An Integration of Attachment and the Investment Model: Joint Predictors of Accommodation in Romantic and Friendship Dyads

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An Integration of Attachment and the Investment Model: Joint Predictors of Accommodation in Romantic and Friendship Dyads
by
Samuel Y. Chung

A thesis presented to
The Graduate School
of Washington University in
partial fulfillment of the
requirements for the degree
of Doctor of Philosophy

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I never thought I would become an attachment researcher and yet here I am. I had been interested in studying close interpersonal relationships for a long time, but attachment theory wasn’t really of any particular interest to me initially. In fact, romantic relationships weren’t really of interest to me as well, and I specifically wanted to study other types of close relationships instead, like friendships. However, I’m glad I did follow this path because it has been through studying attachment and romantic relationships that I have been able to work with and receive guidance from some truly amazing people.

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ABSTRACT OF THE DISSERTATION

An Integration of Attachment and the Investment Model:
Joint Predictors of Accommodation in Romantic and Friendship Dyads

by

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Doctor of Philosophy in Psychological & Brain Sciences
Washington University in St. Louis, 2021
Professor Michael Strube, Chairperson

The present two-wave research examines two frameworks for predicting relationship maintenance: adult attachment theory and the investment model of commitment. Expanding upon past work, I test models that integrate the two theories such that relationship satisfaction, alternatives, and investment size mediate the relationship between avoidance and commitment, and attachment anxiety moderates the investment model factors’ relationships with accommodation in romantic relationships and friendships. In romantic relationships, increasing partner anxiety reduced the relationship between actor relationship satisfaction and commitment whereas in friendships, increasing actor anxiety increased the relationship between actor relationship satisfaction and commitment. Further, increasing actor anxiety increased the relationship between actor investment size and commitment in romantic relationships, but decreased the relationship between actor investment and commitment in friendships. Additionally, attachment effects generally persisted in models that included extraversion and neuroticism as covariates of avoidance and anxiety respectively; and analyses between model variables at Wave 1 and Wave 2 suggested that relationships between model variables remain stable over a two to thirteen week period.
Chapter 1: Introduction

Interpersonal conflict and the maintenance of relationships play significant roles in shaping the quality and stability of close relationships and personal well-being (Berscheid & Reis, 1998; Mikulincer & Shaver, 2016). The development and persistence (or end) of any relationship, whether it is happy and fulfilling, or toxic and abusive, depends on how partners think, feel, and behave around each other, especially during difficult interpersonal situations.

The present research integrates two guiding perspectives in relationship maintenance and stability: attachment theory (Bowlby, 1969, 1980) and the investment model of commitment (Rusbult, 1980; 1983), to better understand how individuals choose to maintain their relationships. By considering both models, it may be possible to reach a fuller understanding of how individuals maintain their relationships with close others. Attachment theory provides theoretical explanations through dispositional factors regarding mental representations and expectations of relationships formed in past relationships, whereas the investment model provides more proximal understandings of relationship structure in current relationships. Integrating the two frameworks may provide additional insights into how people maintain their relationships and why some relationships fail while others persist.

1.1 Attachment Theory

Attachment (Bowlby, 1969, 1980) refers to the strong emotional bond formed in close relationships from the perceived quality of interaction in the relationship. According to theory, patterns of interactions with attachment figures (people with whom an individual is reliant on for protection, comfort, and support) earlier in life shape individuals’ beliefs and expectations of later relationships. These expectations form working models of relationships that develop into
systematic patterns of thinking, feeling, and behaving in relationships referred to as attachment orientations. Attachment orientations impact multiple aspects in close relationships, including commitment (Simpson, 1990), stability of the relationship (Kirkpatrick & Davis, 1994), and the use of different coping strategies managing negative emotions in threatening situations (Mikulincer & Shaver, 2007; Simpson, 1990).

Two relatively independent dimensions underlie adult attachment: avoidance and anxiety (Brennan et al., 1998; Simpson et al., 1996). Individuals high in attachment avoidance have low trust in others and strive to limit closeness with others, maintaining autonomy and emotional independence in their close relationships (Campbell et al., 2005; Hazan & Shaver, 1994). Individuals high in anxiety have moderate, but fluctuating trust in others, holding persistent concerns regarding the availability and responsiveness of their partners when seeking their support (Campbell et al., 2005). Individuals who score low in both attachment dimensions are prototypically secure, showing high levels of trust in others, being comfortable with emotional closeness and confident in the availability and supportiveness of their significant others. Overall, individuals high in avoidance and anxiety tend to be less well-adjusted and show less positive well-being (Mikulincer & Shaver, 2003, 2007; Shaver & Mikulincer 2002). Further, more secure individuals tend to show more positive relationship outcomes than individuals high in avoidance or anxiety, their relationships characterized by higher satisfaction, commitment, and length (Feeney et al., 1994; Simpson, 1990).

Attachment has been found to be a robust theory in close relationships context, having been compared alongside other well-established dispositional constructs related to interpersonal relations such as the Big Five personality traits (Costa & McCrae, 1985, 1992; John et al., 1991). Associations have been found to varying degrees between both attachment orientations and all of
the five factors of the Big Five: neuroticism, extraversion, openness, agreeableness, and conscientiousness (see Noftle & Shaver, 2006; Roisman et al., 2007), with neuroticism sharing the strongest relationship with both attachment orientations (particularly with attachment anxiety) and extraversion being the most consistent (more so with avoidance) among the remaining four. However, findings suggest that the attachment variables not only provide unique explanations above and beyond the Big Five in a relationship context, attachment anxiety and avoidance are better predictors of relationship outcomes such as relationship status, length, satisfaction, commitment, and quality (Noftle & Shaver, 2006; Shaver & Brennan, 1992).

1.1.1 Attachment and Relationship Maintenance
Attachment theory provides a robust framework explaining individual differences in relationship maintenance. Attachment orientations have been shown to predict differences in how individuals provide and receive social support (Carnelley et al., 1996; Collins & Feeney, 2000; Collins et al., 2011; Fraley & Shaver, 1998; Simpson et al., 1992), and how individuals evaluate and cope with stressful situations (Mikulincer & Shaver 2016). For example, highly avoidant individuals tend to self-disclose less and are less likely to seek support and closeness from others (Feeney, 2016). In contrast, individuals high in anxiety are motivated to increase intimacy in their relationships, even if such actions occur at some cost to their satisfaction and well-being (Feeney, 1994; Feeney, 2016).

