show the standardized regression coefficients for the effect of both low and high close friendship quality in predicting mental health symptoms from follow-up simple slopes analyses as described below.

Internalizing Symptoms. There was a significant difference between the two models comparing constrained versus unconstrained close friendship interactions with romantic qualities for internalizing symptoms at age 28. Follow-up regression analyses in which each romantic quality and its interaction with close friendship were entered into separate regression analyses

are presented in Table 9. Results indicate there were no significant interactions for any of the romantic relationship qualities and close friendship quality when assessed individually.

Externalizing Symptoms. There was a significant difference between the constrained and unconstrained models assessing close friendship interactions with romantic qualities for externalizing symptoms at age 22. Follow-up regression analyses are presented in Table 10. Results indicate several significant interactions including the interaction between close friendship with intimacy, dyadic support, and observed conflict.

Follow-up simple slopes analyses assessed the regression lines for participants one standard deviation above and below the mean in close friendship quality. Results as shown in Table 10 and Figure 3 indicate only the regression line representing low close friendship quality was significant for intimacy predicting externalizing symptoms. This means intimacy was more likely to be associated with greater externalizing symptoms for participants who had low quality close friendships, but was not related to externalizing symptoms for those who had high quality close friendships.

Results also indicate only the regression line representing low close friendship quality was significant for dyadic support predicting externalizing symptoms as shown in Table 10 and Figure 4. This means that dyadic support was more likely to be associated with greater externalizing symptoms for those who had low quality close friendships, but was not related to externalizing symptoms for those who had high quality close friendships.

Finally, results indicate only the regression line representing high close friendship quality was significant for observed conflict predicting externalizing symptoms as shown in Table 10 and Figure 5. This means that observed conflict was more likely to be associated with externalizing symptoms for those who had high quality close friendships, but was not related to

externalizing symptoms for those who had low quality close friendships. Thus, close friendship quality was only a significant moderator of the effect of romantic quality on mental health at age 22, not in adolescence or in adulthood.

Hypothesis 3 Summary:

- Close friendship quality does not moderate the relation between romantic quality and internalizing symptoms at any age.
- Close friendship quality did moderate the association between intimacy, dyadic support, and observed conflict and externalizing symptoms at age 22.
    - Specifically, at age 22 intimacy and dyadic support are associated with greater externalizing symptoms for those with low friendship quality, while observed conflict is associated with greater externalizing symptoms for those with high friendship quality. Results suggest close friendship quality is important during early adulthood, especially when there is discontinuity between the quality of romantic relationships and friendships.

Hypothesis 4: Relationship intensity and duration will influence the strength of the association between romantic relationship quality and mental health.

Hypothesis 4a: Relationship intensity will be assessed as a potential moderator of the relation between romantic quality and mental health. The association between romantic quality and mental health will be stronger for those with more intense relationships.

Because there were no *a priori* hypotheses regarding the relationship intensity moderation of the effect of romantic quality on mental health based on age, aggregated variables from ages 17-28 were used to assess moderation. Using the same process to test moderation as described above for Hypothesis 3, results indicate no support for intensity moderation of the effect of romantic

quality on mental health. As shown in Appendix I Table 5, the chi-square difference tests comparing constrained and unconstrained models for internalizing and externalizing symptoms were both not significant.

Post-hoc, a parallel set of analyses that assessed moderation for each time point individually rather than aggregated provided substantially similar results. The only significant chi-square difference test when assessing each time point individually rather than aggregated emerged for predicting externalizing symptoms at age 28 as shown in Appendix I Table 5. The standardized regression coefficients from follow-up analyses, again after covarying gender, baseline family income, and the direct effect of relationship intensity for all interaction terms predicting externalizing symptoms are presented in Table 11. There was a significant interaction between relationship intensity and dyadic conflict. Results from the follow-up simple slopes analysis for the effect of low and high relationship intensity groups are presented in Table 11 and indicate the regression line for the high intensity group was significant. This means that at age 28, dyadic conflict was associated with greater externalizing symptoms for those with high intensity relationships, but was not significantly associated with externalizing symptoms for those with low intensity relationships.

Hypothesis 4b: Relationship duration will be assessed as a potential moderator of the relation between romantic quality and mental health. The association between relationship quality and mental health will be stronger for longer duration relationships. Because there were no *a priori* hypotheses regarding the relationship duration moderation of the effect of romantic quality on mental health based on age, aggregated variables from ages 17-28 were used to assess moderation. Using the same process to test moderation as described above for Hypothesis 3, results from the chi-square difference tests are shown in Appendix I Table 6.

results indicate no support for duration moderation of the effect of romantic quality on mental health. Post-hoc, a parallel set of analyses that assessed moderation for each time point individually rather than aggregated provided substantially similar results. None of the block tests for chi-square difference tests of duration moderation in aggregated form or at any age individually were significant, as shown in Appendix I Table 6 for both internalizing and externalizing symptoms.

Hypothesis 4 Summary:

- Relationship intensity did not moderate the effect of romantic qualities on internalizing or externalizing symptoms in aggregated form from ages 17-28.
    - When using time point specific models, relationship intensity only moderated the effect of dyadic conflict on externalizing symptoms at age 28, such that dyadic conflict was associated with greater externalizing symptoms for those in high intensity relationships.
- Relationship duration did not moderate the effect of romantic qualities on internalizing or externalizing symptoms in aggregated form from ages 17-28.
    - When using time point specific models, relationship duration still did not moderate the effect of romantic qualities on internalizing or externalizing symptoms.

Hypothesis 5: Specific relationship qualities will predict relative change in mental health symptoms over time to the subsequent data collection wave, while others will only have transient effects on mental health.

Hypothesis 5a: Earlier levels of high hostile conflict will predict relative increases in internalizing and externalizing symptoms over time. Initially, the effect of relationship quality

on mental health over the short-term was assessed as a block using nested path models for hostile conflict and observed conflict (individually) predicting relative changes in either internalizing or externalizing symptoms to subsequent waves for all three short-term predictions simultaneously (i.e., relative change in mental health symptoms from age 19 to 22, age 22 to 25, and age 25 to 28). See Appendix G Figure 19 for example of the proposed model. Results for all lagged predictions for both internalizing and externalizing symptoms are presented in Table 12.

Next, chi-square difference tests were assessed comparing the nested path models in which the romantic quality effect on the mental health outcome of interest in the subsequent wave (after accounting for gender, baseline family income, and the mental health outcome in the initial wave) was held constant (i.e., constrained) to an unconstrained model. The tests compared the effect of the romantic quality of interest on the outcome of interest across subsequent waves for all three short-term predictions (i.e., 19 to 22; 22 to 25; 25 to 28) in a model in which the effects were fixed at zero vs. a model in which the effects were unconstrained. This provides an overarching test of whether or not there is evidence of a significant path from T1 relationship quality to T2 mental health outcome across all the ages in the study.

If the models significantly differed ($p \leq .05$), a series of simple linear regressions at each age, with variables entered hierarchically was performed to examine whether hostile dyadic conflict and observed conflict would predict relative increases in the outcome of interest after accounting for gender, baseline family income, and the initial level of internalizing or externalizing symptoms at the baseline (previous) time point.

Gender and baseline family income were entered together first in all models. The effect of gender and baseline family income on internalizing and externalizing symptoms at each outcome is presented in Table 3.

Second, internalizing symptoms were entered that correspond to the baseline time point. Specifically, this means that age 19 internalizing symptoms were entered for analyses assessing age 22 internalizing symptoms as the outcome variable of interest; age 22 internalizing symptoms were entered for analyses assessing age 25 internalizing symptoms as the outcome variable of interest; and age 25 internalizing symptoms were entered for analyses assessing age 28 internalizing symptoms as the outcome variable of interest. The effects of baseline mental health symptoms on mental symptoms at the outcome time point of interest for all predictions are presented in Table 13 for internalizing and externalizing symptoms separately.

Third, conflict (dyadic or observed) was entered in separate regression analyses. The analytic approach of predicting the future level of a variable, such as internalizing symptoms, while accounting for predictions from initial levels of those variables, yields one marker of residualized change in that variable by accounting for initial levels while allowing assessment of predictors of future symptoms (Cohen & Cohen, 1983). Further, considering baseline levels of future behavior as a covariate reduces the spurious effect whereby observed predictions are a result of cross-sectional associations among variables that are stable over time.

As shown in Table 12, none of the tests of the lagged predictions in the four nested path models were significant, indicating overall there was no effect of dyadic or observed conflict in predicting short-term relative change in mental health symptoms. Further, none of the chi-square difference tests comparing nested path models of constrained versus unconstrained effects of dyadic or observed conflict on internalizing and externalizing symptoms were significant as shown in Table 14. Findings suggest hostile conflict does not predict relative change in mental health symptoms over time, regardless of method of assessment.

Hypothesis 5b: Earlier levels of high support will predict relative decreases in both internalizing and externalizing symptoms over time. Using the same procedure as described above in Hypothesis 5a, dyadic support and observed support were each examined as independent predictors of relative decreases in internalizing and externalizing symptoms over time. As shown in Table 12, none of the tests of the lagged predictions in the four nested path models were significant indicating overall there was no effect of dyadic or observed support in predicting short-term relative change in mental health symptoms.

However, there was one significant chi-square difference test when comparing nested path models of constrained versus unconstrained effects of observed and dyadic support each independently predicting internalizing symptoms. Specifically, this difference was found for observed support predicting internalizing symptoms as shown in Table 14. Follow-up regression results as shown in Table 15 include the standardized regression coefficients for observed support predicting relative decreases in internalizing symptoms over time to the subsequent time point. As shown, observed support at age 19 predicted relative decreases in internalizing symptoms from age 19 to 22 after controlling for gender, baseline family income, and age 19 internalizing symptoms.

Hypothesis 5c: Earlier levels of secure attachment will predict relative decreases in internalizing and externalizing symptoms over time. Using the same procedure as described above in Hypothesis 5a, secure attachment was examined as a predictor of relative decreases in internalizing and externalizing symptoms over time. Results from the lagged predictions in the two nested path models are presented in Table 12. Results indicate attachment significantly predicted relative decreases in internalizing symptoms over time in this full model (β = .07, p=.0497) but did not significantly predict relative changes in externalizing symptoms.

However, follow-up analyses of chi-square difference tests assessing constrained versus unconstrained nested path models for secure attachment predicting relative short-term change in internalizing symptoms were not significant as shown in Table 14. Further follow-up regression results as shown in Table 15 include the standardized regression coefficients for secure attachment predicting relative decreases in internalizing symptoms over time to the subsequent time point. As shown, when considering each short-term prediction independently rather than in a full model, none of the individual short-term predictions of internalizing symptoms from secure attachment were significant.

Hypothesis 5d: Intimacy will only demonstrate transient (i.e., concurrent) effects on internalizing symptoms. Using the same procedure as described above in Hypothesis 5a, intimacy was examined as a predictor of relative changes in internalizing and externalizing symptoms over time. The lagged predictions in the two nested path models assessing the effect of intimacy on internalizing and externalizing symptoms were not significant as shown in Table 12. Findings indicate overall there was no effect of intimacy in predicting short-term relative change in mental health symptoms. Further, none of the chi-square difference tests assessing nested path models for intimacy predicting relative short-term change in mental health symptoms were significant as shown in Table 14.

Post-hoc Analyses for Hypothesis 5: Short-Term Moderation Analyses

Gender Moderation. Using the same process for moderation as described above in Hypothesis 2b, gender moderation for short-term predictions of externalizing symptoms was assessed, because there were several significant interactions identified between gender X intimacy and gender X secure attachment in predicting concurrent externalizing symptoms at age 25. Because there was no evidence for gender moderation of romantic qualities and concurrent

internalizing symptoms, gender moderation for short-term predictions of internalizing symptoms was not assessed.

When romantic relationship qualities and gender interactions were tested as a block for each short-term prediction to the subsequent time point individually (i.e., age 19 to 22, 22 to 25, and 25 to 28 individually), the chi-square difference tests comparing constrained versus unconstrained models were significant for gender moderation of predictions of relative change in externalizing symptoms from age 25 to 28 as shown in Appendix I Table 7. Follow-up regression analyses for each romantic quality individually indicated a significant interaction between secure attachment and gender as well as between observed conflict and gender both at age 25 predicting relative change in externalizing symptoms by age 28 as shown in Table 16. Follow-up analyses separated by gender also shown in Table 16 and Figure 6 indicated secure attachment predicted relative decreases in externalizing symptoms for males and was not related to change in externalizing symptoms for females. In addition, follow-up analyses revealed observed conflict predicted relative increases in externalizing symptoms for females, but was not related to changes in externalizing symptoms for males as shown in Table 16 and Figure 7.

Close Friendship Quality Moderation. Using the same process for moderation as described above in Hypothesis 3, close friendship quality moderation for short-term predictions of externalizing symptoms was assessed, because there were several significant interactions identified between friendship X intimacy, friendship X dyadic support, and friendship X observed conflict in predicting concurrent externalizing symptoms at age 22. Because there was no evidence for close friendship quality moderation of romantic qualities and concurrent internalizing symptoms, close friendship moderation for short-term predictions of internalizing symptoms was not assessed.

When romantic relationship qualities and close friendship quality interactions were tested as a block for each short-term prediction to the subsequent time point individually (i.e., age 19 to 22, 22 to 25, and 25 to 28 individually), none of the chi-square difference tests comparing constrained versus unconstrained models were significant as shown in Appendix I Table 8. Results suggest close friendship quality did not moderate the effect of earlier romantic quality on subsequent mental health over the short-term.

Relationship Intensity Moderation. Because there was no evidence for intensity moderation of romantic qualities and concurrent internalizing or externalizing symptoms using aggregation of ages 17-28, intensity moderation was not assessed for predicting short-term relative change in mental health symptoms over time.

Relationship Duration Moderation. Because there were no significant interactions between romantic quality and relationship duration for concurrent internalizing or externalizing symptoms using aggregation of ages 17-28, duration moderation was not assessed for predicting short-term relative change in mental health symptoms over time.

Hypothesis 5 Summary:

- Secure attachment predicted relative decreases in internalizing symptoms in the full model assessing all short-term predictions simultaneously, but did not predict any individual short-term change when assessing each short-term prediction individually.
- Only observed support predicted relative decreases in internalizing symptoms from age 19 to 22, and this was not moderated by any of the proposed constructs.
- None of the romantic qualities predicted short-term relative change in externalizing symptoms across subsequent time points.

    - Although not directly significant, secure attachment predicted relative decreases in externalizing symptoms for males from age 25 to 28, and observed conflict predicted relative increases in externalizing symptoms for females from age 25 to 28.

- Close friendship quality did not moderate any of the short-term predictions from romantic quality to relative change in mental health.

Hypothesis 6: For those relationship qualities that consistently predict relative change in mental health across the subsequent data collection wave, the qualities will also be predictive of relative change in mental health over longer periods of time. Both the direct effects pathway from earlier romantic relationship qualities and adult mental health as well as mediated pathways via the effect on subsequent romantic relationship qualities will be tested as needed.

Hypothesis 6a: Adolescent romantic relationship qualities (age 19) will be predictive of relative change in mental health from adolescence to adulthood (age 25).

Predictions to longer term outcomes were examined in cases where near term predictions of change were observed. The only significant short-term prediction was observed support at age 19 predicting relative decreases in internalizing symptoms by age 22, and thus is the only romantic quality assessed for longer term predictions. Using a similar process described above, observed support at age 19 was assessed as a predictor of relative change in internalizing symptoms by age 25 after accounting for gender, baseline family income, and the initial level of internalizing at age 19. The effect of age 19 internalizing symptoms on age 22 internalizing symptoms was: $\beta = .55$, $p < .001$. As shown in Table 17, **earlier levels of observed support at age 19 predicted relative decreases in internalizing symptoms by age 25.** Two possible indirect paths were tested: age 19 observed support to age 25 internalizing symptoms via age 22 observed support

and via age 25 observed support. When tested using bootstrapped confidence intervals, both indirect effects' 95% confidence intervals were found to contain zero (β = .03, 95% CI [-.06, .12] and β = .02, 95% CI [-.03, .16] respectively), and so were not considered significant.

Hypothesis 6b: Adolescent romantic relationship qualities (age 19) will be predictive of relative change in mental health from adolescence to adulthood (age 28). Paralleling Hypothesis 6a, a similar process was used to assess observed support at age 19 as a predictor of relative change in internalizing symptoms by age 28 after accounting for gender, baseline family income, and the initial level of internalizing at age 19.The effect of age 19 internalizing symptoms on age 28 internalizing symptoms was: β = .53, $p < .001$. As shown in Table 17, **earlier levels of observed support at age 19 predicted relative decreases in internalizing symptoms by age 28** after controlling for age 19 internalizing symptoms, gender, and baseline family income. Three possible indirect paths were tested: age 19 observed support to age 28 internalizing symptoms via age 22 observed support, via age 25 observed support, and via 28 observed support. When tested using bootstrapped confidence intervals, the indirect effects' 95% confidence intervals for all three paths were all found to contain zero for potential mediation via observed support at ages 22, 25, and 28 (β = -.02, 95% CI [-.15, .09]; β = .01, 95% CI [-.10, .13]; and β = .09, 95% CI [-.08, .35] respectively), and so were not considered significant.

Hypothesis 6c: Young adult romantic relationship qualities (age 22) will be predictive of relative change in mental health from young adulthood to adulthood (age 28). There were no significant associations between age 22 predicting relative change in internalizing or externalizing symptoms by age 25. Because no short-term predictions were significant from age 22, no long-term predictions from age 22 were assessed.

Post-hoc Analyses for Long-Term Moderation Analyses

Gender Moderation. Using the same process for moderation as described above in Hypothesis 2b, gender moderation for long-term predictions of externalizing symptoms was assessed, because there were several significant interactions between romantic quality and gender for concurrent and short-term changes in externalizing symptoms. Because there was no evidence for gender moderation of romantic qualities and concurrent internalizing symptoms, gender moderation for long-term predictions of internalizing symptoms was not assessed.

When all romantic relationship qualities and gender interactions were tested as a block for each long-term prediction independently (i.e., age 19 to 25, 19 to 28, and 22 to 28), the chi-square difference tests comparing constrained versus unconstrained models predicting externalizing symptoms for age 19 to 28 and age 22 to 28 were both significant as shown in Appendix I Table 9. Follow-up regression analyses for each romantic quality individually for age 19 romantic qualities predicting relative change in externalizing symptoms by age 28 indicated a significant interaction between intimacy and gender as shown in Table 18. However, follow-up analyses separated by gender also shown in Table 18 indicated intimacy was not significantly related to relative changes in externalizing symptoms for males or females. Follow-up regression analyses for each romantic quality individually for age 22 romantic qualities predicting relative change in externalizing symptoms by age 28 as shown in Table 18 indicate none of the interaction terms were significant in individual models.

Close Friendship Quality Moderation. Because there were no significant interactions between romantic quality and close friendship quality for short-term predictions of internalizing or externalizing symptoms, close friendship quality was not assessed for predicting long-term relative change in mental health symptoms over time.

Relationship Intensity Moderation. Because there was no evidence for intensity moderation of romantic qualities for concurrent predictions of internalizing or externalizing symptoms, intensity moderation was not assessed for predicting long-term relative change in mental health symptoms over time.

Relationship Duration Moderation. Because there were no significant interactions between romantic quality and duration for concurrent predictions of internalizing or externalizing symptoms, relationship duration was not assessed for predicting long-term relative change in mental health symptoms over time.

Hypothesis 6 Summary:

- There is little support for romantic qualities predicting long-term change in mental health symptoms.
- The only consistent finding is that observed support at age 19 predicted relative decreases in internalizing symptoms by ages 25 and 28. Results were not mediated by later observed support indicating a direct effect from age 19 observed support to age 25 and age 28 internalizing symptoms.
- Results were not moderated by gender.

Post-hoc Analysis: Internalizing and externalizing symptoms will predict relative changes in different romantic relationship qualities.

Because the following results were conducted post-hoc and were not initially a main hypothesis of this study, I will present all significant findings below but will only summarize and describe in the discussion section those findings that are significant at the $p \leq .01$ level.

Short-Term Predictions. In order to address whether mental health predicted relative change in romantic qualities over time, a series of linear regressions with variables entered

hierarchically was performed. Analyses for internalizing symptoms and externalizing symptoms were completed separately for each individual romantic quality of interest. All analyses covaried gender and baseline family income (first step), and the initial level of romantic quality at the baseline (previous) time point (second step). Specifically this means that age 19 romantic quality was entered for analyses assessing age 22 romantic quality as the outcome of interest; age 22 was entered for analyses assessing age 25 outcomes; and age 25 was entered for analyses assessing age 28 outcomes. Table 19 includes the effect of gender and baseline family income on each romantic quality. Table 20 includes the effect of baseline romantic quality on later romantic quality. In the third step, internalizing symptoms or externalizing symptoms was entered in separate regression analyses. In total, 18 regressions were assessed for internalizing symptoms as the predictor and 18 regressions were assessed for externalizing symptoms as the predictor.

Regression results are shown in Table 21 and include the standardized regression coefficients for the third and final step of analyses, which is the effect of internalizing symptoms on each romantic quality, while Table 22 includes the standardized regression coefficients for the effect of externalizing symptoms on each romantic quality.

Internalizing Symptoms. As shown in Table 21, earlier levels of internalizing symptoms at age 19 predicted relative increases in intimacy by age 22. Additionally, earlier levels of internalizing symptoms predicted relative decreases in secure attachment by each subsequent time point. Specifically, age 19 internalizing symptoms predicted relative decreases in secure attachment by age 22; age 22 internalizing symptoms predicted relative decreases in secure attachment by age 25; and age 25 symptoms predicted relative decreases by age 28.