The interpersonal goals held by highly avoidant and highly anxious individuals develop from the expectations of relationships they have developed from past relationships (Bowlby, 1969). These working models of relationships have consequences for the types of behaviors and outcomes individuals experience in their relationships. For example, insecure individuals, that is, highly avoidant individuals and highly anxious individuals, tend to report lower relationship
satisfaction (Brennan & Shaver, 1995; Collins & Read, 1990; Feeney, 1994), lower commitment (Simpson, 1990), and more negative views of their partners (Campbell et al., 2005; Collins & Feeney, 2004).

Theory suggests that insecure individuals experience these outcomes due to attachment related worries and concerns (Kobak et al., 1994). The tendency to hold more negative expectations and regard for their partners by insecure individuals may sharpen the negative effects of relationship threatening events, manifesting in more defensive and destructive maintenance behaviors. Consequently, both types of insecure attachments have been associated with more destructive accommodation behaviors (Scharfe & Bartholomew, 1995): Individuals high in attachment avoidance are likely to become detached and withdraw from the relationship (Campbell et al., 2005; Mikulincer & Shaver, 2007) and individuals high in attachment anxiety are likely to show clingy and controlling demands for their partner’s attention.

When an immediate threat to the relationship (such as the perceived unavailability of the partner, rejection, or a conflict) appears, the activation of attachment-related concerns influences how individuals react to the situation. Highly avoidant attachment develops from a history of consistently unsuccessful attempts at receiving support from attachment figures, instead experiencing receiving neglect and rejection (Bowlby, 1973; Ainsworth et al., 1978). Holding low trust for others and seeking to avoid being vulnerable to rejection from their partners, highly avoidant individuals rely on defensive coping strategies that limit intimacy (Campbell et al., 2005). In doing so, highly avoidant individuals are likely to view conflicts as highly aversive, downplaying the significance of conflicts and minimizing the importance of issues (and their partner’s complaints) as they withdraw from the relationship (Fraley & Shaver, 1998). They thus tend to distance themselves and avoid interacting with their partners when conflicts arise; and
when unable to avoid the conflict, are likely to try to dominate the interaction in order to maintain control and autonomy (Creasey & Hesson-McInnis, 2001; Pistole, 1989; Pistole et al., 1995).

Highly anxious attachment develops from receiving inconsistent or unpredictable care from attachment figures, leading to concerns of self-worth as well as persistent fears of rejection and abandonment. These individuals come to hold fluctuating trust in others, becoming hypervigilant towards the availability and responsiveness of attachment figures, and tend to ruminate over worst-case relationship outcomes (Mikulincer et al., 1993; Shaver & Hazan, 1993). High anxiety individuals are thus especially likely to interpret conflict as highly threatening to the relationship, experiencing intense fears of rejection and will ruminate obsessively. Notably, these perceptions can manifest in seemingly contrasting behaviors, either by dominating an interaction (to get their own needs met) or by being submissive and highly accommodating due to their fear of rejection (Creasey & Hesson-McInnis, 2001; Pistole, 1989; Pistole et al., 1995), however, both of these behaviors stem from the same motivation of ensuring that their attachment figure remains close and available.

Highly anxious individuals’ hypervigilance towards the availability and responsiveness of their partners generates a need for constant reassurance of security from their partners (Mikulincer, 1998; Mikulincer & Shaver, 2016). This constant monitoring of their partners leads highly anxious individuals to be particularly sensitive to their partners’ commitment to and behaviors within the relationship. For example, in response to a threatening situation, highly anxious individuals were less likely to react destructively, felt more accepted and less rejected when their partners’ relationship commitment was high (Tran & Simpson, 2009). Notably, highly anxious individuals’ own level of commitment was not found to predict their behavioral
and emotional responses to the situation, only their partners’, suggesting it may be just as important to consider the partners of anxious individuals when investigating how attachment anxiety plays a role in relationship maintenance.

Overall, attachment avoidance and anxiety contribute to more negative perceptions, more negative feelings towards their partners, as well as more destructive responses to relationship conflict. Highly avoidant individuals are quick to withdraw from the relationship when threatening situations arise and behave aggressively when they are unable to avoid the issue. In contrast, highly anxious individuals can be highly accommodating in a relationship but are also likely to be more demanding of their partners. Further, answering how highly anxious individuals’ respond to the threat may lie in their perceptions of their partner. If reassured of their partners’ commitment to their relationship, highly anxious individuals may behave more constructively to the situation, however, they may behave more destructively if they are unsure of their partners’ regard.

1.1.2 Friendships and Attachment
In addition to romantic relationships, friendships have been found to hold implications regarding important relationship-related outcomes such as well-being (see Aldbrecht et al. 1994). Friendships provide an important source of social support and having close friendships are associated with better health and positive emotions such as happiness and optimism when faced with adversity (Aldbrecht et al., 1994; Brannan et al., 2013; Loucks et al., 2005; Tayler et al., 2000). Additionally, the relationship between the number of friends and happiness is weak (Lucas & Dyrenfreth, 2006; Pinquart & Sörensen, 2000). Rather, the quality of friendship with an individual’s closest friends was found to be the most important (Demir et al., 2007), emphasizing the importance of close relationships.
In friendships, attachment representations function similarly to romantic attachment, conceptualized along the same two-dimension model of attachment (Brennan et al., 1998), and friendship attachment has been found to uniquely predict various social and emotional outcomes above and beyond that of other attachment relationships (Bartholomew & Horowitz, 1991; Chow et al., 2016). For example, friendship attachment has been found to uniquely predict loneliness, depression, and self-esteem (Chow & Buhrmester, 2008). In addition, individuals’ attachment with their best friend was significantly related to psychological adjustment above and beyond general peer relationship quality (Wilkinson, 2010).