Internalizing symptoms at age 19 predicted relative increases in dyadic support by age 22. Finally, internalizing symptoms at age 22 predicted relative increases in observed support by age 25.

Externalizing Symptoms. As shown in Table 22, earlier levels of externalizing symptoms at age 22 predicted relative decreases in intimacy by age 25. Similar to above, externalizing symptoms predicted relative decreases in secure attachment over time. Specifically, externalizing symptoms at age 22 predicted relative decreases in secure attachment by age 25; and externalizing symptoms at age 25 predicted relative decreases in secure attachment by age 28.

Earlier levels of externalizing symptoms at age 19 predicted relative increases in dyadic support by age 22; however externalizing symptoms at age 22 predicted relative decreases in dyadic support by age 25. Externalizing symptoms at age 22 predicted relative increases in dyadic conflict by age 25; and the same pattern emerged for externalizing symptoms at age 25 predicting relative increases in dyadic conflict by age 28. Finally, externalizing symptoms at age 19 predicted relative increases in observed conflict by age 22.

Short-Term Predictions Summary ($p \leq .01$):

- Internalizing symptoms and externalizing symptoms at age 22 each predicted relative decreases in secure attachment by age 25; and symptoms at age 25 predicted decreases by age 28.
- Externalizing symptoms at age 22 predicted relative decreases in dyadic support and relative increases in dyadic conflict by age 25.

Long-Term Predictions. The same process as described for the short-term predictions was completed for long-term predictions. In total, 18 regressions were conducted for internalizing symptoms as the predictor and 18 for externalizing symptoms as the predictor.

Standardized regression coefficients assessing whether internalizing symptoms predict change in each individual romantic quality are presented in Table 23, while the results assessing whether externalizing symptoms predict change in each romantic quality are presented in Table 24.

Internalizing Symptoms. As shown in Table 23, earlier internalizing symptoms at age 19 predicted relative decreases in secure attachment by age 25; the same pattern emerged for internalizing symptoms at age 22 predicting relative decreases in secure attachment by age 28. In addition, age 19 internalizing symptoms predicted relative increases in dyadic conflict by age 28.

Externalizing Symptoms. As shown in Table 24, externalizing symptoms predicted long-term relative changes in dyadic conflict: age 19 externalizing symptoms predicted relative increases in dyadic conflict by age 25 and by age 28; age 22 externalizing symptoms also predicted relative increases in dyadic conflict by age 28.

Additionally, age 19 externalizing symptoms predicted relative decreases in observed support by age 28. Age 22 externalizing symptoms predicted relative decreases in secure attachment by age 28 and separately, predicted relative decreases in dyadic support by age 28.

Long-Term Predictions Summary ($p \leq .01$):

- Internalizing and externalizing symptoms at age 22 each individually predicted relative decreases in secure attachment by age 28.
- Externalizing symptoms at age 19 predicted relative decreases in observed support by age 28.
- Externalizing symptoms at age 22 predicted relative decreases in dyadic support by age 28.

- Consistently, externalizing symptoms predicted relative increases in dyadic conflict over time; specifically age 19 symptoms predicted relative increases in dyadic conflict by age 25 and 28; and age 22 symptoms predicted relative increases in dyadic conflict by age 28.

Discussion

This study extends our understanding of the interplay between romantic relationship quality and mental health from adolescence through adulthood. Using a multi-method, multi-reporter, longitudinal design, associations between six key measures of romantic quality (intimacy, attachment, dyadic reported and observed support, and dyadic reported and observed conflict) and mental health symptoms (i.e., internalizing and externalizing symptoms) were assessed to address three primary questions: 1) What is the function of specific romantic experiences on concurrent mental health, and does the relation between specific relationship qualities and mental health strengthen or weaken with age? 2) Do contextual factors (gender, friendship quality, relationship intensity, and relationship duration) moderate the relation between romantic relationship quality and mental health? 3) When do certain romantic qualities emerge as particularly salient predictors of mental health? In other words, what is the function of earlier romantic experiences on future mental health? An additional question added post-hoc assessed whether it may be mental health symptoms that predict relative changes in specific romantic relationship qualities, rather than the reverse direction as hypothesized.

Overall, as hypothesized, there were many significant associations between concurrent romantic quality and mental health. Additionally, several of these associations became stronger with age. Findings mirror the stage theory of central developmental tasks related to relationships, which posits romantic relationships are not central to development until young adulthood (Barry et al., 2009; Erikson, 1982; Schulenberg et al., 2004) and thus romantic relationship quality

impacts mental health more strongly in adulthood than in adolescence although the causal direction of the current relationships was not clear.

Gender emerged as a moderator of the relation between romantic quality and mental health, suggesting certain romantic qualities are linked to mental health for males but not for females. Close friendship quality emerged as a moderator only in early adulthood and suggested individuals reported greater externalizing symptoms when their friendships and romantic relationships were of opposing quality. However, there was little consistent support for the role of other contextual factors (i.e., baseline family income, relationship intensity, relationship duration) moderating the relation between romantic quality and mental health.

Further, only observed support emerged as a consistent important quality of earlier romantic relationships in predicting relative changes in internalizing over time. Additionally, secure attachment was related to relative decreases in internalizing symptoms over time when assessed as a full model, but not when short-term predictions were assessed individually. However, when assessing the prediction of romantic quality from mental health symptoms, many more consistent significant findings emerged. Results suggest greater support for the hypothesis of mental health symptoms potentially driving changes in romantic quality rather than vice versa. These results and broader implications will be discussed below.

The Role of Attachment

The first major takeaway from this study is support for the hypothesis that specific romantic qualities are associated with concurrent mental health. Specifically, results suggest attachment is associated with fewer internalizing and externalizing symptoms from ages 17-28. Findings support prior research on the importance of attachment style for psychosocial functioning and mental health (Collins & Read, 1990; Feeney & Noller, 1990; Hazan & Shaver,

1987; Kirkpatrick & Davis, 1994). Just as attachment to a parental figure in childhood is critical for psychosocial development (e.g., Bowlby, 1969; 1973; 1998), findings suggest attachment to a romantic partner in late adolescence and early adulthood is important for mental health as well. Prior research suggests individuals transfer their primary attachment from a parent to a romantic partner during young adulthood (Hazan & Shaver, 1994). Perhaps this transition is reflected in this study because findings suggest the relation between attachment and externalizing symptoms became stronger with age.

In addition to assessing the concurrent associations between romantic quality and mental health, this study sought to assess whether earlier romantic qualities have the potential to predict relative changes in mental health over time through the transition to adulthood. Overall, there was little evidence for specific romantic qualities predicting relative change in mental health symptoms over time. Nonetheless, secure attachment predicted relative decreases in internalizing symptoms over time when assessing all short-term predictions within the same overarching model. However, in follow-up analyses, attachment did not predict relative short-term change in internalizing symptoms when assessing each short-term prediction individually from one age to the next. This suggests that effects of attachment on relative changes in internalizing symptoms were not strong enough to be captured when assessed individually, yet there is a relationship that exists between these two constructs over time that the added power of assessing multiple time points simultaneously allows to emerge.

Gender moderation will be fully discussed below, however it is important to highlight that secure attachment was related to fewer externalizing symptoms at age 25 for males and predicted relative decreases in externalizing symptoms from ages 25 to 28, though for males only. These findings highlight potential gender differences in the relation between romantic

attachment and mental health. This study replicates prior findings on the importance of secure attachment in psychosocial development (e.g., Collins & Read, 1990; Feeney & Noller, 1990; Hazan & Shaver, 1987; Kirkpatrick & Davis, 1994) for both concurrent mental health and as a potential predictor of relative changes in mental health. Individuals who are able to maintain high secure attachment with a romantic partner, characterized by balanced levels of dependence and high levels of trust and security, may benefit outside of the relationship in terms of lessening internalizing symptoms. Perhaps those experiencing anxiety or depression receive reassurance and dependability from their romantic partner in securely attached relationships. This security provides space for individuals to manage their symptoms in a productive way and may account for the relative decreases in symptoms over time.

The Developmental Significance of Intimacy

Contrary to the hypothesis, there was no overall effect of intimacy on concurrent mental health symptoms when assessing aggregated effects from ages 17-28. However, when assessing whether the relation between romantic qualities and mental health changes with age, an interesting pattern of results emerged for the relation between intimacy and mental health. Results indicate greater intimacy was associated with greater externalizing symptoms in young adulthood and with fewer symptoms in adulthood. A similar pattern emerged for the relation between intimacy and internalizing symptoms, yet did not reach statistical significance.

These findings may be explained, in part, from the typical characteristics of romantic relationship involvement in adolescence and young adulthood. Romantic relationships of high emotional or sexual intensity *in adolescence* can negatively impact well-being and relationship quality (Carver, Joyner, & Udry, 2003; Davila, 2008; Frost, Hoyt, Chung, & Adam, 2015; Szwedo et al., 2015; Zimmer-Gembeck & Helfand, 2008). As such, the development of intimacy

in young adulthood may be damaging for those who have failed to develop the communication and relationships skills necessary to support highly intimate relationships. Prior findings indicate intimacy in adolescent relationships has the potential to be detrimental when occurring too early than what is developmentally healthy (Zimmer-Gembeck & Helfand, 2008), and the current findings replicate this at a slightly older age. Given the increasing interim period of dating that is occurring in young adulthood as the age of first marriage continues to increase, findings may capture the delayed developmental transition into intimate relationships. Those that are engaging in these highly intimate relationships at a younger age, perhaps in relation to their peers, may be experiencing greater externalizing behavioral problems.

Conflict Remains Linked to Mental Health

Historically, one of the most commonly studied aspects of romantic relationships is conflict and its link to broader negative impacts such as poorer mental health in adolescence (Collibee & Furman, 2015; Jouriles, Garrido, Rosenfield, & McDonald, 2009) and in adulthood (Choi & Marks, 2008; DeLongis et al., 2004; Gottman, 1993). This study replicated the strong association between relationship conflict and externalizing problems such as aggression and rule-breaking behaviors.

Regarding concurrent associations, greater dyadic reported conflict was associated with greater internalizing and externalizing symptoms from ages 17-28, while observed conflict was associated with only greater externalizing symptoms. Just as with attachment, there is some evidence supporting the hypothesis that the links between conflict and mental health became stronger with age. Findings thus mirror psychosocial development theory that posits romantic relationships do not emerge as a central developmental task until early adulthood (Barry et al.,

2009; Schulenberg et al., 2004) and therefore are more strongly related to well-being in early adulthood as compared to in adolescence.

However, neither observed nor dyadic reported conflict predicted changes in mental health symptoms over time. Perhaps conflict and externalizing behaviors are co-occurring, or any influence processes are happening across extremely short time periods and thus there are no additional changes to mental health symptoms beyond the initial concurrent change. That is, when hostile conflict is occurring within a romantic relationship, mental health symptoms are changing at the same time and thus there are no further changes to capture with longitudinal analysis. Future research may focus on assessing shorter term changes perhaps by using momentary ecological assessments to address this co-occurrence hypothesis.

Adolescent Support and Concurrent and Future Mental Health

Typically, high levels of support within marital relationships have been found to protect against developing symptoms of anxiety and depression and as a mechanism to decrease problematic, externalizing behaviors (Horwitz et al., 1998; Sampson et al., 2005; Waite, 1995). In adolescence, individuals increasingly turn to their romantic partner for support rather than to their friends or parents (Furman & Shomaker, 2008) indicating the potential for romantic support to similarly relate to positive mental health outcomes for teenagers. Interestingly, this study found no overall effect of dyadic reported support or of observed support on concurrent mental health symptoms when assessing aggregated effects from ages 17-28. Assessed in aggregate, these non-findings suggest that perhaps when relationships are generally positive, individuals are not gaining additional benefits from these relationships in terms of a relation to mental health symptoms.

However, when assessing whether the relation between romantic qualities and mental health changes with age, there were important differences that emerged across age. Regarding dyadic reported support, there was a significant association with fewer externalizing symptoms at ages 25 and 28, but not in adolescence or young adulthood. This suggests a strengthening of the relation between dyadic reported support and fewer externalizing symptoms with age, as expected. Results match previous arguments that maintaining close romantic relationships is not a primary developmental task until early adulthood (Barry et al., 2009; Erikson, 1982), and thus the quality of romantic relationships are more strongly related to mental health in adulthood as compared to in adolescence.

While results for dyadic reported support confirm this study's hypothesis, the results for observed support were unexpected. Indeed, in adolescence there was a significant association between higher observed support and *greater* internalizing symptoms; whereas in adulthood, there were no significant associations between observed support and internalizing symptoms. As evident, this study found differences between observed support and dyadic support in their relation to mental health and this will be discussed below in the section on method differences.

Although in adolescence, those who were in relationships with higher levels of observed support faced greater mental distress, this effect reversed over time. Consistently, adolescent observed support emerged as the only significant predictor of relatively decreasing internalizing symptoms over both the short-term (age 19 to 22) and long-term (age 19 to 25 and 28). Follow-up path analyses for the long-term effects of observed support indicated the effects were not mediated through later observed support, suggesting at least the possibility that the consequences of early observed support within romantic relationships may have a lasting impact regardless of what happens in future relationships.

There are several explanations for why this pattern of results for observed support may exist. First, prior research suggests individuals who tend to co-ruminate with or seek reassurance from a partner, are more likely to report increased depressive symptoms (Starr, 2015). Perhaps the measure of observed support is capturing those who are *in need of* greater support or are prone to excessive reassurance checking, which can be associated with elevated mental distress. Second, in adolescence and young adulthood, gender differences in terms of interest in romantic relationships and centrality of romantic experiences for well-being have been identified (Connolly & Johnson, 1996; Haugen et al., 2008; Shulman & Scharf, 2000). It is possible that high levels of observed support in heterosexual couples may be detrimental at young ages due to imbalances between partners regarding importance and seriousness of the romantic relationship as well as imbalances in emotional maturity. Third, adolescents may be seeking support or reassurance from an adolescent partner who lacks the emotional awareness or experience to handle the intensity and intimacy of the situation, leading to unfulfilling support and increased depression or anxiety. Indeed, the measure of observed support in this study is how positively engaged partners are in discussing a help-seeking topic. Fourth, an alternative explanation is that perhaps those who are most distressed are calling for and receiving more observed support, accounting for this link between observed support and internalizing symptoms. It may be that the same individuals who are highly engaged in these help-seeking tasks and behaviors are also those experiencing greater internalizing symptoms who are in need of support.

Regarding the potential long-term benefits stemming from observed support in adolescence, it is possible adolescents who relied on (or perhaps even over-relied on) a romantic partner for support learned more adaptive communication skills that benefited them by young adulthood. Further, partners may learn similar skills that allow the support to be helpful in

reducing distress by young adulthood. And perhaps adolescents highly engaged in support seeking conversations with partners received the help they needed to decrease their distress and internalizing symptoms. In essence, it is likely those individuals who are very engaged with their partner during a support seeking task in adolescence, ultimately experience benefits to their mental health by adulthood when they develop the skills helpful in managing such intimate conversations or by receiving helpful support that lessened their depressive and anxiety symptoms.

Method Differences: Reported Versus Observed Support and Conflict

As noted above, reported versus observed methods of assessing both support and conflict were related to different outcomes. These findings were an unexpected major takeaway from this study. While reported support was related to lower levels of concurrent externalizing symptoms and these associations became stronger with age, reported support did not predict relative change in symptoms over time. In contrast, observed support was only related to concurrent internalizing symptoms in adolescence and consistently predicted relative decreases in symptoms over time.

Prior research often includes solely self-report or only observational methods to define conflict or support, allowing this study to address potential gaps in previous literature. Gottman's (1999; 2002) findings that partners' verbal and nonverbal cues about neutral, positive, and negative aspects of their current relationship were pivotal in addressing the importance of observing couples interactions to assess their potential longevity and relationship functioning. Further, a meta-analysis of longitudinal research on couples functioning indicated observed conflictual communication between partners predicted relationship satisfaction (Karney & Bradbury, 1995); however outcomes of mental health were not assessed.

Although much of the previous work on observations of couples focused on how couples interact while discussing a disagreement, findings from this study suggest that how couples engage in discussions providing each other with support is similarly important for the development of individual mental distress. Recall that only observed support, but not reported support, predicted relative change in internalizing symptoms over time consistently. Thus, findings point to the importance of establishing positive communications strategies early – effects of observed support on later mental health were not mediated through later observed support suggesting adolescent engagement in supportive conversations with a romantic partner may have a lasting impact regardless of what occurs in later romantic relationships.

In addition, prior findings indicate individuals may inaccurately report on their romantic relationship qualities such as the severity or frequency of partner behaviors based on other individual or personality characteristics such as trust, jealousy, or attachment (Khalifian & Barry, 2016; Luchies et al., 2013). Indeed, self-report measures of romantic partner behaviors and relationship functioning may even be biased when partners are facing fatigue (Stanton & Finkel, 2012). Finally, prior findings indicate individuals may inaccurately self-report higher order processes including relationship schemas (e.g., Nisbett & Wilson, 1977). Thus, it is likely that myriad factors influence responses to self-report items regarding relationship quality, which may account for differences in reported versus observed conflict and support in this study. Further, it seems probable participants may report on their current romantic relationship relative to past relationships or to other relationships they see around them. Attempts to use observational methods with coding systems for specific behaviors of support and hostility try to reduce this potential bias. It may be that there is significant individual variability in perceptions of support and conflict and thus, self reported responses may not match what trained coders observe

occurring between partners. In essence, reported support and reported conflict reflect how people think about their relationships perhaps in that moment or in reflection, while observed methods capture what a snapshot of how the couples' interactions may appear to an outsider while controlling some potential bias.

Gender Differences in Romantic Quality and Mental Health

Another important takeaway relates to potential gender differences in the relation between romantic experiences and mental health. This study assessed whether several contextual factors may moderate the relationship between romantic quality and mental health. Overall, there was minimal evidence of moderation by any of the key characteristics assessed (i.e., gender, close friendship quality, relationship intensity, and relationship duration). Although gender differences emerged, as expected, in terms of baseline mental health symptoms at younger ages (i.e., females report more internalizing symptoms in adolescence compared to males, while males report more externalizing symptoms in adolescence and young adulthood compared to females), these basic gender differences were not significant by ages 25 through 28. Overall, this sample mostly does not report clinically significant levels of internalizing or externalizing symptoms. Therefore, perhaps the lack of gender differences in mental health symptoms in adulthood may be partially due to the limited variation of reported symptoms in this particular sample.

In this study, the impact of romantic quality on concurrent and future mental health symptoms was at times stronger for males than for females. Specifically, intimacy and secure attachment appeared to be more strongly related to fewer externalizing symptoms for males more so than females. Further, secure attachment predicted relative decreases in externalizing symptoms for males only, but not for females, in adulthood. High quality romantic relationships may help males resist or decrease engagement in aggressive or other risky behavior. While there

was minimal evidence of moderation by gender for other characteristics, these consistent patterns highlight potential gender differences in both adolescence and adulthood. Results fit with prior research suggesting males may benefit more from romantic relationships as compared to females (Belle, 1987; Bloom et al., 1979; Gove, 1973).

Gender differences may arise due to differences in the number of close companions within female versus male social networks and as such, differences in the availability of intimacy or support from social relationships (Gillespie et al., 2015; Ryle, 2011). Males may have fewer alternative sources of intimacy besides their romantic partner, while females may be more likely to have access to intimate, close relationships from a wider social network. As such, females may find security in multiple close relationships, while males are more likely to only have their partner as their primary attachment or support-providing figure. Therefore, when a romantic relationship is going particularly well for males, they experience a greater boost in terms of fewer mental health symptoms because they may be less likely to experience similar intimate relationships with friends.

While the majority of the gender differences found in this study pointed in the direction of the relation between romantic quality and mental health being stronger for males, there was one exception. Specifically, although there was no overall effect of observed conflict predicting relative change in mental health symptoms, there was evidence of significant gender moderation. Findings suggest observed conflict predicted relative increases in externalizing symptoms for females from age 25 to 28, but not for males. Observed conflict did not predict any other relative changes between other ages for males or females. Gender differences may emerge due to differences in the typical conflict management styles utilized by males and females. Prior research has found females are more likely to use communal strategies (i.e., try to meet others'

needs) to resolve conflict with friends, while males are more likely to use aggressive or agentic strategies (i.e., try to meet the needs of the self) with friends (Lindeman, Harakka, & Keltikanga-Jarvinen, 1997; Maccoby, 1998; Suh, Moskowitz, Fournier, & Zuroff, 2004). Therefore, high levels of observed hostile conflict and aggression in young adult relationships may relate to greater problem behavior for females because they are less familiar or comfortable managing hostility in such a direct way. Further, females may have less practice managing conflict when in high hostile situations with romantic partners due to reliance on more communal and collaborative approaches in the past.

Friendship Quality Differences in Romantic Quality and Mental Health

There were important differences that emerged for young adults at age 22 dependent on the quality of their close friendships. First, it is important to point out that significant results only emerged at age 22, and not for adolescence, which is counter to what had been hypothesized. At age 22, those with low quality friendships and romantic relationships with high intimacy and dyadic reported support reported greater externalizing symptoms. Also at age 22, those with high quality friendships but high levels of observed conflict reported greater externalizing symptoms.

Taken together, results suggest that perhaps those who were experiencing romantic relationship quality that is at odds with the quality of friendships may grapple with this apparent discontinuity resulting in more aggressive, externalizing behavior. Further, young adults are likely entering more serious or stable romantic relationships for the first time at this age. They may also be learning to balance their friendships with these intense romantic experiences as they juggle multiple roles. Apparent differences or discontinuity in quality between friendships and romantic relationships may then be exacerbated especially during young adulthood. Indeed, prior theory posits friendships may inform and alter expectations of romantic experiences for

adolescents and young adults (Simon, Bouchey, & Furman, 2000). As such, when the qualities of these two types of relationships are at odds with each other (i.e., low quality friendships when experiencing high intimacy and support in romantic relationships or high quality friendships when experiencing high hostile conflict within romantic relationships), individuals may struggle to make sense of the discontinuity.

Specifically, results suggest developing highly intimate relationships or engaging in highly supportive and intimate discussions with a romantic partner may be detrimental in young adulthood for individuals with low quality friendships. Individuals with poor close friendship quality may lack experience practicing intimate social skills within peer relationships. As such, when these individuals find themselves in highly intimate or supportive romantic relationships, they may struggle to meet the demands. Further, when young adults have high quality friendships and experience discontinuity within their romantic relationships in terms of facing high levels of conflict, they may themselves act more aggressively. Perhaps these young adults are not comfortable with managing hostile conflict when it arises in the context of a romantic relationship because of the novelty compared to experiences within friendships. In sum, individuals may struggle to make sense of the discontinuity in qualities between friendships and romantic relationships, which may manifest in greater externalizing behaviors such as aggression as an attempt to manage these discrepancies.

Besides gender and close friendship moderation, there was little support for the other moderators that were assessed. Specifically, there was minimal to no support for relationship intensity or duration to moderate the relation between romantic quality and mental health for both internalizing and externalizing symptoms. As a post-hoc analysis, only one intensity moderation effect was found in that those with greater dyadic reported conflict at age 28 reported

greater externalizing symptoms only for those in high intensity relationships. This may reflect the tendency for more individuals to be married by this age and those who are married may experience greater links between conflict and mental health symptoms. Future research should address whether marital status impacts these associations.

Prior studies using the same community sample also did not find evidence for the moderating effect of duration (Kansky & Allen, 2018) while other findings supported a moderating effect of longer duration for increased delinquency (Haynie et al., 2005) and a direct negative effect of short-term romantic relationships in adolescence (Joyner & Udry, 2000). This study may not have found duration effects due to the eligibility requirements (e.g., three months duration minimum; willingness of both partners to complete questionnaires and attend in-person observations) leading to little variability in intensity and at least moderate duration since a threshold needed to be met in order to participate. Results suggest perhaps that after romantic experiences reach three month, relationship of longer duration are not necessarily more influential for the relation between romantic quality and mental health.

The Role of Mental Health in Predicting Relative Changes in Romantic Quality

The focus of this study was on understanding which specific romantic qualities were related to mental health and how these associations changed over time. However, the reverse causal direction – that mental health influences the quality of romantic experiences – is a natural extension of this question regarding the link between romantic relationships and mental health. Although not an original hypothesis for the purposes of this study, findings indicate mental health symptoms may predict relative changes in romantic relationship functioning. Indeed, there was greater support for the potential of mental health to predict romantic qualities, rather than for specific romantic qualities to predict mental health.

In particular, those with high levels of depressive and anxiety symptoms may experience more insecure attachment behaviors over time. Anxiety and depression are both closely linked with insecure attachment (Collins, 1996; Cyranowski et al., 2002). It is likely those who are anxious or depressed may engage in reassurance seeking behaviors that are typical of anxious attachment. It is also possible individuals who are anxious may avoid establishing closeness in romantic relationships due to the tendency to withdraw from potential triggers of anxiety. Indeed, individuals with anxiety may use poor communication and conflict resolution skills such as avoidance, coercion, or self-silencing (Noller et al., 1994; Feeney, 1999; Campbell, Simpson, Boldry, & Kashy, 2005) which are also characteristics of an insecure attachment style.

Unfortunately, results point to a self-fulfilling prophecy in that individuals who are prone to worry or anxiety may behave in ways that drive romantic partners away or make it difficult to establish closeness in romantic relationships. These behaviors may subsequently be associated with lower-quality romantic relationships, which can lead to greater worry and anxiety both in the context of the relationships and individually. Ultimately, anxious individuals may experience spillover of their worry into romantic relationships as well, perhaps by allowing their anxiety or depression to negatively effect interactions with romantic partners, which in turn exacerbates insecure attachment behaviors. A similar pattern emerged for those with high levels of externalizing behaviors regarding predicting greater insecure attachment over time. Individuals with aggressive tendencies may be more likely to pull away from close relationships due to discomfort or inability to productively work through challenges, leading to poorer attachment over time.

In addition to the link between mental health and future attachment, results also indicate that mental health predicted relative changes in dyadic reported conflict. Specifically,

externalizing symptoms (and internalizing symptoms to a lesser extent) consistently predicted relative increases in dyadic reported conflict. Individuals with depression, anxiety, or externalizing disorders often rely on poor coping strategies to manage interpersonal challenges (Clarke, 2006; Cole, Michel, & Teti, 1994; Gunthert, Cohen, Butler, & Beck, 2007; Hampel & Petermann, 2006; Youngren & Lewinsohn, 1980) and experience fewer positive rewards from social interactions (Kobak & Sceery, 1988; Nezlek, Imbrie, & Shean, 1994; Shaver & Brennan, 1992). Further, those with depression or aggression often also have social skills deficits, which may contribute to difficulties managing conflict (Barnow, Lucht, & Freyberger, 2003; Nezlek & Gable, 2001; Prinstein, Boergers, & Vernberg, 2001; Tse & Bond, 2004). It is likely that ineffective communication strategies, coping style, and conflict resolution skills combined with potential social deficits may all contribute to problematic and negative romantic interactions. As such, these challenges may in turn account for increased hostile conflict within intimate relationships.

Finally, externalizing symptoms predicted relative decreases in both dyadic reported support and in observed support. It is quite easy to imagine that those with externalizing and aggressive behaviors may be challenging to engage with when asking for help or support. Prior research has found those with externalizing symptoms tend to experience worsening interpersonal relationships over time during adolescence (Little & Garber, 2005; Bornstein, Hahn, & Haynes, 2010). Additionally, previous findings suggest externalizing symptoms are negatively related to marital adjustment generally (Humbad, Donnellan, Iacono, & Burt 2010; South, Krueger, & Iacono, 2011). Perhaps if romantic partners are met with aggression or hostility when asking for or providing support, they will be less likely to engage in support-

seeking conversations in the future, which may be a significant portion of interactions in adult romantic relationships.

Overall, individuals with elevated externalizing behaviors experience poorer relationship functioning over time as reflected in this study using measures of attachment, support, and conflict. Further those with elevated internalizing symptoms experience relative decreases in secure attachment over time. Future work should further assess the influence of individual mental distress on the development of positive or negative romantic relationships.

Limitations

Although this study addresses several prior methodological limitations of similar research by including multi-reporters, observational data, longitudinal data, and a diverse nonmarried sample, there are also several limitations. First, it is acknowledged that the study may have low power due to its modest sample size. In addition, more complex statistical analyses such as structural equation modeling were unable to be utilized due to the sample size for certain measures at certain time points.

Second, this longitudinal study assessed the predictors of relative changes in mental health outcomes in adolescence and during the transition to adulthood. However, the study was not experimental; the results can only disconfirm but cannot directly confirm the existence of any causal processes. Although the study helps to identify romantic qualities that are more likely to play a significant role in the development of mental health difficulties at different developmental ages, it cannot directly evaluate causal hypotheses. Further, the results generally tend to disconfirm causal hypotheses by not finding significant predictions of relative change from romantic qualities to mental health outcomes. In addition, the findings suggest it is possible the effects of romantic qualities on mental health symptoms are occurring so quickly that they have

already taken place concurrently and no further changes occur by the following data collection time point. Finally, given that romantic qualities and mental health measures were assessed concurrently, the possibility that mediation proceeds via the opposite path, from mental health through relationship factors, cannot be ruled out, and indeed results were often more consistent with this pathway. It is also plausible that both pathways exist and other variables (e.g., familial influences) may also mediate the relationship between romantic qualities and mental health. Future research should explore these possibilities.

In addition, the results may not generalize to all adolescents and young adults, as the study utilized a community sample from a small Southeastern town. For example, there may be contextual or community factors that impact the relation between romantic quality and mental health for those living in other geographical areas or from other demographic groups. Research has found differences in romantic relationship satisfaction and stability based on differences in education level between partners (Schwartz & Gonalons-Pons, 2016; Schwartz & Han, 2014; Tzeng, 1992). Due to the small sample size and lack of educational information about romantic partners, analyses based on education level could not be conducted; however this is an important area of future study. Relatedly, the sample was a community sample and most mental health symptoms were below the threshold for meeting a clinical diagnosis of depression, anxiety or externalizing disorder. The results of the study thus may not replicate in populations with greater clinical distress. Finally, future studies will benefit from including non-hetero-normative couples to determine whether results from a largely heterosexual sample replicate to individuals with more diverse sexual identities.

Additionally, the study included romantic relationship functioning as reported by both the target individual and his/her romantic partner on the target's behavior. Including both partners'

reports of conflict, support, and intimacy reduced the potential self-report bias that exists when solely using self-report data. In addition, prior findings indicate that individuals may inaccurately self-report higher order processes such as relationship schemas and attachment (Main & Goldwyn, 1985; Nisbett & Wilson, 1977). As such, a possible limitation is that partners were not asked to report on their perceptions of the target participant's attachment behaviors. In a future wave of data collection, partner-rated attachment of the target participant may be assessed to determine whether individuals and partners identify attachment patterns differently.

Finally, mental health data was aggregated over a three-year period in order to develop a broader measure of mental health functioning. However, it is possible this doesn't capture shorter-term changes (i.e., within the three year period of data collection of the romantic relationship data). Future studies can include mental health data specifically from the age at which the individual also reported on their romantic relationship to better address current mental health functioning.

Future Directions

Important future directions to extend and replicate these results include using a larger sample size to understand the causal relationship between mental health and romantic quality changes over time. Because there were significant differences in terms of what relative changes romantic quality predicts compared to what mental health predicts, it is important to understand the potential bidirectional influences between both sets of factors and how these co-occur and develop over time.

In addition, it would be useful to assess observed interactions of couples in more depth to identify specific behaviors that may lead to changes in mental health. Given the discrepancies between reported and observed conflict and support, it is critical to understand whether what

individuals report about their relationships may differ from what a trained coder views. Further work may focus on whether these different methods of measuring romantic quality are predictive of other aspects of psychosocial functioning such as relationship longevity and satisfaction. Additionally, it may also be beneficial to assess whether differences between self reported and observed romantic qualities impact mental health outcomes – that is, does the level of convergence between reported and observed romantic qualities impact mental health symptoms.

Future research may also assess other relational or individual factors that may account for the link between romantic quality and mental health. In addition, using ecological momentary assessment to understand more immediate (e.g., daily) changes in mental health as related to romantic experiences is an important next step to capture more simultaneous effects. Finally, all findings are based on a community sample. Future research should seek to include clinical populations such as those engaging in individual therapy, or distressed couples such as those engaging in couples therapy, to determine whether findings extend to a more distressed population.

Summary and Conclusion

This study was unique in that it assessed mental health outcomes from adolescence through adulthood using concurrent and earlier observed, self-reported, and partner-reported romantic qualities as predictors. In sum, it is evident romantic relationships and mental health are strongly concurrently related and several of the associations became stronger with age. Importantly, observed support emerged as the only romantic quality that predicted relative change in internalizing symptoms during the transition from adolescence to adulthood; this effect was not mediated by later observed support, which indicates support in adolescence may be directly linked to later mental health. Post-hoc analyses indicate the results are stronger for

supporting the hypothesis that mental health predicts relative changes in romantic quality rather than the other direction. Additionally, there was some evidence suggesting the association between romantic quality and mental health in young adulthood was stronger for males and for those with discontinuity in the quality of their close friendships and their romantic relationships.

Overall, findings indicate it is important to understand not only how individuals' report how their relationship is going, but also to observe how couples interact in order to provide clinical guidance to adolescents and young adults seeking to find satisfying romantic relationships and alleviate mental distress. Future work may seek to understand more time sensitive bi-directional effects between romantic quality and mental health over shorter periods of time using daily or weekly assessments. Additionally, more in-depth analyses on the mechanisms by which mental health impacts romantic quality are warranted. Future work that extends findings will benefit young adults in order to provide insight into dyadic processes that can promote well-being during the transition to adulthood.

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Table 1. Simple Correlations of all Variables of Interest by Time Point

	2	3	4	5	6	7	8	9	10	11	12	13
Age 19												
1 Intimacy	.41***	.75***	-.22*	.11	-.17	-.07	-.02	-.01	.12	.08	.14	.44***
2. Attachment	--	.47***	-.39***	-.01	-.01	-.37***	-.39***	.03	-.03	.30**	.01	.22*
3. Dyadic Support	--	--	-.21**	.05	-.14	-.11	-.10	.13	.15	.17	.10	.44***
4. Dyadic Conflict	--	--	--	-.03	.30**	.12	.44***	-.10	-.22*	-.16	-.19	-.11
5. Observed Support	--	--	--	--	-.06	.27*	.21	-.06	.10	.06	-.01	-.05
6. Observed Conflict	--	--	--	--	--	-.06	.10	-.05	-.16	-.01	-.01	-.01
7. Internalizing Symptoms	--	--	--	--	--	--	.50***	.18*	.08	.01	-.21	.11
8. Externalizing Symptoms	--	--	--	--	--	--	--	-.17*	.04	-.20**	-.03	-.07
9. Gender	--	--	--	--	--	--	--	--	-.11	.47***	.01	.25**
10. Family Income	--	--	--	--	--	--	--	--	--	-.01	-.05	-.02
11. Close Friendship	--	--	--	--	--	--	--	--	--	--	-.03	.35***
12. Relationship Duration	--	--	--	--	--	--	--	--	--	--	--	.22
13. Relationship Intensity	--	--	--	--	--	--	--	--	--	--	--	--
Age 22												
1 Intimacy	.20*	.74***	.09	-.09	-.10	.12	.17*	.01	.03	.11	.22*	.37***
2. Attachment	--	.21*	-.13	-.05	-.20*	-.46***	-.32***	.08	-.10	.08	.17	.17*
3. Dyadic Support	--	--	.09	-.03	-.16	.05	.12	.08	-.09	.16	.30**	.38***
4. Dyadic Conflict	--	--	--	-.15	.21*	.17*	.20*	.05	-.12	-.12	.24*	.15
5. Observed Support	--	--	--	--	-.24*	-.01	.04	-.24*	.25*	-.09	-.19	-.20*
6. Observed Conflict	--	--	--	--	--	.15	.15	.05	-.12	.10	-.07	.05
7. Internalizing Symptoms	--	--	--	--	--	--	.60***	.05	.05	-.08	.03	-.08
8. Externalizing Symptoms	--	--	--	--	--	--	--	-.17*	.07	.04	.04	-.13
9. Gender	--	--	--	--	--	--	--	--	-.11	.31***	-.08	.10
10. Family Income	--	--	--	--	--	--	--	--	--	-.11	-.12	-.10
11. Close Friendship	--	--	--	--	--	--	--	--	--	--	-.05	.07
12. Relationship Duration	--	--	--	--	--	--	--	--	--	--	--	.07
13. Relationship Intensity	--	--	--	--	--	--	--	--	--	--	--	--
Age 25												
1 Intimacy	.18	.63***	-.17	.25*	-.33**	-.02	-.12	.03	.19*	.10	.28**	.13
2. Attachment	--	.14	-.17	-.14	-.17	-.49***	-.42***	.08	.01	.08	.21*	.26**
3. Dyadic Support	--	--	-.23*	.15	-.33**	.04	-.20*	.15	.10	.17	.29**	.11
4. Dyadic Conflict	--	--	--	-.27*	.44***	.23*	.43***	-.01	-.30**	-.14	-.11	.22*
5. Observed Support	--	--	--	--	-.43***	.14	.01	-.23*	.43***	-.11	-.11	-.23*
6. Observed Conflict	--	--	--	--	--	.07	.22*	.17	-.29**	.03	.07	.10
7. Internalizing Symptoms	--	--	--	--	--	--	.65***	.10	.02	-.03	-.14	-.15
8. Externalizing Symptoms	--	--	--	--	--	--	--	-.14	.04	-.10	-.23**	-.10
9. Gender	--	--	--	--	--	--	--	--	-.11	.37***	.13	.07
10. Family Income	--	--	--	--	--	--	--	--	--	-.10	.11	-.32**
11. Close Friendship	--	--	--	--	--	--	--	--	--	--	.04	-.04

12. Relationship Duration	--	--	--	--	--	--	--	--	--	--	--	.13
13. Relationship Intensity	--	--	--	--	--	--	--	--	--	--	--	--
Age 28												
1 Intimacy	.19*	.80***	-.26**	.16	-.36***	-.12	-.32***	.15	.13	.22*	.63***	.07
2. Attachment	--	.19*	-.06	-.16	.06	-.60***	-.52***	-.06	-.05	.07	.10	.24*
3. Dyadic Support	--	--	-.41***	.27*	-.40***	-.07	-.34***	.17	.10	.28**	.45***	.01
4. Dyadic Conflict	--	--	--	-.29**	.47***	.12	.34***	-.08	-.09	-.23*	-.23*	.12
5. Observed Support	--	--	--	--	-.47***	.15	.03	.01	.22*	.14	.09	-.14
6. Observed Conflict	--	--	--	--	--	-.07	.09	.08	-.31**	-.11	-.24*	.21*
7. Internalizing Symptoms	--	--	--	--	--	--	.72***	.12	-.05	-.15	-.10	-.16
8. Externalizing Symptoms	--	--	--	--	--	--	--	-.13	-.03	-.18*	-.21*	-.06
9. Gender	--	--	--	--	--	--	--	--	-.11	.29***	.03	.07
10. Family Income	--	--	--	--	--	--	--	--	--	.06	.13	.03
11. Close Friendship	--	--	--	--	--	--	--	--	--	--	.18*	-.02
12. Relationship Duration	--	--	--	--	--	--	--	--	--	--	--	.15
13. Relationship Intensity	--	--	--	--	--	--	--	--	--	--	--	--

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 2. Autocorrelations for all Variables of Interest

	Age 19	Age 22	Age 25	Age 28
Intimacy				
Age 19	-	.31**	.02	.19
Age 22	-	-	.19*	.18
Age 25	-	-	-	.27**
Age 28	-	-	-	-
Attachment				
Age 19	-	.57***	.38***	.33**
Age 22	-	-	.48***	.36***
Age 25	-	-	-	.46***
Age 28	-	-	-	-
Dyadic Support				
Age 19	-	.35***	.29*	.36**
Age 22	-	-	.31**	.27**
Age 25	-	-	-	.43***
Age 28	-	-	-	-
Dyadic Conflict				
Age 19	-	.52***	.43***	.30*
Age 22	-	-	.32**	.35***
Age 25	-	-	-	.37***
Age 28	-	-	-	-
Observed Support				
Age 19	-	.36**	.21	.52***
Age 22	-	-	.42***	.54***
Age 25	-	-	-	.29*
Age 28	-	-	-	-
Observed Conflict				
Age 19	-	.27*	.05	.35*
Age 22	-	-	.23	.23
Age 25	-	-	-	.44***
Age 28	-	-	-	-
Internalizing Symptoms				
Age 19	-	.65***	.55***	.53***
Age 22	-	-	.73***	.67***
Age 25	-	-	-	.76***
Age 28	-	-	-	-
Externalizing Symptoms				
Age 19	-	.68***	.58***	.48***
Age 22	-	-	.77***	.69***
Age 25	-	-	-	.76***
Age 28	-	-	-	-
Relationship Intensity				
Age 19	-	.29***	.12	.15
Age 22	-	-	.33***	.23*
Age 25	-	-	-	.42***
Age 28	-	-	-	-
Close Friendship Quality				
Age 19	-	.46***	.46***	.41***
Age 22	-	-	.49***	.34***
Age 25	-	-	-	.52***
Age 28	-	-	-	-

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 3. Standardized Regression Coefficients for Gender and Baseline Family Income on Internalizing and Externalizing Symptoms (**Hypothesis 1a and Hypothesis 1b)**

	Gender	Baseline Family Income	R^2
Internalizing Symptoms			
Aggregated Ages 17-28	.13	.06	.02
Age 19	.19*	.10	.04
Age 22	.05	.05	.01
Age 25	.11	.04	.01
Age 28	.12	-.03	.03
Externalizing Symptoms			
Aggregated Ages 17-28	-.18*	.01	.03
Age 19	-.17*	.02	.03
Age 22	-.17*	.05	.03
Age 25	-.14	.02	.02
Age 28	-.14	-.04	.02

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 4. Final Standardized Regression Coefficients of Each Age 17-28 Aggregated Romantic Quality Individually Predicting Internalizing and Externalizing Symptoms After Controlling for Gender and Baseline Family Income (**Hypothesis 1a and Hypothesis 1b)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	β	β	β	β	β	β
Internalizing Symptoms	.04	-.58***	.04	.23**	.13	.02
Externalizing Symptoms	-.01	-.46***	-.05	.47***	-.12	.21*

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 5. Final Standardized Regression Coefficients for each Individual Romantic Quality Predicting Internalizing Symptoms After Controlling for Gender and Baseline Family Income **(Hypothesis 1c Follow-Up)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Age	β	β	β	β	β	β
19	-.10 [de]	-.40***	-.18	.19	.32* [a]	-.03
22	.12 [d]	-.46***	.05	.18*	-.03 [b]	.16
25	-.04 [de]	-.51***	.01	.29**	.23* [ab]	.05
28	-.17 [e]	-.60***	-.12	.15	.14 [ab]	-.08

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Note: where β's significantly differ between pairs of ages, this is indicated via different superscripts