Successful maintenance of friendships may vary depending on the emotional closeness present in the relationship. Compared to less close friendships, emotionally closer friendships rely less on physical proximity and more on frequency and variety of interaction settings to maintain the relationship (Hays, 1989; Rose & Serfica, 1986). In friendships, attachment avoidance and anxiety have been associated with fewer prosocial behaviors such as expressing positive emotions, more reassurance of the relationship, fewer dominating conflict management strategies (Bippus & Rollin, 2003; Simon & Baxter, 1993), and higher withdrawal from a threatening situation (Chung, 2018). However, studies that have focused on friendship attachment and its effect on maintenance behaviors are limited. Accordingly, insights into the likely influence of attachment orientations in friendships are drawn in parallel to the more robust romantic attachment literature.

Attachment provides strong theoretical reasons, through differing levels of trust and working models of relationships, to explain individual differences in relationship functioning and outcomes in both romantic and friendship relationships. Stable and high trust leads to more securely attached individuals (low on avoidance and anxiety dimensions) who generally show
more positive relationship outcomes. As trust decreases (highly avoidant individuals) or chronically fluctuates (highly anxious individuals), individuals begin to show more negative relationships outcomes. Consequently, attachment avoidance and anxiety predict negative relationship outcomes such as more negative views of one’s partner, especially within a conflict, and the use of less constructive and more destructive relationships behaviors (e.g., Campbell et al., 2005; Mikulincer & Shaver, 2016).

1.2 The Investment Model of Commitment
The investment model of commitment (Rusbult, 1983) is another major framework within which to understand relationships. The investment model asserts that commitment, and the causes of commitment, predict relationship persistence (Rusbult, 1983; Rusbult et al., 2011). Rooted in interdependence theory (Kelly & Thibaut, 1978), the investment model uses two important concepts related to costs and rewards in relationships as the basis for its framework: comparison level (the comparison of the current relationship with past relationships to manage expectations), and quality of alternatives (the perceived appeal of alternate situations compared to the current one; Arriaga, 2009).

The investment model holds that commitment in a relationship is preceded by three independent factors: satisfaction level, quality of alternatives, and investment size (Rusbult, 1983). In turn, commitment mediates the relationship between these three factors and relationship persistence. That is, relationships persist due to the positive effects of high relationship satisfaction, the perceived absence of better options outside of the relationship (quality of alternatives), and the extent to which resources have already been invested into the relationship that would degrade or be lost by exiting the relationship (investment size), all of which are explained by commitment.
1.2.1 The Investment Model and Relationship Maintenance
A powerful predictor of relationship persistence (Le & Agnew, 2003; Le et al., 2010), the investment model has identified numerous ways in which high commitment promotes constructive relationship maintenance mechanisms (Rusbult et al., 2001). For example, highly committed individuals tend to hold positive biases towards their partners and relationships: exaggerating positive aspects and downplaying negative aspects of their partner (Agnew et al., 2001; Arriaga et al., 2007), tending to hold negative biases towards others, viewing their relationships as “superior” to others’ relationships (Rusbult et al., 2000) and rating opposite-sex persons as less attractive (Simpson et al., 1990). Holding these perceptions, highly committed individuals are motivated to validate and maintain the relationship by shielding themselves from potentially tempting alternatives.

Compared to less committed individuals, highly committed individuals are also likely to respond to threats in a relationship in more constructive, and less destructive, ways that promote the relationship and help it persist (Arriaga & Rusbult, 1998; Kilpatrick et al., 2002; Rusbult et al., 1991; Slotter et al., 2012). As such, high commitment is one of the most powerful predictors of pro-relationship maintenance behaviors such as derogation of alternatives (Johnson & Rusbult, 1989) as well as the willingness to sacrifice and act in the interest of their partners or relationships (Powell & Van Vugt, 2003; Van Lange, Agnew, et al., 1997; Van Lange, Rusbult, et al., 1997). Further, highly committed individuals are more likely to forgive their partners’ offenses (Cann & Baucom, 2004; Finkel et al., 2002; McCullough et al., 1998) and show more accommodation behaviors in relationships (Rusbult et al., 1991). High commitment appears to consistently promote constructive, pro-relationship behaviors and obstruct destructive relationship behaviors, helping to explain how enduring relationships are maintained.
The investment model (Rusbult, 1983) is a widely generalizable perspective that has been used to understand commitment and its influence on relationship processes in a variety of interpersonal relationships including friendships (Le & Agnew, 2003; Lin & Rusbult, 1995; Rusbult, 1980). The relationship between investment model factors and relationship processes have been consistent with those found in the romantic relationship literature. Relationship satisfaction, quality of alternatives, and investment size predicted commitment; and commitment mediated the relationship of its three bases on friendship stability (including changes in the relationship from best friends to close friends to casual friends) both concurrently and over time (Branje et al., 2007; Oswald & Clark, 2003).

The investment model of commitment provides a practical framework for understanding the causes and consequences of commitment on interpersonal relationship processes. Along with its three antecedents (relationship satisfaction, quality of alternatives, and investment size), the investment model uses commitment as a mechanism to predict relationship maintenance behaviors (e.g., forgiveness, willingness to sacrifice, accommodation) and relationship outcomes (e.g., relationship stability and dissolution) across numerous types of interpersonal relationships including romantic relationships and friendships.

### 1.3 Attachment and the Investment Model

Attachment theory (Bowlby, 1969; Hazan & Shaver, 1994) provides insight into relationship behaviors and outcomes via dispositional factors called attachment orientations that describe differing levels of trust formed through earlier relationship experiences. Highly avoidant individuals hold low trust in others, highly anxious individuals hold fluctuating trust in others, whereas high and stable trust in others describe securely attached individuals (those who are both low on avoidance and anxiety). These attachment orientations affect numerous relationship
processes and outcomes including relationship maintenance behaviors and outcomes such as relationship satisfaction and relationship quality (e.g., Campbell et al., 2005; Hazan & Shaver 1994; Holland et al., 2012).

The investment model of commitment (Rusbult, 1983) focuses on commitment and has, with much success, provided evidence for commitment (and its three bases: relationship satisfaction, quality of alternatives, and investment size) as strong predictors of relationship maintenance and persistence. In comparison, attachment provides dispositional factors developed through past relationship experiences to explain relationship variables whereas the investment model describes qualities of the current relationship to provide more proximal understandings of relationship structure. Used in a complementary fashion, an integrated model including elements of attachment theory and the investment model may provide for better understanding of behaviors and outcomes in relationship.