Table 6. Final Standardized Regression Coefficients for each Individual Romantic Quality Predicting Externalizing Symptoms After Controlling for Gender and Baseline Family Income (**Hypothesis 1c Follow-Up)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Age	β	β	β	β	β	β
19	-.03 [ab c ef]	-.40*** [ef]	-.10 [ab ef]	.47*** [ab]	.20	.11
22	.17* [a cd e]	-.31*** [e]	.15 [a e]	.24*** [a]	-.04	.18*
25	-.15 [b cd ef]	-.42*** [ef]	-.20 * [b ef]	.51*** [b]	-.06	.28**
28	-.38*** [ab d f]	-.53 *** [f]	-.40*** [ab f]	.39*** [ab]	-.01	.16

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Note: where β's significantly differ between pairs of ages, this is indicated via different superscripts

Table 7. Significance of T-test Analyses for Mental Health Symptoms by Gender and Average Internalizing and Externalizing Symptoms Score by Gender (**Hypothesis 2a)**

	Males	Females	*p*
Age 19			
Internalizing	-.194	.170	.013
Externalizing	.182	-.158	.023
Age 22			
Internalizing	-.050	.040	.551
Externalizing	.191	-.154	.022
Age 25			
Internalizing	-.114	.092	.175
Externalizing	.160	-.129	.065
Age 28			
Internalizing	-.137	.103	.123
Externalizing	.156	-.116	.097

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 8. Final Standardized Regression Coefficients for Romantic Quality X Gender Interaction Term & Standardized Regression Coefficients (i.e., beta weights) by Gender Predicting Externalizing Symptoms After Controlling for Gender and Baseline Family Income **(Hypothesis 2b)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	β	β	β	β	β	β
Age 25						
Interaction	.26**	.17*	.07	-.04	.08	-.16
Male	-.40***	-.54***				
Female	.12	-.31***				

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Figure 1. Gender X Intimacy Interaction Predicting Concurrent Externalizing Symptoms at Age 25 for Females and Males Separately

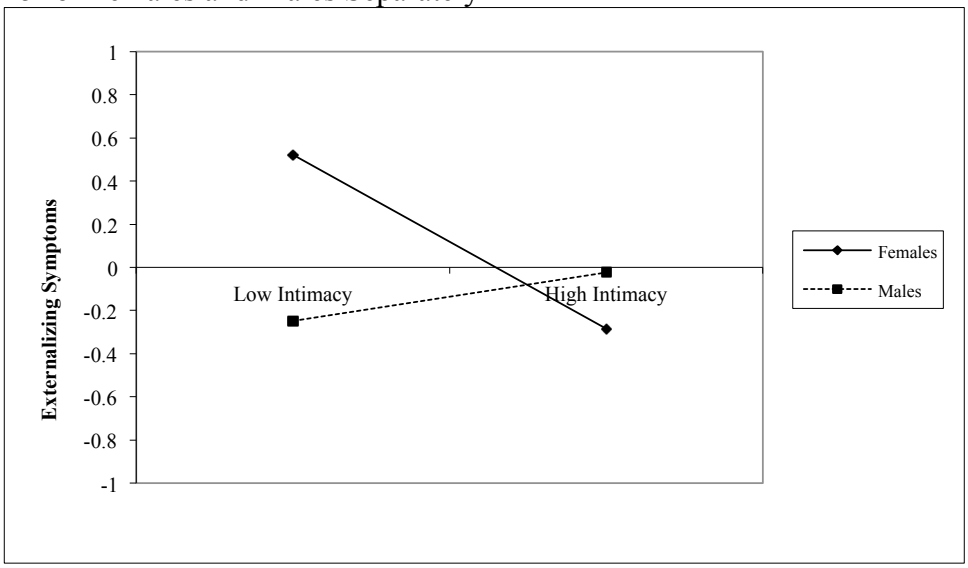


Figure 2. Gender X Secure Attachment Interaction Predicting Concurrent Externalizing Symptoms at Age 25 for Females and Males Separately

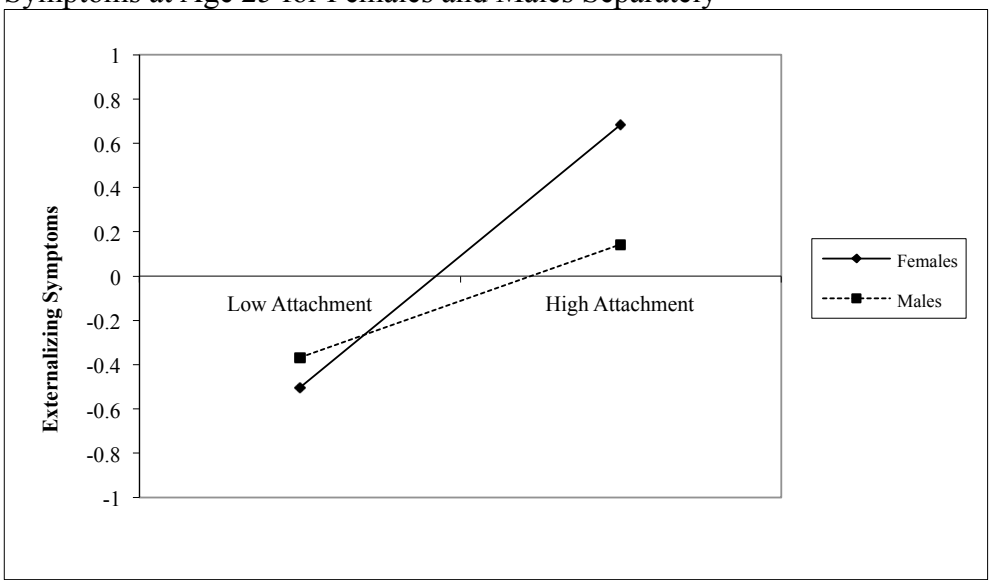


Table 9. Final Standardized Regression Coefficients for Romantic Quality X Close Friendship Quality Interaction Term & Standardized Regression Coefficients (i.e., beta weights) for Low and High Close Friendship Quality Predicting Internalizing Symptoms After Controlling for Friendship Quality, Gender, and Baseline Family Income **(Hypothesis 3)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	β	β	β	β	β	β
Age 28						
Interaction	-.01	.10	-.08	.03	-.15	-.15
Low Quality						
High Quality						

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 10. Final Standardized Regression Coefficients for Romantic Quality X Close Friendship Quality Interaction Term & Standardized Regression Coefficients (i.e., beta weights) for Low and High Close Friendship Quality Predicting Externalizing Symptoms After Controlling for Friendship Quality, Gender, and Baseline Family Income **(Hypothesis 3)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	β	β	β	β	β	β
Age 22						
Interaction	-.22*	-.10	-.19*	-.01	-.09	.24*
Low Quality	.32**		.24*			-.13
High Quality	-.16		-.10			.45**

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Figure 3. Close Friendship Quality X Intimacy Interaction Predicting Concurrent Externalizing Symptoms at Age 22 for Low and High Close Friendship Quality Separately

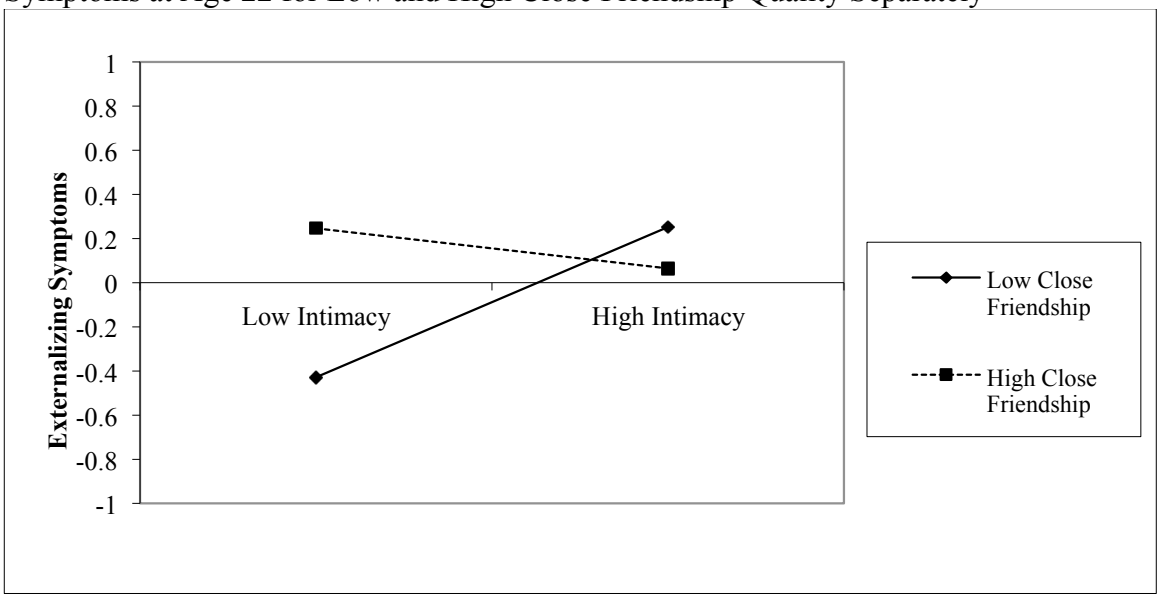


Figure 4. Close Friendship Quality X Dyadic Support Interaction Predicting Concurrent Externalizing Symptoms at Age 22 for Low and High Close Friendship Quality Separately

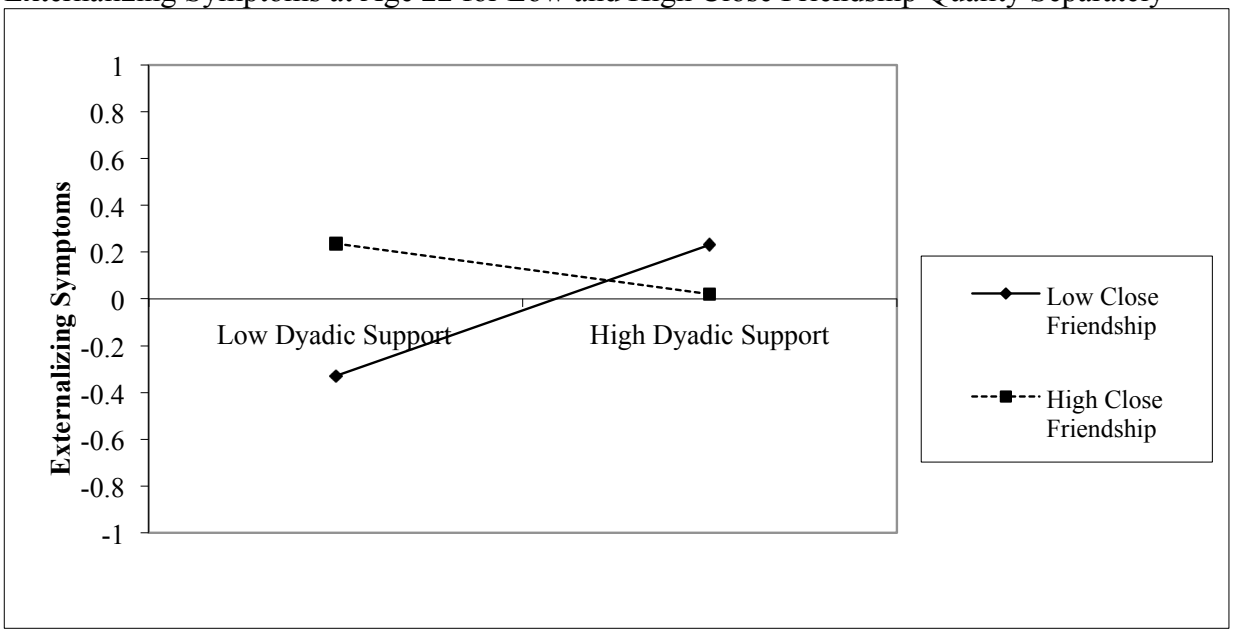


Figure 5. Close Friendship Quality X Observed Conflict Interaction Predicting Concurrent Externalizing Symptoms at Age 22 for Low and High Close Friendship Quality Separately

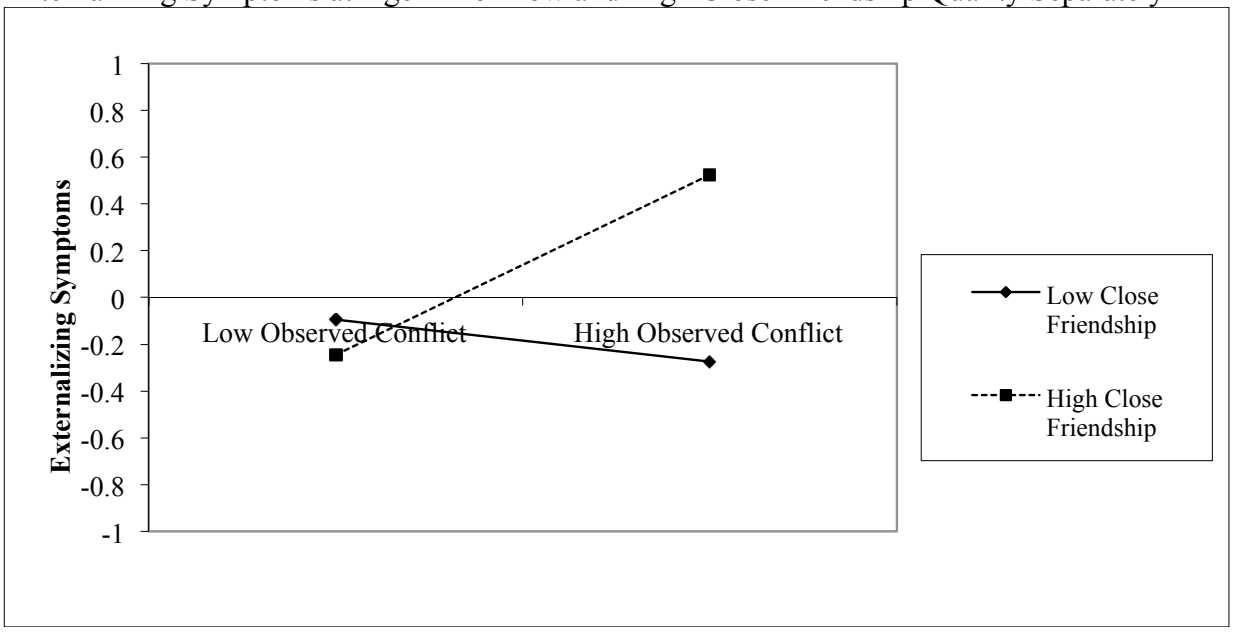


Table 11. Standardized Regression Coefficients for Romantic Quality X Relationship Intensity Interaction Term & Standardized Regression Coefficients (i.e., beta weights) for Low and High Intensity Predicting Externalizing Symptoms After Controlling for Intensity, Gender, and Baseline Family Income **(Hypothesis 4a)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	β	β	β	β	β	β
Age 28						
Interaction	-.05	.13	.06	.28**	.02	.22
Low Intensity				.07		
High Intensity				.39***		

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 12. Direct Lagged Effects from Nested Models Assessing Each Romantic Quality Predicting Short-Term Relative Change in Internalizing and Externalizing Symptoms for All Three Short-Term Predictions in Same Model (Ages 19 to 22, 22 to 25, and 25 to 28) (**Hypothesis 5**)

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	β	β	β	β	β	β
Internalizing Symptoms	.02	-.07*	.04	.02	-.01	.02
Externalizing Symptoms	.03	.06	.01	.02	-.06	.02

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 13. Standardized Regression Coefficients for Baseline Internalizing and Externalizing Symptoms on Later Internalizing and Externalizing Symptoms After Controlling for Gender and Baseline Family Income

	β	R^2
Internalizing Symptoms		
Short-Term Predictions		
Age 19 to 22	.66***	.43***
Age 22 to 25	.72***	.53***
Age 25 to 28	.76***	.58***
Long-Term Predictions		
Age 19 to 25	.55***	.30***
Age 19 to 28	.53***	.29***
Age 22 to 28	.66***	.45***
Externalizing Symptoms		
Short-Term Predictions		
Age 19 to 22	.66***	.46***
Age 22 to 25	.76***	.59***
Age 25 to 28	.76***	.59***
Long-Term Predictions		
Age 19 to 25	.57***	.34***
Age 19 to 28	.47***	.24***
Age 22 to 28	.69***	.48***

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 14. Chi Square Difference (Df=2) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Simultaneous Effect of Each Romantic Quality Individually Predicting Relative Change in Internalizing and Externalizing Symptoms For All Short-Term Predictions After Controlling for Gender, Baseline Family Income, and Baseline Symptoms (**Hypothesis 5)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
	χ^2	χ^2	χ^2	χ^2	χ^2	χ^2
Internalizing Symptoms	.31	1.53	.95	3.57	8.69*	2.34
Externalizing Symptoms	3.17	3.96	5.28	.41	4.23	2.69

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 15. Final Standardized Regression Coefficients for Each Romantic Quality Individually Predicting Short-Term Relative Change in Internalizing Symptoms After Controlling for Baseline Internalizing Symptoms, Gender and Baseline Family Income **(Hypothesis 5)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Short-Term Predictions	β	β	β	β	β	β
19 to 22 (control 19)	.05	-.04	.09	-.01	-.24**	-.07
22 to 25 (control 22)	.01	-.01	.03	-.05	.09	.03
25 to 28 (control 25)	-.01	-.10	-.01	.07	.01	.09

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 16. Final Standardized Regression Coefficients for Each Romantic Quality X Gender Interaction Term & Standardized Regression Coefficients by Gender Predicting Short-Term Relative Change in Externalizing Symptoms After Controlling for Baseline Externalizing Symptoms, Gender, and Baseline Family Income **(Post-Hoc Hypothesis 5)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Short-Term Predictions	β	β	β	β	β	β
25 to 28 (Control 25)						
Interaction B	.07	.10*	.05	-.06	-.03	.18*
Male		-.24**				-.16
Female		-.04				.28**

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Figure 6. Gender X Secure Attachment Interaction Predicting Relative Change in Externalizing Symptoms from Age 25 to 28 for Females and Males Separately

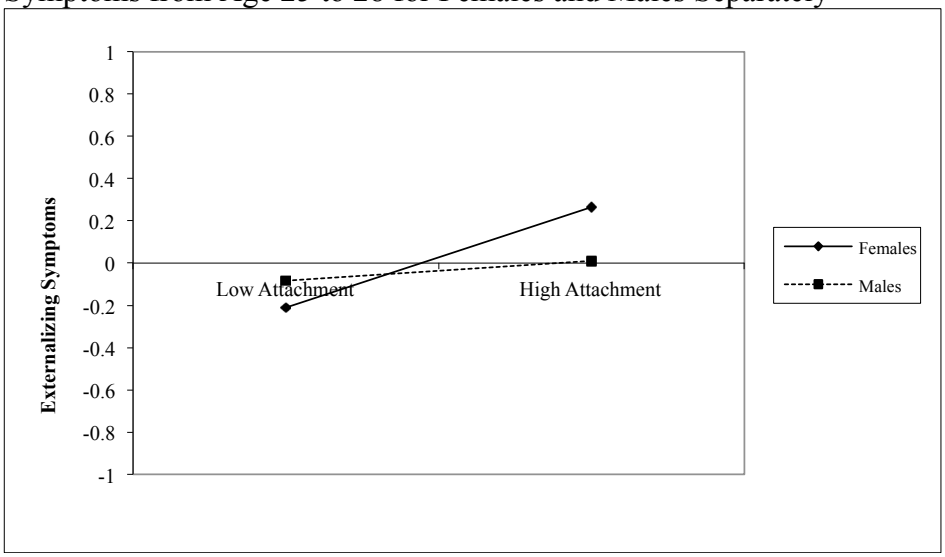


Figure 7. Gender X Observed Conflict Interaction Predicting Relative Change in Externalizing Symptoms from Age 25 to 28 for Females and Males Separately

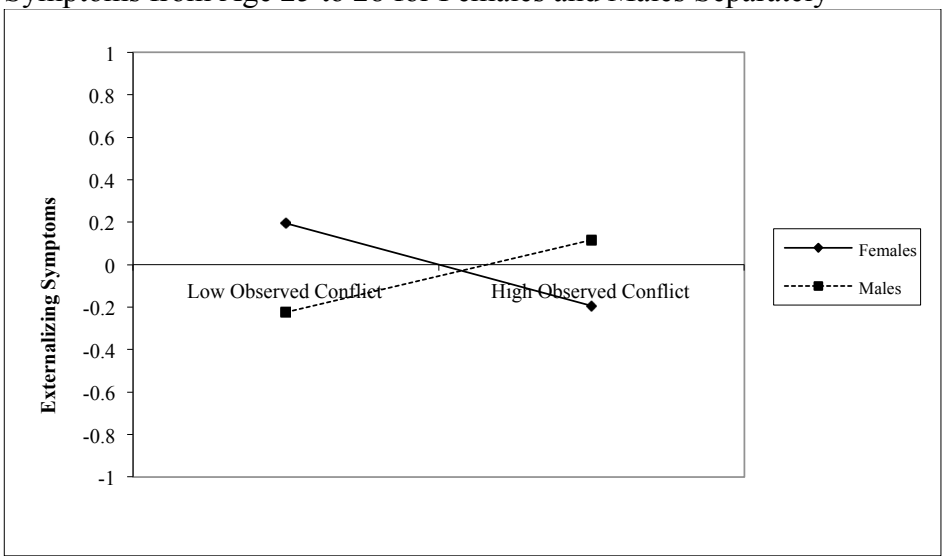


Table 17. Final Standardized Regression Coefficients for Each Romantic Quality Individually Predicting Long-Term Relative Change in Internalizing Symptoms After Controlling for Baseline Internalizing Symptoms, Gender and Baseline Family Income **(Hypothesis 6)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Long-Term Predictions	β	β	β	β	β	β
19 to 25 (control 19)	.06	.09	.12	.09	-.23*	-.08
19 to 28 (control 19)	.01	.07	.08	-.03	-.28**	-.15
22 to 28 (control 22)	.02	.06	-.03	.04	.02	.04