Past work has shown significant associations between attachment orientations and investment model factors (e.g., Etcheverry et al., 2012; Pistole et al., 1995; Shaver & Brennan, 1992). For example, highly avoidant and highly anxious individuals tend to find themselves in less happy and less stable relationships than more securely attached individuals (Brennan & Shaver, 1995; Collins & Read, 1990). As such, highly avoidant individuals tend to be less satisfied and committed in their relationships (Etcheverry et al., 2012; Segal & Fraley, 2016; Slotter & Finkel, 2009). Further, high avoidance has been found to be positively associated with quality of alternatives and negatively associated with investment size (Etcheverry et al., 2012; Segal & Fraley, 2016). Motivated by their low trust in others, highly avoidant individuals readily withdraw from the relationship when faced with a threatening situation in the relationship and
are more likely to view leaving the relationship altogether (an alternative situation) as desirable (Etcheverry et al., 2012; Pistole et al., 1995; Segal & Fraley, 2016).

Highly anxious individuals also tend to be less satisfied in their relationships (Etcheverry et al., 2012; Segal & Fraley, 2016; Slotter & Finkel, 2009). However, the relationship between attachment anxiety and commitment is less consistent, sometimes showing a negative relationship (Etcheverry et al., 2012; Pistole et al., 1995; Segal & Fraley, 2006) or a nonsignificant one (Joel et al., 2011; Shaver & Brennan, 1992; Slotter & Finkel, 2009). Further, correlations suggest that anxiety may not be significantly related to quality of alternatives or investment size (Etcheverry et al., 2012; Segal & Fraley, 2016).

Although numerous studies have established the relative associations between attachment and investment model factors, there is less extant work investigating both frameworks as dual or joint predictors of relationships processes. Only two studies have thus far directly tested an integration of attachment theory and the investment model of commitment to predict relationship outcomes. In one, researchers successfully fitted a structural equation model testing the relationships between attachment dimensions and investment model factors jointly predicting willingness to sacrifice and accommodation, successfully replicating their findings in three separate samples (Etcheverry et al., 2012). Tests of mediation between the two frameworks found that the relationships between attachment avoidance and anxiety with commitment were mediated by all three bases of commitment. Further, commitment mediated the relationship between avoidance and willingness to sacrifice as well as between anxiety and willingness to sacrifice and between anxiety and accommodation.

In the second, researchers conducted a moderation test of attachment dimensions and commitment predicting maintenance behaviors during accommodative dilemma discussions that
individuals held with their spouses (Tran & Simpson, 2009). Their data supported past research, showing that individuals higher in avoidance and anxiety showed less constructive and more destructive maintenance behaviors (Campbell et al., 2005; Mikulincer & Shaver, 2007) and that more highly committed individuals showed more constructive maintenance behaviors (e.g., Rusbult et al., 1991). Tran and Simpson (2009) found no significant interaction between attachment avoidance and commitment, or anxiety and commitment, in predicting accommodative behaviors (Tran & Simpson, 2009). However, these researchers found that individuals’ commitment level and their partner’s anxiety significantly interacted to predict accommodative behaviors, showing that less committed individuals in a relationship with more anxious partners behaved more destructively during an interaction. In addition, high commitment appeared to buffer against partner anxiety as highly committed individuals showed more constructive behaviors even when they had anxious partners. Highly anxious individuals are particularly sensitive to rejection from their partners and show hypervigilant monitoring of their partners’ responsiveness, requiring reassurances of support from their partners (Mikulincer, 1998; Mikulincer & Shaver, 2016). This suggests that highly anxious individuals’ constant demands for assurance and attention from their partner negatively affect their partners’ behavior within the relationship, but only when the partner is less committed to the relationship as this effect seems to disappear when partners are highly committed to the individual.

Previous tests of the joint roles of attachment theory and the investment model in predicting relationship behaviors do not yet provide a full understanding of how the two perspectives integrate. The mediation modeling by Etcheverry et al. (2012) did not include measurements of individuals’ partner’s variables, a central feature of the moderation testing conducted by Tran and Simpson (2009). Additionally, the moderation tests conducted by Tran
and Simpson (2009) did not include the three base variables of commitment (i.e., relationship satisfaction, quality of alternatives, investment size) in their analyses. Although neither study provides a complete testing of an integrated model, they provide guidance on building a more complete integrated model.

1.4 The Present Research
The current study tested the joint roles of attachment and the investment model in predicting relationship maintenance behaviors, specifically, accommodation, in two different types of close interpersonal relationships: romantic relationships and friendships. Using a mediation model structure as a base, I tested whether attachment anxiety may be represented as a moderating variable between investment model variables and accommodation. In Model 1, anxiety was tested as a moderator along two pathways (Figure 1.1): the relationship satisfaction-commitment pathway, and the investment size-commitment pathway. In Model 2, partner anxiety is included as the moderator along two pathways (Figure 1.2): the commitment-accommodation pathway, and the relationship satisfaction-commitment pathway. Taking guidance from past research, Models 1 and 2 were tested within romantic dyads. Subsequently, expanding upon existing research, the robustness of the models were investigated by applying the models within close friendships (Models 3 and 4).
The mediation pathways constructed in the present models remain relatively consistent with the structural equation models used by Etcheverry et al. (2012), the difference being the use of anxiety as a moderating variable instead of as a mediated variable within the constructed models. This was done to incorporate and expand upon Tran and Simpsons’ (2009) findings regarding anxiety as a moderator to commitment, into the models. Much of the past findings related to those pathways were therefore expected to replicate in the current models. In all four models, I expected avoidance to explain some of the variance in relationship satisfaction, quality of alternatives, and investment size, and these three variables to then mediate the link.
between avoidance and commitment. Further, I expected avoidance and the three bases of commitment to collectively explain a large amount of the variance found in commitment (Etcheverry et al. [2012] reported that 89% of the variance in commitment was explained by these four variables in their model). Lastly, I expected commitment to mediate the relationships between the three bases of commitment and accommodation.

Expectations for moderated relationships in the models remained consistent across romantic relationships and friendships. That is, similar results were expected between Model 1 and 3 (models using actor anxiety), and Models 2 and 4 (models using partner anxiety). In Models 1 and 3, two pathways were identified as having a potential moderated effect of actor anxiety: the relationship satisfaction-commitment pathway and the investment size-commitment pathway.

First, attachment anxiety was expected to moderate the relationship between relationship satisfaction and commitment. Anxiety has been found to be negatively associated with both relationship satisfaction (Simpson et al., 1996) and commitment (Etcheverry et al., 2012), and commitment has been found to be positively associated with relationship satisfaction (Rusbult et al., 1991). As such, I expected anxiety and satisfaction to interact negatively such that the positive effect of satisfaction on commitment decreases, as anxiety increases.

Second, anxiety was expected to also act as a moderator in the investment size-commitment pathway. Unlike with relationship satisfaction, the relationship between anxiety and investment size has been found to be non-significant (Etcheverry et al., 2012; Segal & Fraley, 2016), and though anxiety is negatively associated with commitment, there is some evidence suggesting that anxiety may strengthen the relationship between investment size and commitment (Segal & Fraley, 2016). Highly anxious individuals are motivated to prevent loss in
their relationships (Mikulincer & Shaver, 2007), and thus have a tendency to engage in behaviors motivated to avoid driving their partners away, such as compulsive caregiving (Pistole et al., 1995), and withholding expression of negative emotions (Winterheld, 2016). When highly anxious individuals become highly invested in their relationships, they may be even more likely to be committed to the relationship as there is that much more to lose. I expected anxiety and investment to interact positively such that the positive effect of investment on commitment increases as anxiety increases.

In Models 2 and 4, two moderated effects of partner attachment anxiety on investment model variables were expected. Like that of the model used by Tran and Simpson (2009), Models 2 and 4 investigated the role of partner anxiety and the investment model predicting accommodation, but additionally included the three bases of commitment as antecedents to commitment in the model (Figure 1.2). Findings were expected to replicate Tran and Simpson’s (2009) study with partner anxiety significantly moderating the relationship between commitment and accommodation such that less committed individuals in a relationship with highly anxious partners reported the lowest accommodation (endorse more destructive behaviors), and highly committed individuals in a relationship with less anxious partner reported the most accommodation (endorse more constructive behaviors). In other words, I expected partner anxiety and commitment to interact negatively such that the positive effect of commitment on accommodation decreases as partner anxiety increases.

Lastly, partner attachment anxiety was expected to moderate the relationship between relationship satisfaction and commitment. The presence of high anxiety in a relationship (in one or both partners in a dyad) has been negatively associated with relationship satisfaction in both individuals in the relationship (e.g., Brennan & Shaver, 1995; Simpson, 1990). Considering the
positive associations between relationship satisfaction and commitment (Rusbult et al., 1991), I expected partner anxiety and satisfaction to interact negatively such that the positive effect of satisfaction on commitment decreases as partner anxiety increases.
Chapter 2: Method

2.1 Participants
The current study consists of primary participants recruited from the Washington University Psychology Subject Pool, who each nominated two partner participants: (1) the primary participants’ current romantic partner in a long-term, committed relationship (defined as having a minimum length of three months) and (2) the primary participants’ same-sex “best friend” (or if they do not have a singular “best friend”, “one of their closest friends”). To simplify the design, all primary participants were heterosexual females, providing female-male romantic dyads and female-female friendship dyads as targets of analyses. All participants completed the study online hosted through Qualtrics Survey Software.

Primary participants were 270 female students ranging in age from 18 to 34 years old ($M = 20.00, SD = 1.50$). The majority of participants identified as White (49%), followed by Asian (26%), Black or African American (9%), Latinx (5%), and “other” or multicultural (11%). The length of romantic relationships ranged from 3 to 84 months ($M = 16.51, SD = 15.06, Mdn = 11.0$) whereas friendships ranged from 3 to 255 months ($M = 47.62, SD = 48.72, Mdn = 30.5$).

Romantic partner participants were 169 males ranging in age from 18 to 29 years old ($M = 20.52, SD = 1.99$). The majority of participants identified as White (50%), followed by Asian (23%), Black or African American (4%), Latinx (5%), and “other” or multicultural (14%).

Best friend partner participants were 159 females ranging in age from 18 to 25 years old ($M = 19.92, SD = 1.37$). The majority of participants identified as White (54%), followed by Asian (20%), Black or African American (8%), Latinx (4%), and “other” or multicultural (13%).
Power analyses using the model fit approach described by Lee et al. (2012) indicated that models having close fit (RMSEA = .05) and poor fit (RMSEA = .10) can be distinguished with .80 power with a sample size of 270 (a = .05, likelihood ratio test).

An important characteristic of the sample must be noted. The participant data for the present study were collected in the spring of 2020 when the COVID-19 global pandemic led to many changes in social norms and individuals’ abilities to function in their relationships. This likely affected many individuals’ social and emotional health and potentially led to elevated levels of negative emotions such as anxiety and decreased relationship satisfaction in part of the sample. Approximately 20-25% of the study data was collected after the government and universities began to issue stay-at-home orders in the United States.

2.2 Measures
All participants were asked to complete the measurements privately and independently of their romantic partners and best friends. Upon completion of the study, participants were presented with a debriefing statement and received course credit as compensation.

**Attachment Orientation.** Participants’ attachment orientations were measured using the Adult Attachment Questionnaire (17 items; Simpson et al., 1996), a global measure of attachment orientation. Two major dimensions are assessed: avoidance (8-items) and anxiety (9-items). Participants were asked to rate their agreement with each item as generally experienced in their close relationships, using a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Sample items measuring attachment avoidance and anxiety, respectively, include: “I'm not very comfortable having to depend on other people” and “I usually want more closeness and intimacy than others do” (see Appendix A for all items). Composite scores for each dimensional construct were created. For primary participants, the Cronbach’s alphas were α
Participants’ friendship attachment orientations were measured using a modified version of the Adult Attachment Questionnaire (Simpson et al., 1996) adapted for friendships (Grabill & Kerns, 2000). Sample items measuring attachment avoidance and anxiety, respectively, include: “I'm not very comfortable having to depend on other people”, and “I rarely worry about my friend(s) leaving me” (see Appendix B). Composite scores for each dimensional construct were created. For primary participants, the Cronbach’s alphas were $\alpha = .88$ (avoidance) and $\alpha = .84$ (anxiety). The Cronbach’s alpha for friend partners’ attachment anxiety was $\alpha = .85$.