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 18. Final Standardized Regression Coefficients for Romantic Quality X Gender Interaction Term & Standardized Regression Coefficients by Gender Predicting Long-Term Relative Change in Externalizing Symptoms After Controlling for Baseline Externalizing Symptoms, Gender, and Baseline Family Income (**Post-Hoc Hypothesis 6**)

Ages	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Long-Term Predictions	β	β	β	β	β	β
19 to 28 (Control 19)						
Interaction	.21*	.09	.10	-.05	.07	.18
Male	-.21					
Female	.16					
22 to 28 (Control 22)						
Interaction B	-.05	.08	.03	.01	.02	-.01
Male						
Female						

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 19. Standardized Regression Coefficients for Gender and Baseline Family Income on Each Romantic Relationship Quality (**Post-Hoc Analysis)**

	Gender	Baseline Family Income	R^2
Intimacy			
Age 19	-.01	.11	.01
Age 22	.01	.03	.01
Age 25	.05	.21	.04
Age 28	.16	.14	.04
Attachment			
Age 19	.03	-.03	.01
Age 22	.07	-.09	.02
Age 25	.09	.02	.01
Age 28	-.07	-.05	.01
Dyadic Support			
Age 19	.14	.15	.04
Age 22	.06	-.08	.01
Age 25	.16	.12	.04
Age 28	.19*	.11	.04
Dyadic Conflict			
Age 19	-.11	-.21*	.05
Age 22	.04	-.11	.01
Age 25	-.04	-.30***	.09
Age 28	-.09	-.10	.02
Observed Support			
Age 19	-.05	.09	.01
Age 22	-.22*	.22*	.11*
Age 25	-.19*	.41***	.22***
Age 28	.04	.21*	.04
Observed Conflict			
Age 19	-.05	-.14	.02
Age 22	.04	-.11	.01
Age 25	.15	-.28**	.11**
Age 28	.05	-.29**	.09

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 20. Standardized Regression Coefficients for Baseline Romantic Qualities Predicting Later Romantic Qualities After Controlling for Gender and Baseline Family Income (**Post-Hoc Analysis**)

	β	R^2
Intimacy		
Short-Term Predictions		
Age 19 to 22	.31**	.10**
Age 22 to 25	.21*	.09*
Age 25 to 28	.24*	.09*
Long-Term Predictions		
Age 19 to 25	-.03	.04
Age 19 to 28	.21	.08
Age 22 to 28	.17	.07
Attachment		
Short-Term Predictions		

Age 19 to 22	-.55***	.32***
Age 22 to 25	-.48***	.24***
Age 25 to 28	-.47***	.23***
Long-Term Predictions		
Age 19 to 25	-.38***	.15***
Age 19 to 28	-.30***	.10***
Age 22 to 28	-.37***	.13***
Dyadic Support		
Short-Term Predictions		
Age 19 to 22	.39***	.15***
Age 22 to 25	.32***	.13***
Age 25 to 28	.42***	.20***
Long-Term Predictions		
Age 19 to 25	.30**	.13**
Age 19 to 28	.39***	.19***
Age 22 to 28	.27**	.11**
Dyadic Conflict		
Short-Term Predictions		
Age 19 to 22	.52***	.28***
Age 22 to 25	.30**	.17**
Age 25 to 28	.39***	.16***
Long-Term Predictions		
Age 19 to 25	.41***	.26***
Age 19 to 28	.37**	.15**
Age 22 to 28	.60***	.34***
Observed Support		
Short-Term Predictions		
Age 19 to 22	.36**	.25**
Age 22 to 25	.25*	.27*
Age 25 to 28	.21	.08
Long-Term Predictions		
Age 19 to 25	.16	.25**
Age 19 to 28	.58***	.36***
Age 22 to 28	.57***	.34***
Observed Conflict		
Short-Term Predictions		
Age 19 to 22	.25*	.08
Age 22 to 25	.13	.11
Age 25 to 28	.39***	.23***
Long-Term Predictions		
Age 19 to 25	.11	.12
Age 19 to 28	.36*	.21*
Age 22 to 28	.23*	.15*

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 21. Final Standardized Regression Coefficients for Internalizing Symptoms Predicting Relative Change in Each Romantic Quality After Controlling for Baseline Romantic Quality, Gender and Baseline Family Income (**Post-hoc Analysis**)

Ages	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Short-Term Predictions	β	β	β	β	β	β
19 to 22 (control 19)	.21*	-.19*	.22*	.03	.02	.11
22 to 25 (control 22)	-.03	-.22**	.01	.02	.19*	.01
25 to 28 (control 25)	-.02	-.30***	-.07	.02	.05	-.10

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 22. Final Standardized Regression Coefficients for Externalizing Symptoms Predicting Relative Change in Each Romantic Quality After Controlling for Baseline Romantic Quality, Gender and Baseline Family Income (**Post-hoc Analysis**)

Ages	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Short-Term Predictions	β	β	β	β	β	β
19 to 22 (control 19)	.16	.03	.19*	.02	-.12	.19*
22 to 25 (control 22)	-.23*	-.22**	-.29**	.27**	-.05	.11
25 to 28 (control 25)	-.10	-.24***	-.11	.19*	-.05	.08

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 23. Final Standardized Regression Coefficients for Internalizing Symptoms Predicting Relative Change in Each Romantic Quality After Controlling for Baseline Romantic Quality, Gender and Baseline Family Income (**Post-Hoc Analysis**)

Ages	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Long-Term Predictions	β	β	β	β	β	β
19 to 25 (control 19)	-.02	-.20*	-.01	.05	.11	-.09
19 to 28 (control 19)	.08	.13	.06	.19*	-.14	-.06
22 to 28 (control 22)	-.01	-.25**	.01	.05	.03	-.07

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 24. Final Standardized Regression Coefficients for Externalizing Symptoms Predicting Relative Change in Each Romantic Quality After Controlling for Baseline Romantic Quality, Gender and Baseline Family Income (**Post-Hoc Analysis**)

Ages	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Long-Term Predictions	β	β	β	β	β	β
19 to 25 (control 19)	-.09	-.10	-.17	.26**	-.04	.03
19 to 28 (control 19)	-.10	.01	-.14	.28**	-.34***	.16
22 to 28 (control 22)	-.12	-.23**	-.26**	.36***	-.12	.21

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Appendix A: Timeline of Measures

Assessment Construct	Reporter	Frequency of Measure	Name of Measure
Adolescence			
Mental Health – Internalizing	Self	Annually; Aggregate Ages 17-19	Adult Self Report (Internalizing Subscale)
			Beck Anxiety Inventory*/State-Trait Anxiety
			Child Depression Inventory*/Beck Depression Inventory
Mental Health – Externalizing	Self	Annually; Aggregate Ages 17-19	Child Behavior Checklist*/Adult Self Report (Externalizing Subscale)
Romantic Quality - Conflict	Self & Partner	Once Between Ages 17 and 19	Conflict in Relationships (Negative Subscale)
			Network of Relationships Inventory (Conflict & Antagonism subscales)
	Observed	Once Between Ages 17 and 19	Autonomy and Relatedness Task (Hostility Subscale)
Romantic Quality - Support	Self & Partner	Once Between Ages 17 and 19	Network of Relationships Inventory (Instrumental Aid & Support subscales)
	Observed	Once Between Ages 17 and 19	Supportive Behavioral Observational Task (Engagement)
Romantic Quality - Attachment	Self	Once Between Ages 17 and 19	Experiences in Close Relationships (Total Sum Score)
Romantic Quality - Intimacy	Self & Partner	Once Between Ages 17 and 19	Network of Relationships Inventory (Intimacy & Affection subscales)
Friendship Quality	Friend	Annually; Aggregate Ages 17-19	Inventory of Parent and Peer Attachment (Sum Score; Friend Report Only)
	Self & Friend	Annually; Aggregate Ages 17-19	Network of Relationships Inventory (Overall Positivity Subscale)
Relationship Intensity	Self	Once Between Ages 17 and 19	Two Single Items: Importance and Seriousness
Relationship Duration	Self	Once Between Ages 17 and 19	Single Item: Current Relationship Duration

Assessment Construct	Reporter	Frequency of Measure	Name of Measure
Early Adulthood			
Mental Health – Internalizing	Self	Annually; Aggregate 20-22	Adult Self Report (Internalizing Subscale)
			State-Trait Anxiety Inventory
			Beck Depression Inventory
Mental Health – Externalizing	Self	Annually; Aggregate 20-22	Adult Self Report (Externalizing Subscale)
Romantic Quality - Conflict	Self & Partner	Once Between Ages 20 and 22	Conflict in Relationships (Negative Subscale)
			Network of Relationships Inventory (Conflict & Antagonism subscales)
	Observational	Once Between Ages 20 and 22	Autonomy and Relatedness Task (Hostility Subscale)
Romantic Quality – Support	Self & Partner	Once Between Ages 20 and 22	Network of Relationships Inventory (Instrumental Aid & Support subscales)
	Observational	Once Between Ages 20 and 22	Supportive Behavior Observational Task (Engagement)
Romantic Quality – Attachment	Self	Once Between Ages 20 and 22	Experiences in Close Relationships (Total Sum Score)
Romantic Quality – Intimacy	Self & Partner	Once Between Ages 20 and 22	Network of Relationships Inventory (Intimacy & Affection subscales)
Friendship Quality	Friend	Annually; Aggregate Ages 20-22	Inventory of Parent and Peer Attachment (Sum Score; Friend Report Only)
	Self & Friend	Annually; Aggregate Ages 20-22	Network of Relationships Inventory (Overall Positivity Subscale)
Relationship Intensity	Self	Once Between Ages 20 and 22	Two Single Items: Importance and Seriousness
Relationship Duration	Self	Once Between Ages 20 and 22	Single Item: Current Relationship Duration

Assessment Construct	Reporter	Frequency of Measure	Name of Measure
Early Adulthood			
Mental Health – Internalizing	Self	Annually; Aggregate Ages 23-25	Adult Self Report (Internalizing Subscale)
			State-Trait Anxiety Inventory
			Beck Depression Inventory
Mental Health – Externalizing	Self	Annually; Aggregate Ages 23-25	Adult Self Report (Externalizing Subscale)
Romantic Quality – Conflict	Self & Partner	Once Between Ages 23 and 25	Conflict in Relationships (Negative Subscale)
			Network of Relationships Inventory (Conflict & Antagonism subscales)
	Observational	Once Between Ages 23 and 25	Autonomy and Relatedness Task (Hostility Subscale)
Romantic Quality – Support	Self & Partner	Once Between Ages 23 and 25	Network of Relationships Inventory (Instrumental Aid & Support subscales)
	Observational	Once Between Ages 23 and 25	Supportive Behavior Observational Task (Engagement)
Romantic Quality – Attachment	Self	Once Between Ages 23 and 25	Experiences in Close Relationships (Total Sum Score)
Romantic Quality – Intimacy	Self & Partner	Once Between Ages 23 and 25	Network of Relationships Inventory (Intimacy & Affection subscales)
Friendship Quality	Friend	Annually; Aggregate Ages 23-25	Inventory of Parent and Peer Attachment (Sum Score; Friend Report Only)
	Self & Friend	Annually; Aggregate Ages 23-25	Network of Relationships Inventory (Overall Positivity Subscale)
Relationship Intensity	Self	Once Between Ages 23 and 25	Two Single Items: Importance and Seriousness
Relationship Duration	Self	Once Between Ages 23 and 25	Single Item: Current Relationship Duration

Assessment Construct	Reporter	Frequency of Measure	Name of Measure
Adulthood			
Mental Health – Internalizing	Self	Annually; Aggregate Ages 26-28	Adult Self Report (Internalizing Subscale)
			State-Trait Anxiety Inventory
			Beck Depression Inventory
Mental Health – Externalizing	Self	Annually; Aggregate Ages 26-28	Adult Self Report (Externalizing Subscale)
Romantic Quality – Conflict	Self & Partner	Once Between Ages 26 and 28	Conflict in Relationships (Negative Subscale)
			Network of Relationships Inventory (Conflict & Antagonism subscales)
	Observational	Once Between Ages 26 and 28	Autonomy and Relatedness Task (Hostility Subscale)
Romantic Quality – Support	Self & Partner	Once Between Ages 26 and 28	Network of Relationships Inventory (Instrumental Aid & Support subscales)
			Supportive Behavior Observational Task (Engagement)
Romantic Quality – Attachment	Self	Once Between Ages 26 and 28	Experiences in Close Relationships (Total Sum Score)
Romantic Quality – Intimacy	Self & Partner	Once Between Ages 26 and 28	Network of Relationships Inventory (Intimacy & Affection subscales)
Friendship Quality	Friend	Annually; Aggregate Ages 26-28	Inventory of Parent and Peer Attachment (Sum Score; Friend Report Only)
	Self & Friend	Annually; Aggregate Ages 26-28	Network of Relationship Inventory (Overall Positivity Subscale)
Relationship Intensity	Self	Once Between Ages 26 and 28	Two Single Items: Importance and Seriousness
Relationship Duration	Self	Once Between Ages 26 and 28	Single Item: Current Relationship Duration

Appendix B: Overview and Specific Models for Hypothesis 1

Figure 1 – Overview of Hypothesis 1: Associations Between Aggregated Romantic Relationship Quality and Mental Health

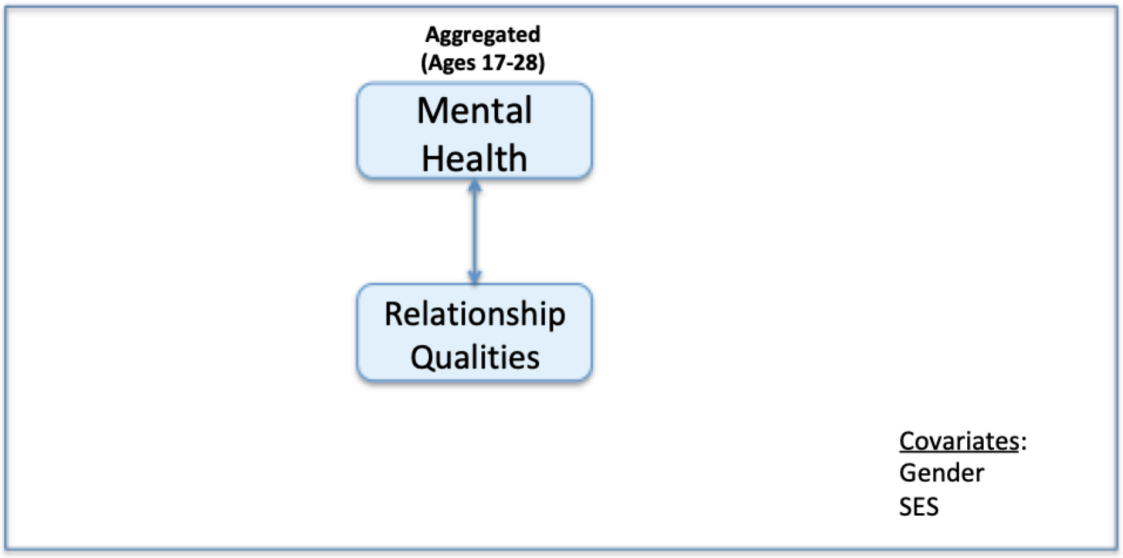


Figure 2 – Specific Example of Hypothesis 1: Association Between Aggregated Intimacy and Internalizing Symptoms

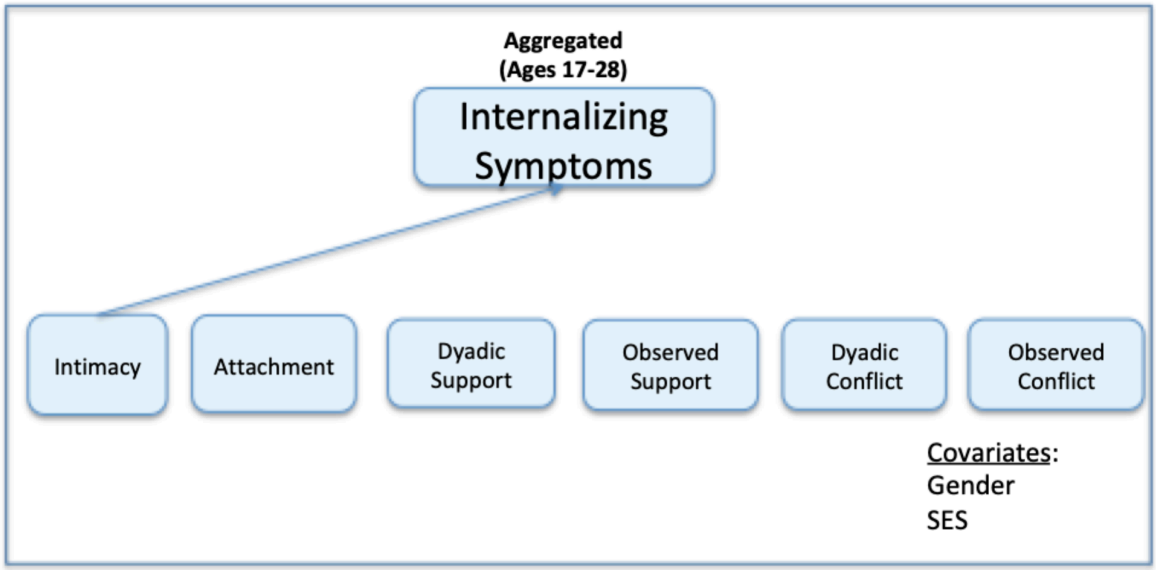
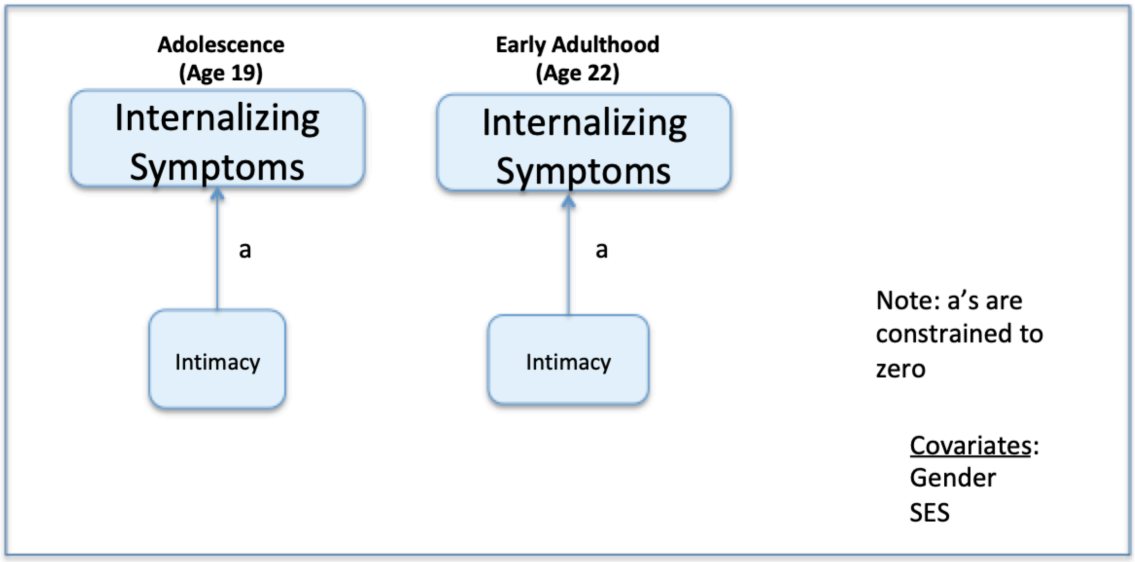


Figure 3 – Specific Example of Hypothesis 1c: Nested Model Comparing Constrained Versus Unconstrained Effects of Intimacy on Internalizing Symptoms for Pairs of Ages 19 and 22



Appendix C: Overview and Specific Models for Hypothesis 2

Figure 4 – Specific Example of Hypothesis 2b: Nested Model Comparing Constrained Versus Unconstrained Effects of Romantic Quality X Gender Interactions on Internalizing Symptoms

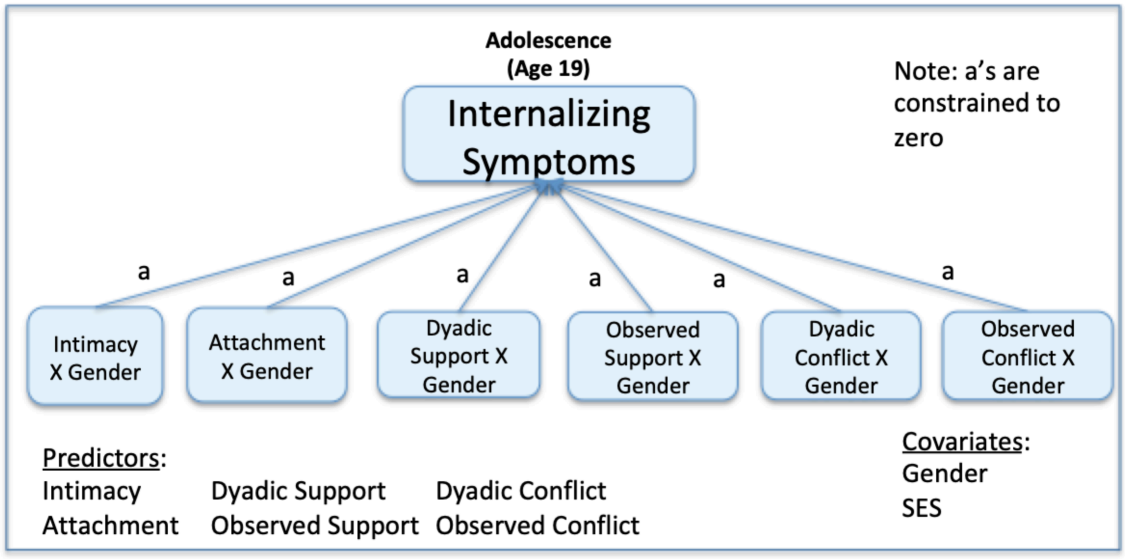


Figure 5 – Overview of Hypothesis 2b Follow-Up: Gender Moderation Between Romantic Relationship Quality and Mental Health