**The Investment Model.** Primary participants’ investment model constructs were measured using the Investment Model Scale (22 items; Rusbult et al., 1998) which measures levels of commitment (7 items), relationship satisfaction (5 items), quality of alternatives (5 items), and investment size (5 items). Each item is measured on a 9-point Likert scale ranging from 0 (Do not agree at all) to 8 (Agree completely). Respectively, scale items measure the degree in which a person intends to persist in the relationship; how satisfied the responder is regarding a relationship’s fulfillment of needs for intimacy, security, and emotional involvement; how much the responder believes one’s satisfaction needs (above) can be fulfilled outside of the current relationship; and perceptions of time, identity, and shared experiences invested into the relationship. Sample items include: “I am committed to maintaining my relationship with my partner” (commitment), “I feel satisfied with our relationship” (satisfaction), “My alternatives are attractive to me (dating another, spending time with friends or on my own, etc.) [alternatives]”, and “I feel very involved in our relationship- like I have put a great deal into it” (investment size) [see Appendix C]. Composite scores for each variable were created. The
Cronbach’s alphas were $\alpha = .87$ (commitment), $\alpha = .91$ (satisfaction), $\alpha = .81$ (alternatives), and $\alpha = .75$ (investment size).

Investment model factors in primary participants’ friendships were measured using a modified version of the Investment Model Scale adapted for friendships (Lin & Rusbult, 1995; Rusbult et al., 1998). A sample item includes, “I am committed to maintaining my relationship with my friend” (see Appendix D). The Cronbach’s alphas were $\alpha = .81$ (commitment), $\alpha = .92$ (satisfaction), $\alpha = .86$ (alternatives), and $\alpha = .82$ (investment size).

**Accommodation.** Primary participants’ constructive versus destructive accommodation behaviors were measured through Rusbult’s Accommodation Scale (16 items; Rusbult et al., 1991). Participants are asked to describe their typical responses to dissatisfaction with their romantic partner. Items are measured on a 9-point Likert scale ranging from 0 (*Never*) to 8 (*Always*). Sample items include: “When my partner is angry with me and ignores me for awhile, I consider breaking up.”, and “When my partner is rude and inconsiderate with me, I talk to him/her about what’s going on.” (see Appendix E). A composite score was created where a high score denotes more constructive accommodation behaviors. The Cronbach’s alpha was $\alpha = .74$.

Primary participants’ accommodation in friendships were measured using the Accommodation Scale adapted for friendships (Berry et al., 2000; Rusbult et al., 1991). A sample item includes: “When I’m upset with my partner, I sulk rather than confront the issue (see Appendix F). A composite score was created where a high score denotes more constructive accommodation behaviors. The Cronbach’s alpha was $\alpha = .75$.

**Extraversion and Neuroticism.** To test the strength and validity of attachment variables in the models, above and beyond other dispositional factors, additional models including extraversion and neuroticism were tested (see Figure 2.1 for an example).
Chapter 3: Results

3.1 Analysis Plan and Modeling Procedure

Missing data was addressed using a two-stage multiple imputation process. First, missing items on each scale (e.g., Investment Model Scale) were imputed from the other items in the scale,
persons with entire profiles of missing data were excluded from this step. Second, imputed data sets for items were used to calculate coefficient alphas and create imputed composites from the imputed items. Composites for persons missing entire profiles of data (in the first step) were imputed using other composite variables. Using this method, 100 imputed data sets were created. Specifically, 10 item-level data sets were imputed and then 10 composite-level data sets were imputed from each of the imputed item-level data sets.

For each imputed data set, coefficient alphas were used along with composite variances and covariances to create a latent variable variance-covariance matrix. A separate path analysis was estimated for each variance-covariance matrix and parameters from each analysis were combined using Rubin’s (1987) rules. Using this method, 100 values were used to produce each parameter estimate, standard error, confidence interval, and goodness of fit statistic in the reported results.

When testing the proposed models, estimation problems (e.g., lack of convergence) were occasionally encountered. The following sequence of steps was implemented when modifying models with estimation problems. First, the interaction terms were removed to simplify the model. If problems producing model fit persisted, covariances with \( p > .50 \) were removed from the model, then covariances with \( p > .10 \), and finally all non-significant covariances were removed from the model.

Three goodness of fit indices were assessed (Hu & Bentler, 1999): the comparative fit index (CFI; values of 0.95 or greater indicate good fit whereas values down to .90 indicate modest fit), the standardized root mean square residual (SRMR; values of 0.05 or less indicate good fit whereas values up to .08 indicate modest fit), and the root mean square error of approximation (RMSEA; values of 0.05 or less indicate good fit whereas values up to .08
indicate modest fit). It is important to note that indices of fit are indicative of different features of the models and are not always consistent with each other. Good model fit is consequently more difficult to achieve in more complex models—this is particularly so with the RMSEA, where complexity in the model is more harshly penalized.

3.2 Descriptive Statistics and Correlations

Summaries of means, standard deviations, measurement alphas, and correlations between model variables are presented in Table 3.1 (romantic relationships) and Table 3.2 (friendships). Relationships between variables were generally consistent with past research and consistent across romantic relationships and friendships. A few differences between the correlations in romantic relationships and friendships were notable. A significant correlation between anxiety and commitment was not found in romantic relationships but was found in friendships. However, the relationship found between anxiety and commitment has been mixed in past literature (e.g., Etcheverry et al., 2012, Slotter & Finkel, 2009). Also, contrary to past findings, a significant correlation between neuroticism and satisfaction was not found in romantic relationships but the relationship was found in friendships.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>C</th>
<th>S</th>
<th>I</th>
<th>A</th>
<th>Acc</th>
<th>Anx</th>
<th>Av</th>
<th>E</th>
<th>N</th>
<th>PA</th>
<th>PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commit.</td>
<td>6.59</td>
<td>1.54</td>
<td>.87</td>
<td>.72</td>
<td>.49</td>
<td>-.47</td>
<td>.44</td>
<td>-.09</td>
<td>-.26</td>
<td>-.02</td>
<td>-.02</td>
<td>-.17</td>
<td>-.12</td>
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<tr>
<td>Satis.</td>
<td>6.24</td>
<td>1.48</td>
<td>.65</td>
<td>.91</td>
<td>.30</td>
<td>-.36</td>
<td>.51</td>
<td>-.36</td>
<td>-.29</td>
<td>.19</td>
<td>-.06</td>
<td>.01</td>
<td>-.04</td>
</tr>
<tr>
<td>Invest.</td>
<td>4.77</td>
<td>1.57</td>
<td>.40</td>
<td>.25</td>
<td>.75</td>
<td>-.31</td>
<td>.03</td>
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<td>-.17</td>
<td>.04</td>
<td>.09</td>
<td>-.07</td>
<td>-.01</td>
</tr>
<tr>
<td>Alt.</td>
<td>3.27</td>
<td>1.69</td>
<td>-.40</td>
<td>-.31</td>
<td>-.24</td>
<td>.81</td>
<td>-.22</td>
<td>-.01</td>
<td>.17</td>
<td>.02</td>
<td>-.11</td>
<td>.07</td>
<td>.03</td>
</tr>
<tr>
<td>Variable</td>
<td>M</td>
<td>SD</td>
<td>C</td>
<td>S</td>
<td>I</td>
<td>A</td>
<td>Acc</td>
<td>Anx</td>
<td>Av</td>
<td>E</td>
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<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Commit.</td>
<td>7.06</td>
<td>1.23</td>
<td>.81</td>
<td>.76</td>
<td>.59</td>
<td>-.38</td>
<td>.50</td>
<td>-.31</td>
<td>-.33</td>
<td>.14</td>
<td>-.07</td>
<td>-.01</td>
<td>.04</td>
</tr>
<tr>
<td>Satis.</td>
<td>6.52</td>
<td>1.47</td>
<td>.65</td>
<td>.92</td>
<td>.47</td>
<td>-.26</td>
<td>.57</td>
<td>-.48</td>
<td>-.31</td>
<td>.13</td>
<td>-.23</td>
<td>-.04</td>
<td>-.00</td>
</tr>
<tr>
<td>Invest.</td>
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<td>1.78</td>
<td>.48</td>
<td>.41</td>
<td>.82</td>
<td>-.21</td>
<td>.17</td>
<td>-.15</td>
<td>-.15</td>
<td>.08</td>
<td>-.08</td>
<td>-.15</td>
<td>-.07</td>
</tr>
<tr>
<td>Alt.</td>
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<td>1.76</td>
<td>-.32</td>
<td>-.23</td>
<td>-.18</td>
<td>.86</td>
<td>-.14</td>
<td>.12</td>
<td>.11</td>
<td>-.07</td>
<td>.00</td>
<td>-.17</td>
<td>-.13</td>
</tr>
<tr>
<td>Acc.</td>
<td>5.97</td>
<td>0.92</td>
<td>.39</td>
<td>.48</td>
<td>.14</td>
<td>-.11</td>
<td>.75</td>
<td>-.43</td>
<td>-.50</td>
<td>.29</td>
<td>-.21</td>
<td>.04</td>
<td>-.06</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.36</td>
<td>1.11</td>
<td>-.26</td>
<td>-.42</td>
<td>-.12</td>
<td>.11</td>
<td>-.34</td>
<td>.84</td>
<td>.41</td>
<td>-.18</td>
<td>.38</td>
<td>.18</td>
<td>.17</td>
</tr>
</tbody>
</table>

Note. N = 270 for all actor variables, N = 169 for all romantic partner variables. Values on the main diagonal indicate Cronbach’s alphas. Values below the main diagonal indicate composite correlations. Values above the main diagonal indicate latent variable correlations. C = Commitment, S = Satisfaction, I = Investment Size, A = Alternatives, Acc = Accommodation, Anx = Anxiety, Av = Avoidance, E = Extraversion, N = Neuroticism, PA = Partner Anxiety, PN = Partner Neuroticism. Means and standard deviations were calculated prior to imputation. Bolded values indicate significant values p < .05.
Avoid.  3.12  1.21  -.28  -.28  -.13  .10  -.41  .35  .88  -.47  .21  -.05  .02
Extra.  3.40  0.72  .11  .11  .07  -.06  .23  -.15  -.41  .86  -.23  -.07  -.02
Neuro.  3.15  0.77  -.06  -.21  -.07  -.00  -.17  .33  .19  -.20  .89  .01  .18
P. Anx.  3.54  1.13  -.01  -.04  -.13  -.14  .03  .15  -.04  -.06  .01  .85  .49
P. Neuro.  3.04  0.73  .03  -.00  -.06  -.11  -.04  .15  .02  .01  .16  .42  .86

*Note. N = 270 for all actor variables, N = 159 for all friend partner variables. Values on the main diagonal indicate Cronbach’s alphas. Values below the main diagonal indicate composite correlations. Values above the main diagonal indicate latent variable correlations. C = Commitment, S = Satisfaction, I = Investment Size, A = Alternatives, Acc = Accommodation, Anx = Anxiety, Av = Avoidance, E = Extraversion, N = Neuroticism, PA = Partner Anxiety, PN = Partner Neuroticism. Means and standard deviations were calculated prior to imputation. Bolded values indicate significant values p < .05.