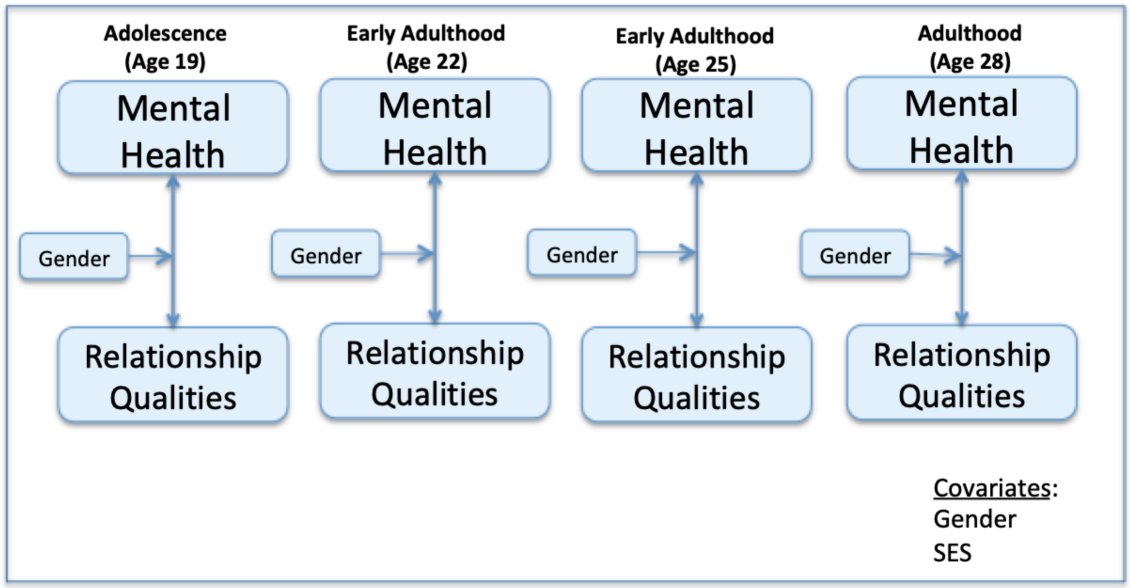


Figure 6 – Specific Example of Hypothesis 2b Follow-Up: Gender Moderation Between Each Individual Romantic Quality (Intimacy) and Internalizing Symptoms in Adolescence

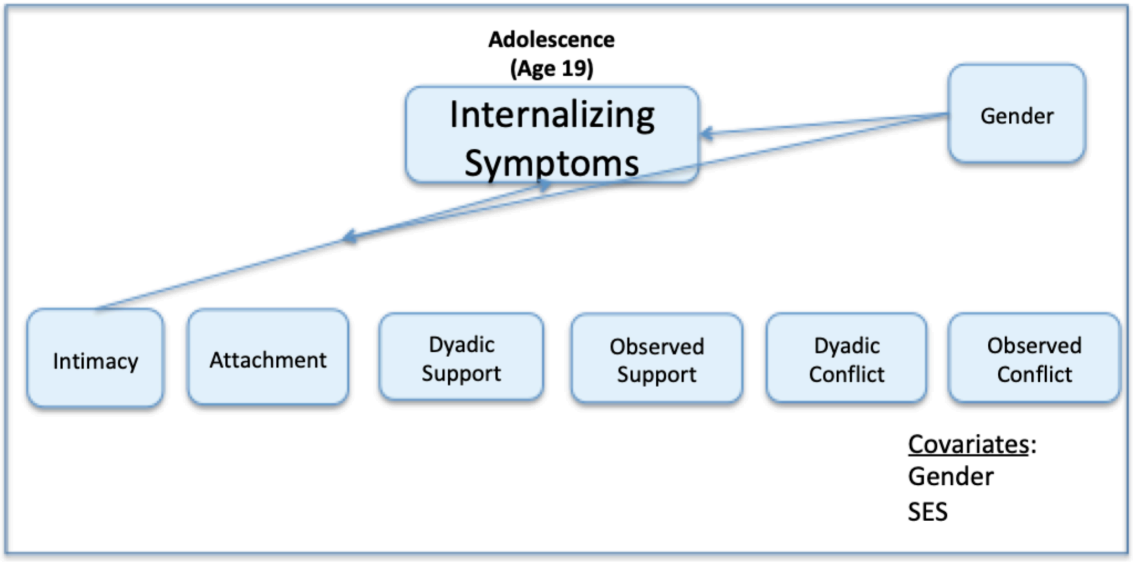
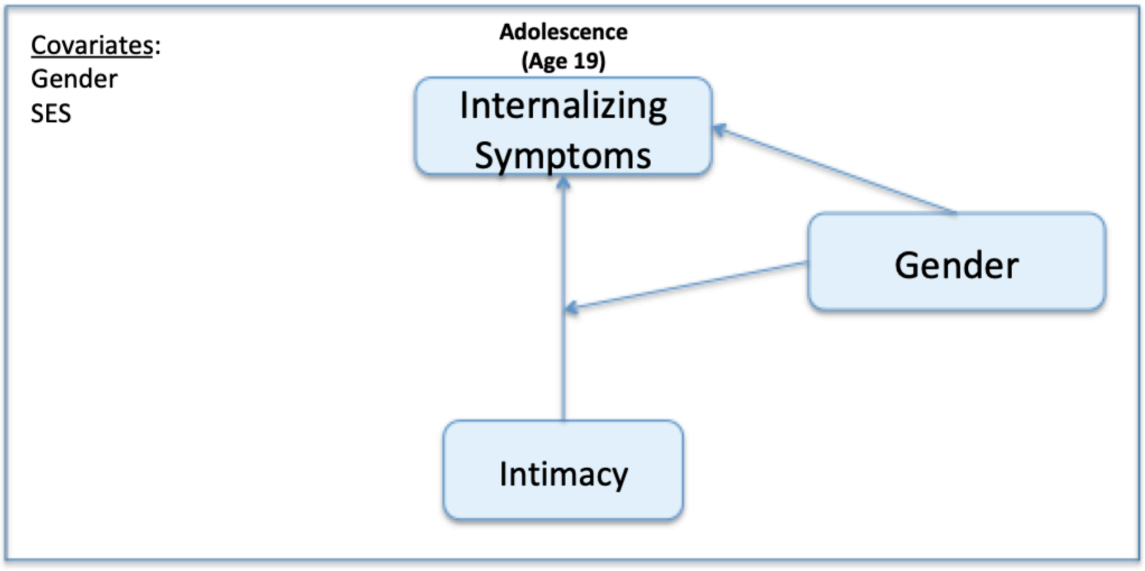


Figure 7 – Hypothesis 2b Follow-Up: Specific Example of Gender Moderation Between Intimacy and Internalizing Symptoms in Adolescence



Appendix D: Overview and Specific Models for Hypothesis 3

Figure 8 – Specific Example of Nested Model Comparing Constrained Versus Unconstrained Effects of Romantic Quality X Close Friendship Quality Interactions on Internalizing Symptoms

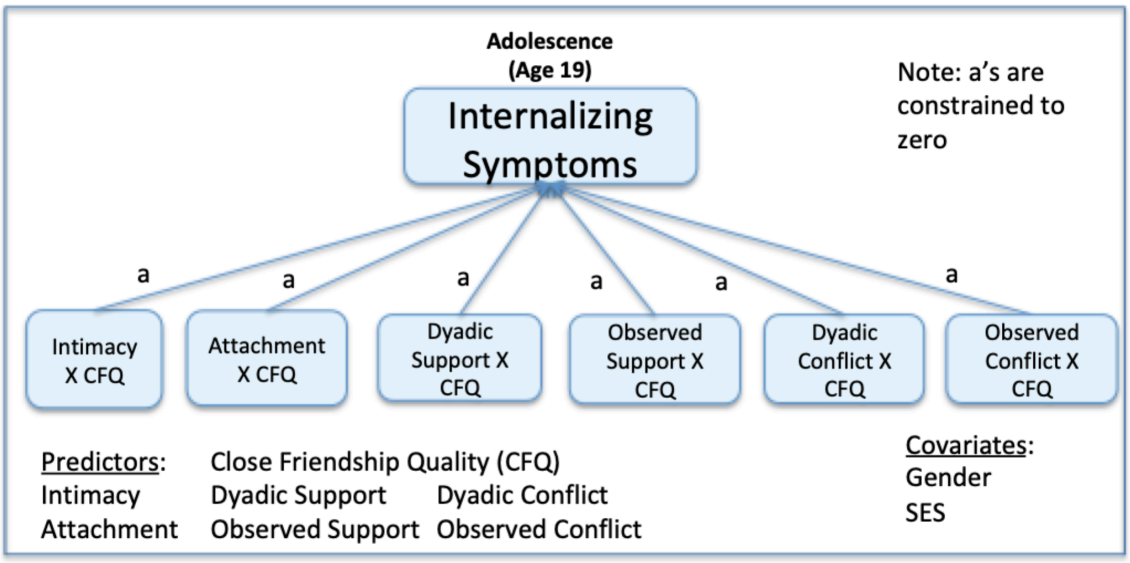


Figure 9 – Overview of Hypothesis 3 Follow-Up: Friendship Quality Moderation Between Romantic Relationship Quality and Mental Health

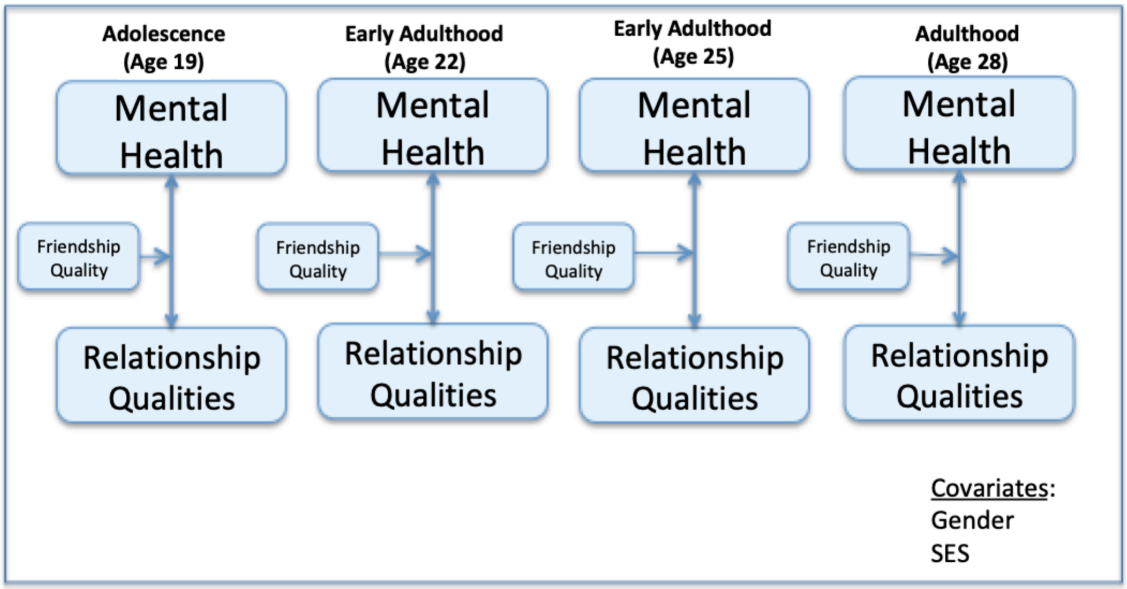


Figure 10 – Specific Example of Hypothesis 3 Follow-Up: Close Friendship Moderation Between Each Individual Romantic Quality (Intimacy) and Internalizing Symptoms in Adolescence

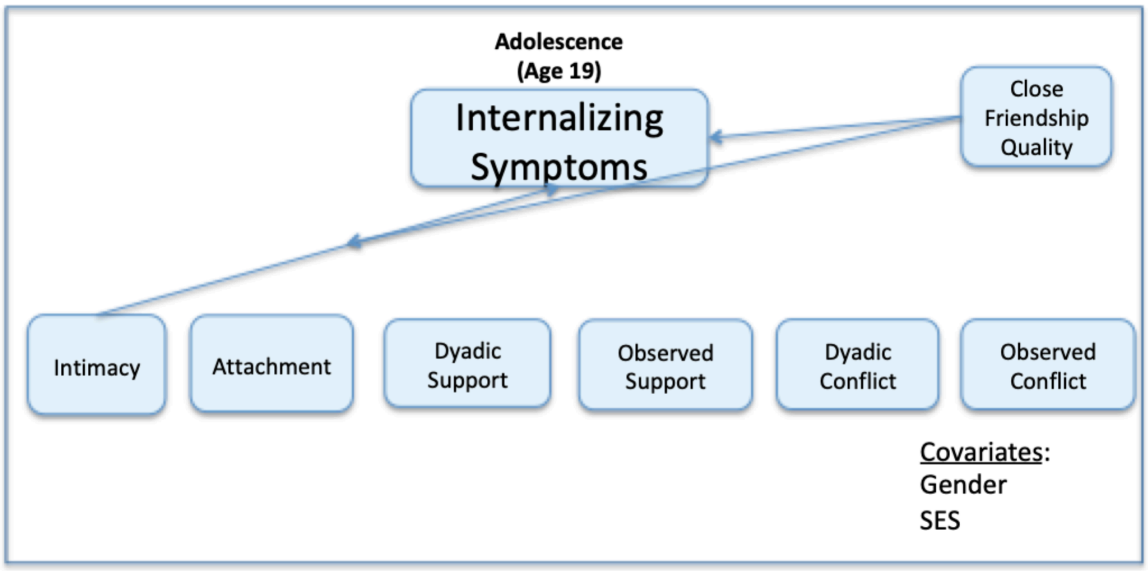
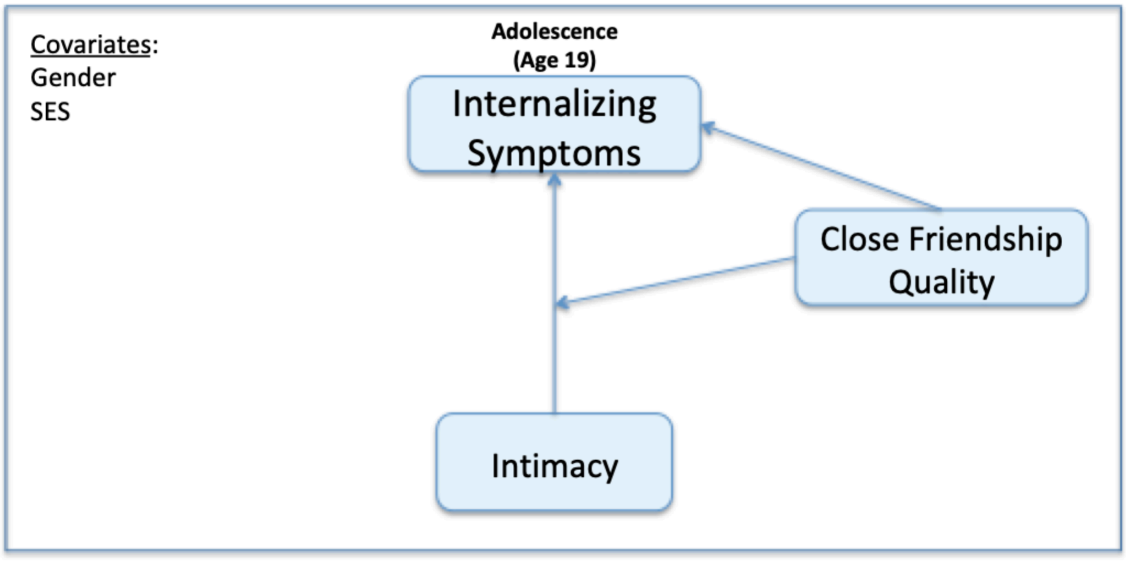


Figure 11 – Hypothesis 3 Follow-Up: Specific Example of Close Friendship Quality Moderation Between Intimacy and Internalizing Symptoms in Adolescence



Appendix E: Overview and Specific Models for Hypothesis 4

Figure 12 – Specific Example of Hypothesis 4a: Nested Model Comparing Constrained Versus Unconstrained Effects of Romantic Quality X Relationship Intensity Interactions on Internalizing Symptoms

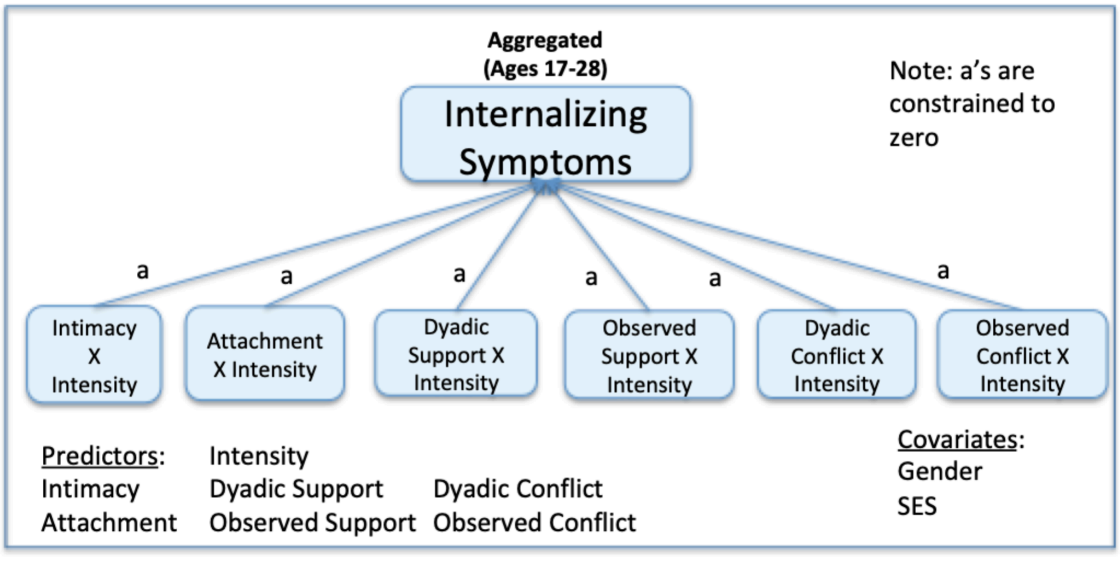


Figure 13 – Specific Example of Hypothesis 4b: Nested Model Comparing Constrained Versus Unconstrained Effects of Romantic Quality X Relationship Duration Interactions on Internalizing Symptoms

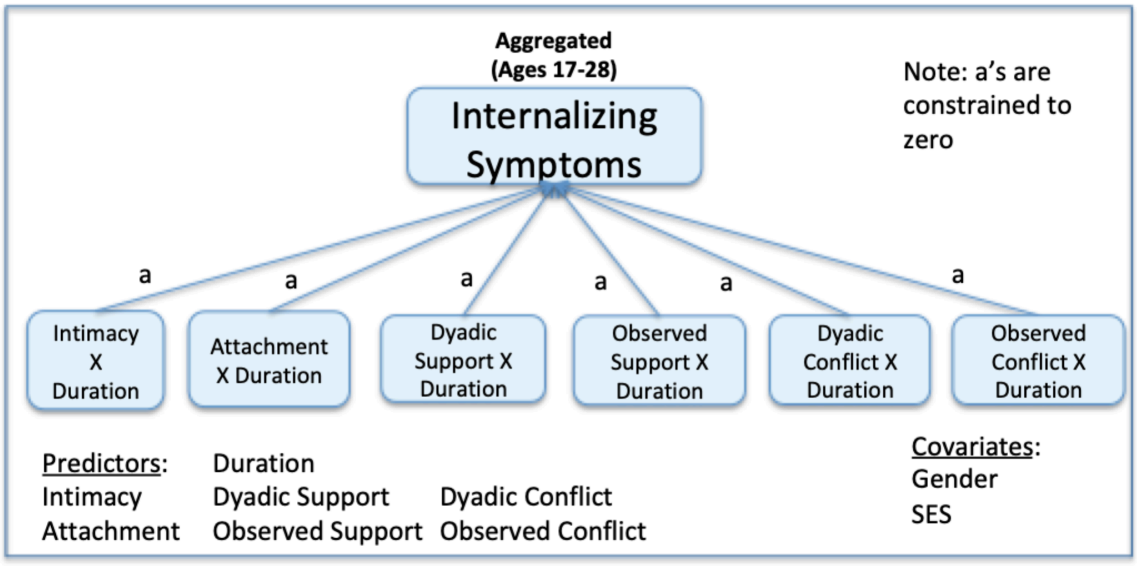


Figure 14 – Specific Example of Hypothesis 4a Follow-Up: Relationship Intensity Moderation Between Each Individual Romantic Quality and Internalizing Symptoms for Aggregated Variables Ages 17-28

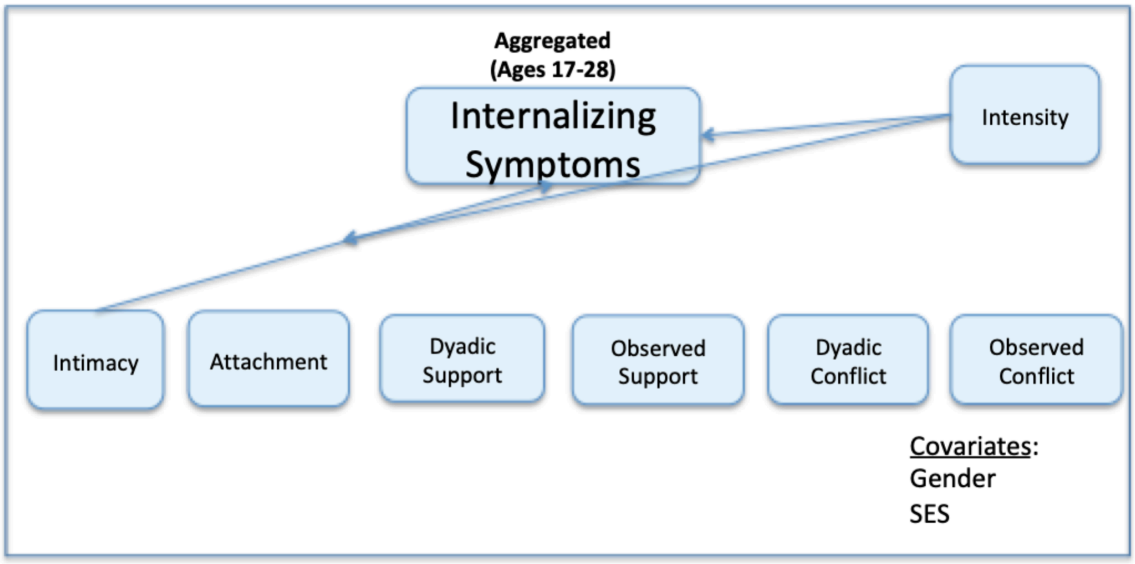


Figure 15 – Hypothesis 4a Follow-Up: Specific Example of Relationship Intensity Quality Moderation Between Intimacy and Internalizing Symptoms for Aggregated Variables Ages 17-28

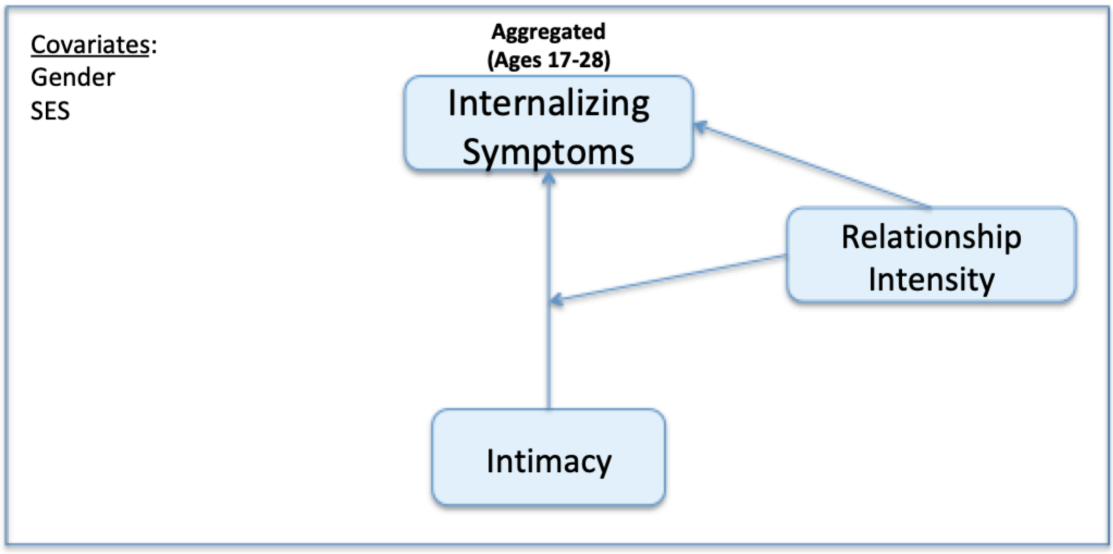


Figure 16 – Specific Example of Hypothesis 4b Follow-Up: Relationship Duration Moderation Between Each Individual Romantic Quality and Internalizing Symptoms for Aggregated Variables Ages 17-28

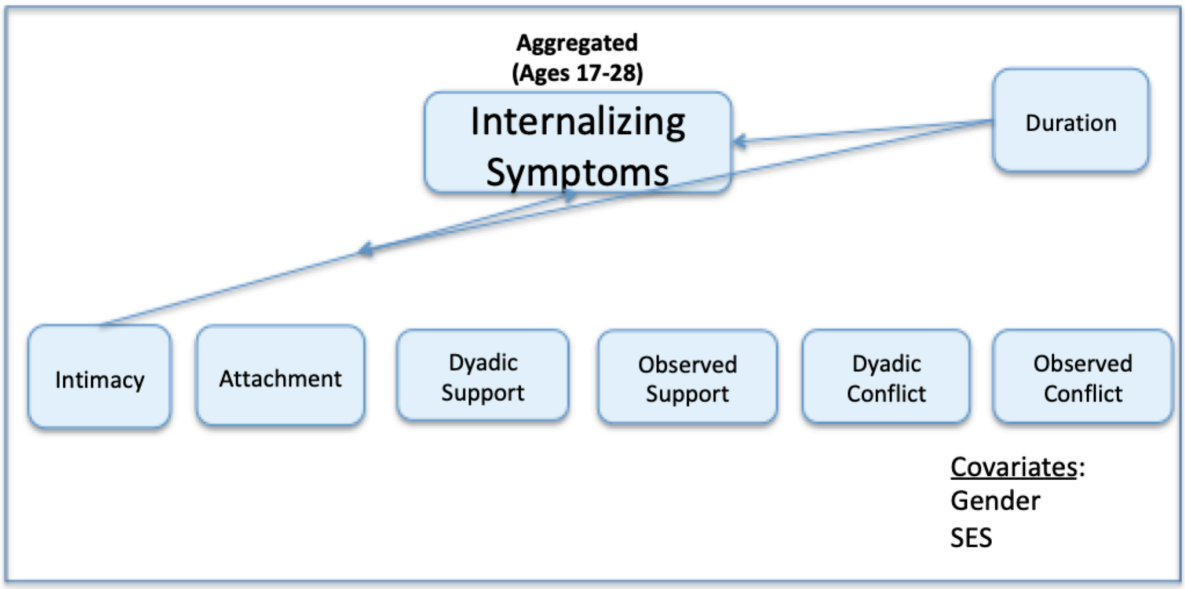
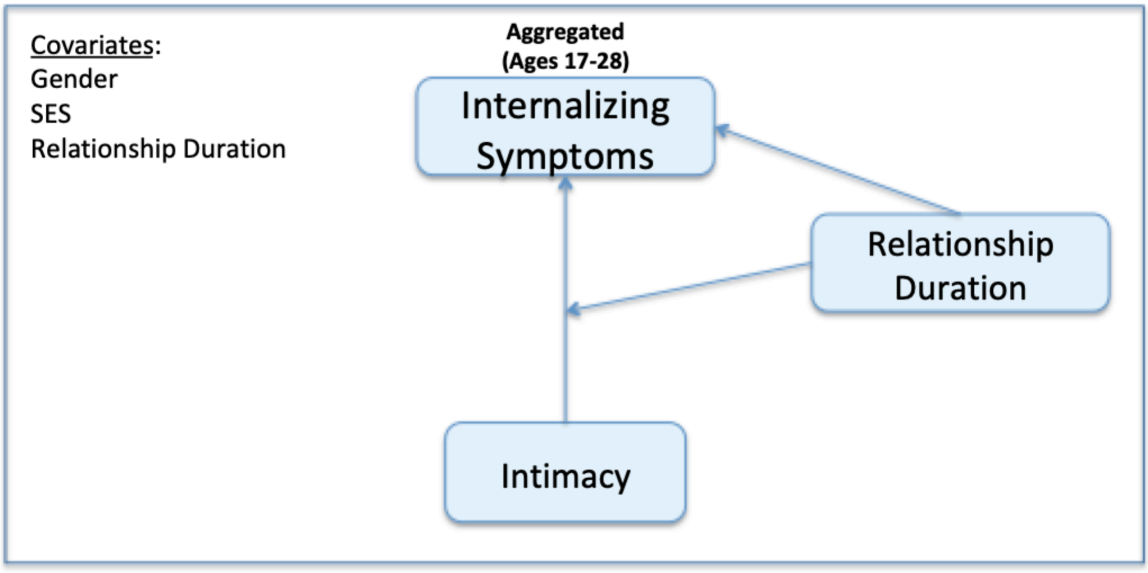


Figure 17 – Hypothesis 4b Follow-Up: Specific Example of Relationship Duration Moderation Between Intimacy and Internalizing Symptoms for all Aggregated Variables Ages 17-28



Appendix F: Overview and Specific Models for Hypothesis 5

Figure 18 – Hypothesis 5: Overview Example of Nested Model Comparing Constrained Versus Unconstrained Effects of Romantic Quality Predicting Short-Term Changes in Mental Health Symptoms

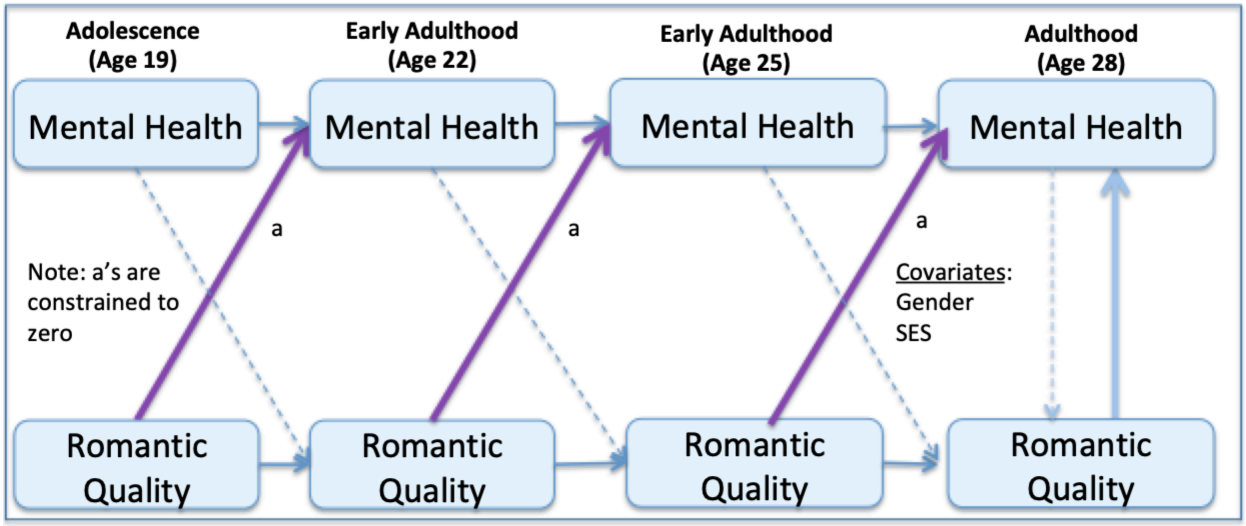


Figure 19 – Hypothesis 5: Specific Example of Nested Model Comparing Constrained Versus Unconstrained Effects of Intimacy Predicting Short-Term Changes in Internalizing Symptoms

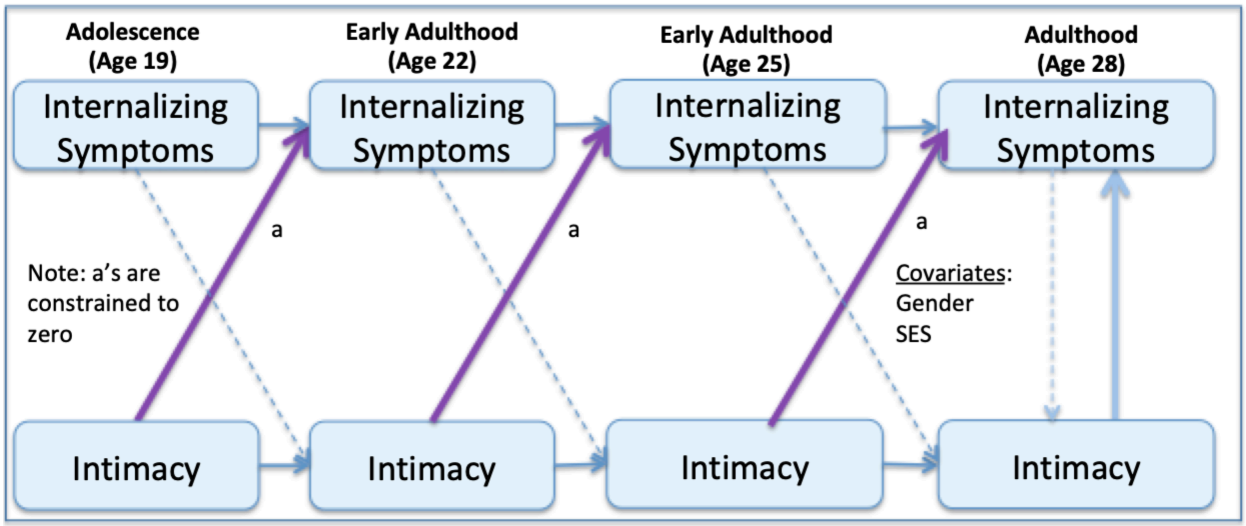
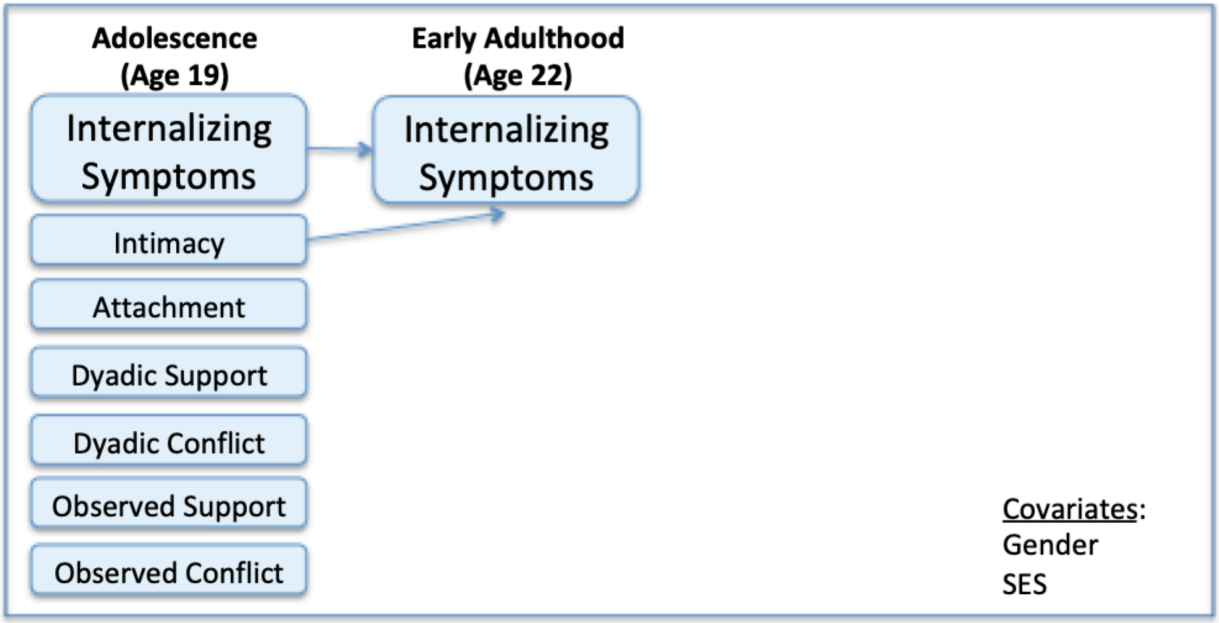


Figure 20 – Hypothesis 5 Follow-Up: Specific Example of Intimacy Predicting Relative Change in Internalizing Symptoms from Age 19 to Age 22 *(Others will be Age 22 to 25; and 25 to 28 as Needed for Internalizing and Externalizing Symptoms Separately)*



Appendix G: Overview and Specific Models for Hypothesis 6

Figure 21 – Hypothesis 6a: Specific Example of Intimacy Predicting Relative Change in Internalizing Symptoms from Age 19 to 25

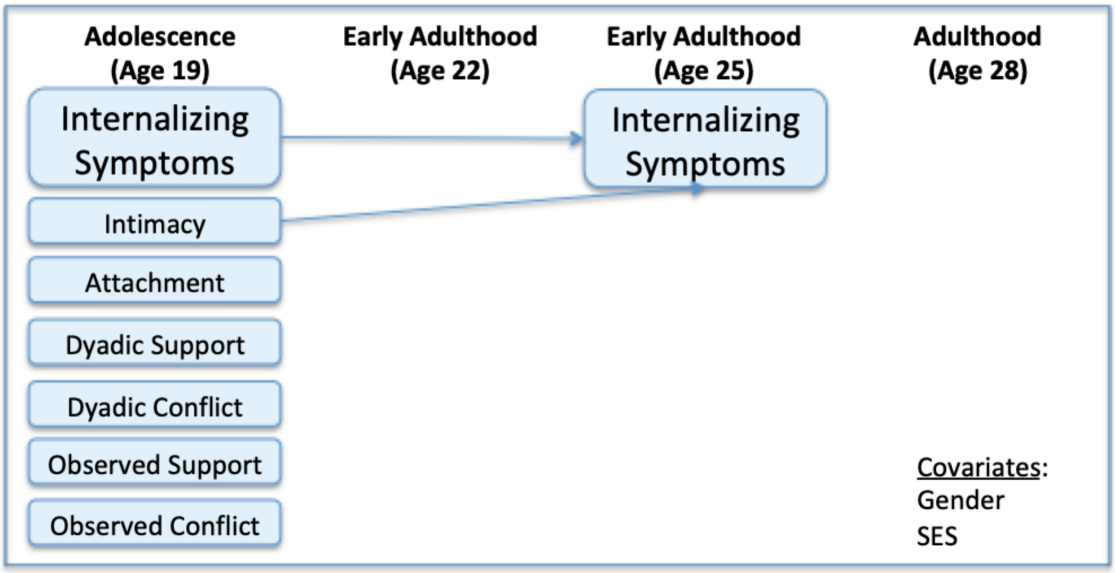


Figure 22 – Hypothesis 6b: Specific Example of Intimacy Predicting Relative Change in Internalizing Symptoms from Age 19 to 28

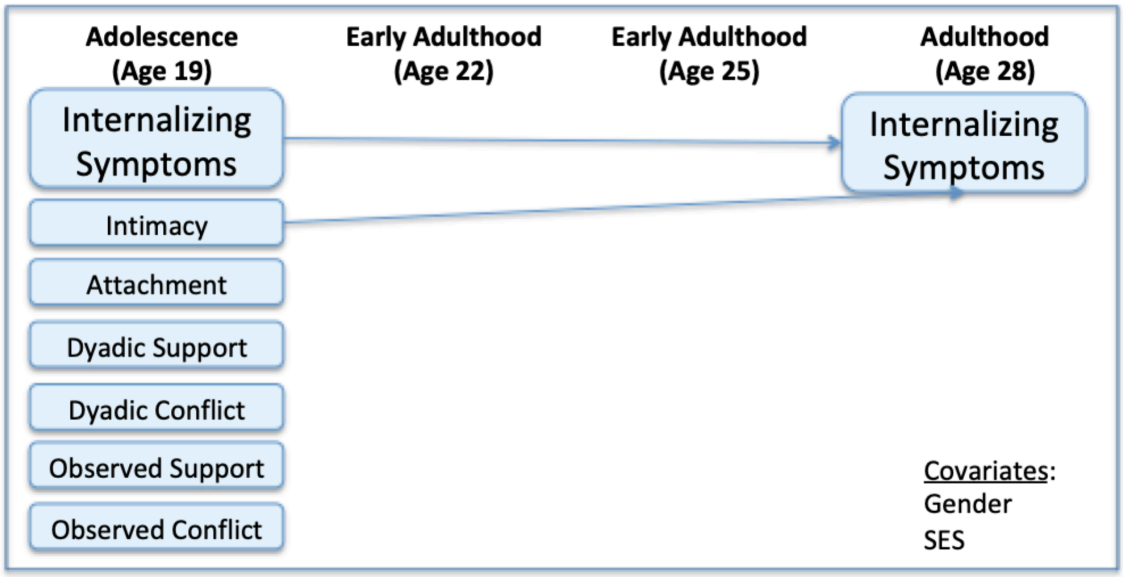


Figure 23 – Hypothesis 6c: Specific Example of Intimacy Predicting Relative Change in Internalizing Symptoms from Age 22 to Age 28

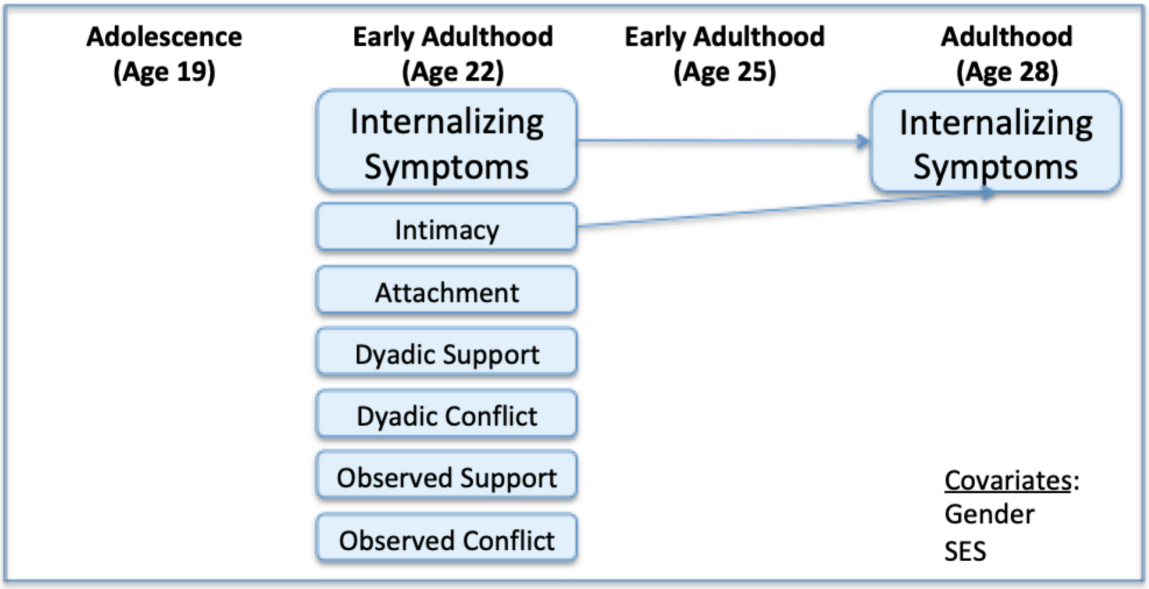


Figure 24 – Hypothesis 6a: Overview of Follow-up Analysis for Direct Versus Mediated Paths from Romantic Relationship Qualities to Mental Health Symptoms

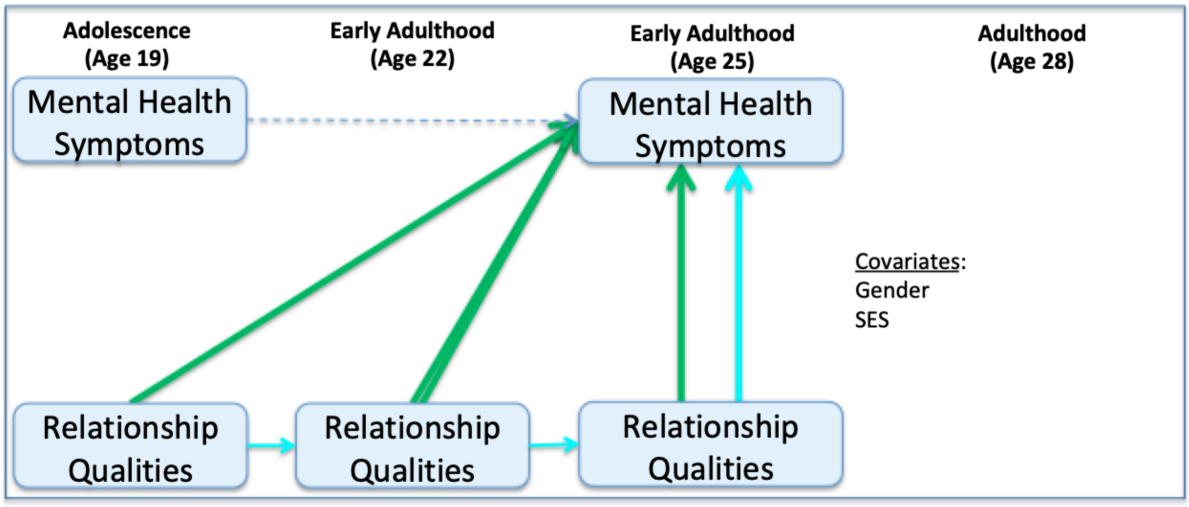


Figure 25 – Hypothesis 6a: Specific Example of Follow-up Analysis for Direct Versus Mediated Paths from Intimacy to Internalizing Symptoms

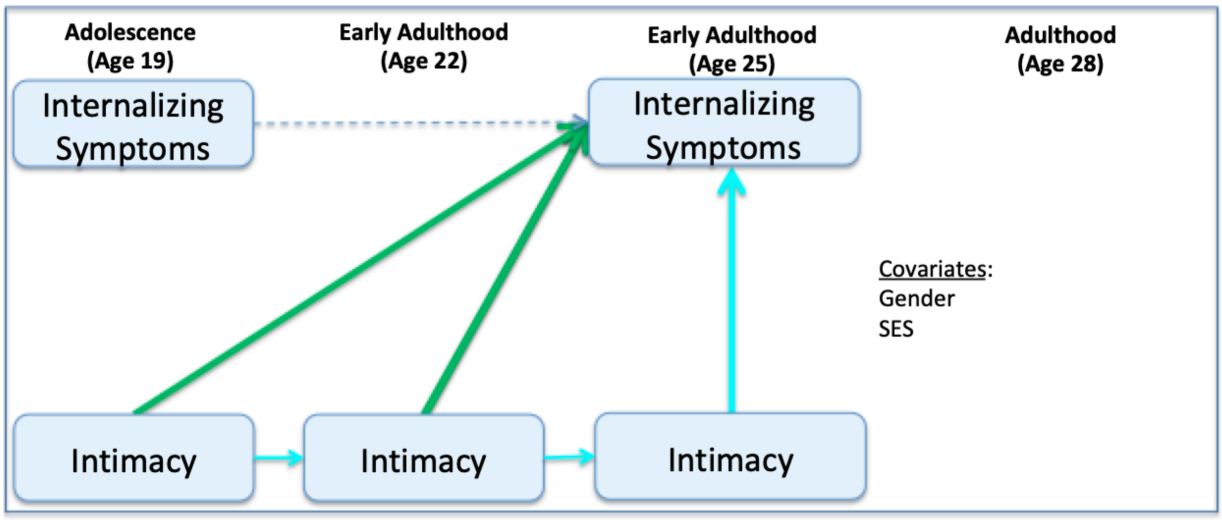


Figure 26 – Hypothesis 6b: Overview of Follow-up Analysis for Direct Versus Mediated Paths from Romantic Relationship Qualities to Mental Health Symptoms

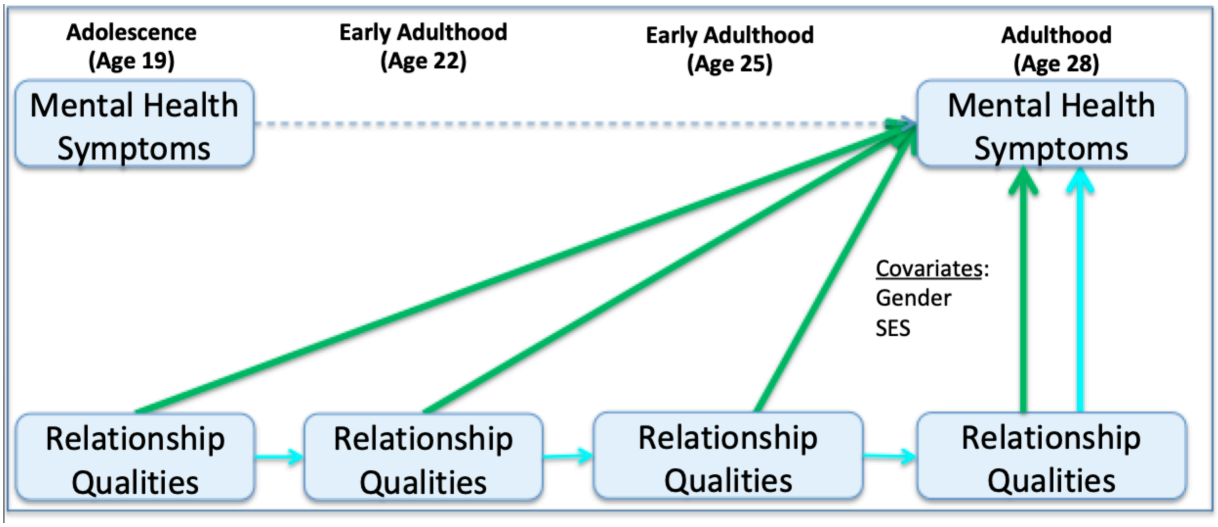


Figure 27 – Hypothesis 6b: Specific Example of Follow-up Analysis for Direct Versus Mediated Paths from Intimacy to Internalizing Symptoms

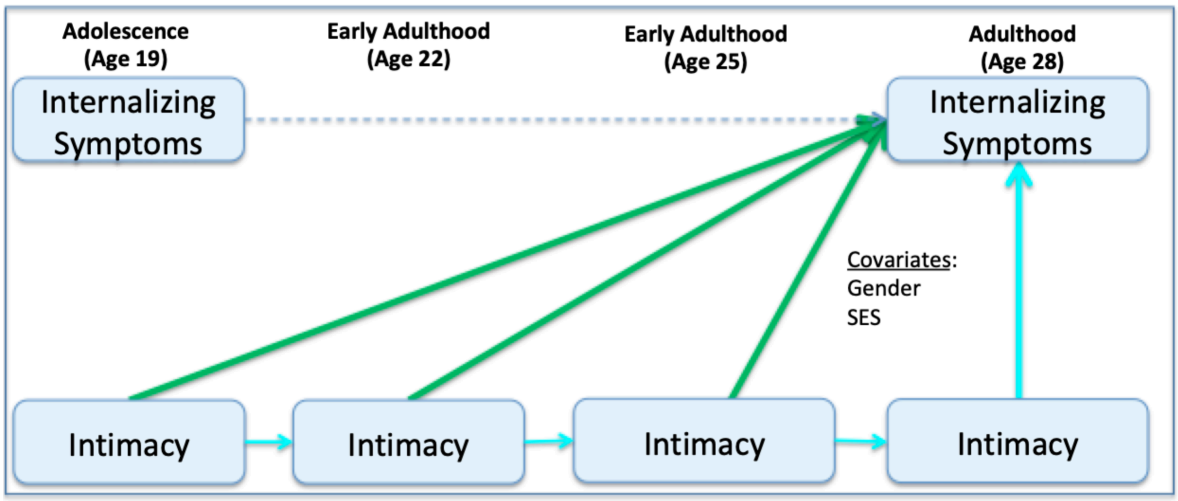


Figure 28 – Hypothesis 6c: Overview of Follow-up Analysis for Direct Versus Mediated Paths from Romantic Relationship Qualities to Mental Health Symptoms

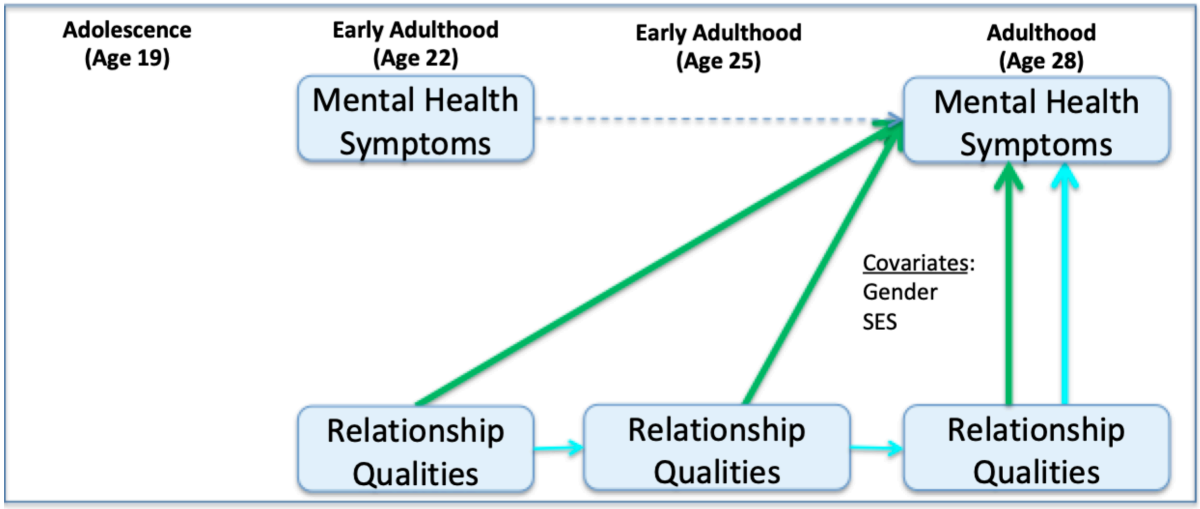
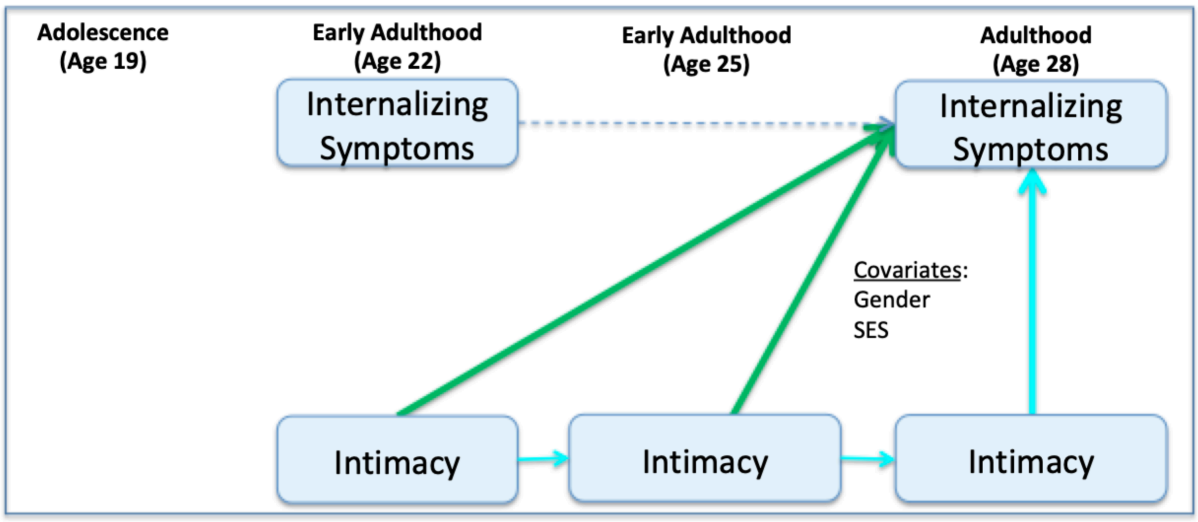


Figure 29 – Hypothesis 6c: Specific Example of Follow-up Analysis for Direct Versus Mediated Paths from Intimacy to Internalizing Symptoms



Appendix H: Factor Analysis Sample

Factor loadings based on an iterative principle factors with oblimin rotation for 20 items from the proposed romantic quality constructs at age 19

Measure	*Reporter*	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
NRI Intimacy	Self	54	24	-3	1	6
NRI Affection	Self	57	10	-13	12	12
NRI Intimacy	Partner	1	73	-1	-8	1
NRI Affection	Partner	2	60	8	-13	8
Anxious Attachment	Self	-18	-4	68	-23	13
Avoidant Attachment	Self	-26	-3	41	-13	0
NRI Aid	Self	73	-12	23	-17	-11
NRI Support	Self	86	7	-10	3	2
SBT Support	Self	15	-6	4	-9	97
NRI Aid	Partner	29	38	1	-1	-6
NRI Support	Partner	6	82	-1	-8	1
SBT Support	Partner	-11	3	1	1	68
CIR Negative	Self	28	-11	59	6	0
NRI Conflict	Self	-1	14	81	21	-2
NRI Antagonism	Self	2	5	68	24	-5
AR Conflict	Self	9	-22	-3	41	-3
CIR Negative	Partner	10	1	4	39	-16
NRI Conflict	Partner	-9	11	6	75	14
NRI Antagonism	Partner	-11	-16	-1	65	5
AR Conflict	Partner	1	-5	4	26	-13

Factor loadings based on an iterative principle factors with oblimin rotation for 20 items from the proposed romantic quality constructs at age 22

Measure	*Reporter*	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
NRI Intimacy	Self	73	2	-35	-10	2
NRI Affection	Self	68	11	13	-3	-7
NRI Intimacy	Partner	61	54	5	20	11
NRI Affection	Partner	55	-21	24	-1	2
Anxious Attachment	Self	8	14	25	37	-2
Avoidant Attachment	Self	-28	-16	47	5	0
NRI Aid	Self	58	33	-13	-12	3
NRI Support	Self	78	15	-11	-2	-30
SBT Support	Self	-9	9	-7	76	-15
NRI Aid	Partner	11	-4	-10	38	20
NRI Support	Partner	56	-34	-1	9	19
SBT Support	Partner	-16	5	-8	77	-7
CIR Negative	Self	24	32	40	25	17
NRI Conflict	Self	2	26	-10	-1	71
NRI Antagonism	Self	-12	2	5	-9	73
AR Conflict	Self	14	8	86	-13	-9
CIR Negative	Partner	10	61	6	7	-5
NRI Conflict	Partner	-5	70	6	9	16
NRI Antagonism	Partner	-1	78	3	6	18
AR Conflict	Partner	--13	7	59	-10	2

Appendix I: Chi-Square Difference Test Results

Table 1. Chi Square Difference (Df=1) Comparing Constrained Effects of Each Individual Romantic Quality on Internalizing Symptoms Across Pairs of Ages to Unconstrained Effect Models **(Hypothesis 1c)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Comparison Ages for Each Romantic Quality Individually	χ^2	χ^2	χ^2	χ^2	χ^2	χ^2
19 to 22	1.31	.03	1.13	.06	5.20*	1.33
19 to 25	.16	.58	.81	.45	.42	.23
19 to 28	.34	3.21	.03	.06	1.98	.13
22 to 25	1.00	.26	.02	.84	2.37	.35
22 to 28	3.95*	2.33	1.23	.01	.19	1.57
25 to 28	.76	1.08	.63	.29	.39	.19

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 2. Chi Square Difference (Df=1) Comparing Constrained Effects of Each Individual Romantic Quality on Externalizing Symptoms Across Pairs of Ages and Unconstrained Models **(Hypothesis 1c)**

	Intimacy	Attachment	Dyadic Support	Dyadic Conflict	Observed Support	Observed Conflict
Comparison Ages for Each Romantic Quality Individually	χ^2	χ^2	χ^2	χ^2	χ^2	χ^2
19 to 22	1.20	1.02	1.54	2.89	1.78	.20
19 to 25	.79	0	.83	.09	2.22	1.24
19 to 28	5.57*	1.54	3.57	.70	1.10	.01
22 to 25	4.75*	1.22	5.65*	4.56*	.01	.54
22 to 28	14.89**	5.23*	13.37**	1.24	.01	.01
25 to 28	2.83	1.42	2.22	.70	.08	.19

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 3. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of All Romantic Quality X Gender Interactions on Internalizing and Externalizing Symptoms After Controlling for Gender and Baseline Family Income **(Hypothesis 2b)**

	Internalizing Symptoms	Externalizing Symptoms
Block Analyses Including All Qualities and Interactions In One Model	χ^2	χ^2
19	8.41	5.40
22	1.90	1.12
25	11.65	21.64**
28	10.36	4.90

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 4. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of All Romantic Quality X Close Friendship Interactions on Internalizing and Externalizing Symptoms After Controlling for Close Friendship Quality, Gender and Baseline Family Income **(Hypothesis 3)**

	Internalizing Symptoms	Externalizing Symptoms
Block Analyses Including All Qualities and Interactions In One Model	χ^2	χ^2
19	3.90	5.18
22	8.40	13.07*
25	5.10	5.18
28	12.85*	8.00

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 5. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of Romantic Quality X Relationship Intensity Interaction on Internalizing and Externalizing Symptoms After Controlling for Relationship Intensity, Gender and Baseline Family Income **(Hypothesis 4a)**

	Internalizing Symptoms	Externalizing Symptoms
Block Analyses Including All Qualities and Interactions in One Model	χ^2	χ^2
17-28	4.45	4.63
19	2.20	1.24
22	5.74	8.77
25	2.62	3.69
28	7.54	23.22***

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 6. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of Romantic Quality X Relationship Duration Interaction on Internalizing and Externalizing Symptoms After Controlling for Duration, Gender and Baseline Family Income **(Hypothesis 4b)**

	Internalizing Symptoms	Externalizing Symptoms
Block Analyses Including All Qualities and Interactions in One Model	χ^2	χ^2
17-28	6.72	6.40
19	5.96	11.08
22	2.08	.81
25	3.29	4.27
28	1.83	5.15

*p ≤ .05; ** p ≤ .01; ***p ≤ .001

Table 7. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of Romantic Quality X Gender Interaction on Short-Term Relative Change in Internalizing and Externalizing Symptoms After Controlling for Baseline Internalizing or Externalizing Symptoms, Gender and Baseline Family Income **(Hypothesis 5)**

	Internalizing Symptoms	Externalizing Symptoms
Short-Term Predictions From Romantic Qualities (including all qualities and interactions as a block)	χ^2	χ^2
19 to 22 (control 19)	3.87	6.15
22 to 25 (control 22)	9.89	12.46
25 to 28 (control 25)	15.57*	23.46***

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 8. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of Romantic Quality X Close Friendship Quality Interaction on Short-Term Relative Change in Internalizing and Externalizing Symptoms After Controlling for Baseline Internalizing or Externalizing Symptoms, Friendship Quality, Gender and Baseline Family Income **(Hypothesis 5)**

	Internalizing Symptoms	Externalizing Symptoms
Short-Term Predictions From Romantic Qualities (including all qualities and interactions as a block)	χ^2	χ^2
19 to 22 (control 19)	7.98	7.76
22 to 25 (control 22)	4.19	6.51
25 to 28 (control 25)	4.10	11.10

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001

Table 9. Chi Square Difference (Df=6) Comparing Constrained and Unconstrained Models Using Nested Path Model Analyses for the Effect of Romantic Quality X Gender Interaction on Long-Term Relative Change in Internalizing and Externalizing Symptoms After Controlling for Baseline Internalizing or Externalizing Symptoms, Gender and Baseline Family Income **(Hypothesis 6a-d)**

Ages	Internalizing Symptoms	Externalizing Symptoms
Long-Term Predictions From Romantic Qualities (including all qualities and interactions as a block)	χ^2	χ^2
19 to 25 (control 19)	6.10	1.84
19 to 28 (control 19)	2.22	14.36*
22 to 28 (control 22)	12.41	12.89*

*p $\leq$ .05; ** p $\leq$ .01; ***p $\leq$ .001