### 3.3 Model Replication

An initial analysis tested an approximate replication of Etcheverry et al.’s (2012) model (Figure 3.1), one of the models on which the current study models are based (Etcheverry et al.’s model included an additional dependent variable, willingness to sacrifice, that was not measured in the present study). Replication of the model was generally successful, with the CFI and SRMR suggesting good fit to the data but the RMSEA showing inadequate fit, CFI = 0.964, 95% CI [0.961, 0.968], SRMR = 0.034, 95% CI [0.032, 0.036], RMSEA = 0.16, 95% CI [0.15, 0.17]. The disparity between the CFI and SRMR compared to the RMSEA suggests that although the model is an improvement over the baseline model (assuming no relations among variables), the model is probably not the best nor the most parsimonious model.
All structural paths were significant with the exception of pathways from avoidance to commitment and from anxiety to alternatives. In this model, 16% of the variance in satisfaction, 7% of the variance in investment size, and 3% of the variance in alternatives were explained by avoidance and anxiety. Also, 64% of the variance in commitment was explained by its three bases and attachment variables, and 38% of the variance in accommodation was explained by the investment model and attachment variables. Compared to Etcheverry et al.’s (2012) model, the replication model generally explained less of the variance in the model parameters: avoidance and anxiety explaining 16% vs 22% of the variance in satisfaction, 7% vs 20% of the variance in investment size, and 3% vs 13% of the variance in alternatives; additionally, in Etcheverry et al.’s model, 75% (compared to 64%) of the variance in commitment was explained by its three bases and attachment variables. However, in both models, 38% of the variance in accommodation was explained by the investment model and attachment variables.
3.4 Primary Analyses

3.4.1 Romantic Relationships Models

Model 1A. Model 1A (Figure 3.2) tested whether actor anxiety is a moderator to the relationship between satisfaction and commitment as well as investment size to commitment. The CFI and SRMR suggested good model fit to the data whereas the RMSEA suggested modest fit, CFI = 0.972, 95% CI [0.969, 0.978], SRMR = 0.044, 95% CI [0.041, 0.045], RMSEA = 0.07, 95% CI [0.06, 0.08]. In this model, 8% of the variance in satisfaction, 3% of the variance in investment size, and 3% of the variance in alternatives were explained by avoidance. Also, 65% of the variance in commitment was explained by its three bases and attachment variables, and 43% of the variance in accommodation was explained by the investment model and attachment variables. Compared to the replication model, the RMSEA in Model 1A suggests better fit and explained more of the variance in accommodation (43% vs 38%).

All structural paths were significant with the exception of pathways from avoidance to commitment as well as from alternatives to accommodation. Although both interactions in the model were in the expected direction (negative for anxiety by satisfaction and positive for anxiety by investment), contrary to expectations, significant interactions were not found between anxiety and satisfaction predicting commitment, or between anxiety and investment size predicting commitment.
Model 2A. Model 2A (Figure 3.3) tested whether partner anxiety could be used as a moderator to the relationship between satisfaction and commitment as well as investment size to commitment. The CFI and SRMR suggested modest model fit to the data whereas the RMSEA suggested inadequate fit, CFI = 0.908, 95% CI [0.906, 0.910], SRMR = 0.066, 95% CI [0.066, 0.066], RMSEA = 0.156, 95% CI [0.153, 0.157]. In this model, 10% of the variance in satisfaction, 2% of the variance in investment size, and 1% of the variance in alternatives were explained by avoidance. Also, 71% of the variance in commitment was explained by its three bases and attachment variables, and 48% of the variance in accommodation was explained by the investment model and attachment variables.

All structural paths were significant with the exception of pathways from avoidance to investment size and commitment, from satisfaction to accommodation, as well as from partner...
anxiety to accommodation. Importantly, a significant interaction was found between partner anxiety and satisfaction predicting commitment in the expected direction such that the effect of satisfaction on commitment decreased as partner anxiety increased. However, contrary to expectation, no significant interaction was found between partner anxiety and commitment predicting accommodation, but the interaction was in the expected direction.

![Figure 3.3 Model 2A. Partner Anxiety as Moderator in Romantic Relationships](image)

*Note. N = 169. *p < .05.*

### 3.4.2 Friendships Models

**Model 3A.** The next set of models replicated those in the previous section but in the context of the primary participants’ friendships instead of romantic relationships. Model 3A (Figure 3.4) tested whether anxiety is a moderator to the relationship between satisfaction and commitment as well as investment size to commitment. The CFI and SRMR suggested good fit to the data, whereas the RMSEA suggested modest model fit, $CFI = 0.972$, 95% CI [0.969, 0.978], $SRMR =$

31
0.044, 95% CI [0.041, 0.045], RMSEA = 0.074, 95% CI [0.066, 0.078]. In this model, 10% of the variance in satisfaction, 2% of the variance in investment size, and 3% of the variance in alternatives were explained by avoidance. Also, 70% of the variance in commitment was explained by its three bases and attachment variables, and 48% of the variance in accommodation was explained by the investment model and attachment variables. Compared to Model 1A (same model parameters but with romantic relationships), Model 3A explained slightly more of the variance in accommodation (48% vs 43%).

Figure 3.4 Model 3A. Actor Anxiety as Moderator in Friendships

Note. N = 270. * p < .05.

All structural paths were significant with the exception of pathways from avoidance to alternatives, from alternatives to accommodation, and from anxiety to accommodation. Additionally, unlike in Model 1A, a significant interaction was found between anxiety and satisfaction predicting commitment; the direction, however, was opposite to what was expected
such that the effect of satisfaction on commitment increased as anxiety increased. Further, contrary to expectation, an interaction between anxiety and investment size predicting commitment was not found, but the interaction was in the expected direction.

**Model 4A.** Model 4A (Figure 3.5) tested whether partner anxiety is a moderator to the relationship between satisfaction and commitment as well as investment size to commitment (the friendship model equivalent to Model 2A). The CFI suggested modest model fit to the data whereas the SRMR and the RMSEA suggested inadequate fit, CFI = 0.92, 95% CI [0.91, 0.93], SRMR = 0.107, 95% CI [0.103, 0.111], RMSEA = 0.14, 95% CI [0.13, 0.15]. In this model, 16% of the variance in satisfaction, 3% of the variance in investment size, and 1% of the variance in alternatives were explained by avoidance. Also, 65% of the variance in commitment was explained by its three bases and attachment variables, and 59% of the variance in accommodation was explained by the investment model and attachment variables.

All structural paths were significant with the exception of pathways from avoidance to alternatives, from alternatives to commitment and accommodation, as well as from partner anxiety to accommodation. Contrary to expectations (and unlike in Model 2A- the romantic partner equivalent to Model 4A) no significant interaction were found between partner anxiety and satisfaction predicting commitment, or between partner anxiety and commitment predicting accommodation. Additionally, although the partner anxiety-satisfaction interaction was in the expected direction, the partner anxiety-commitment interaction was in the opposite direction to what was expected.
Figure 3.5 Model 4A. Partner Anxiety as Moderator in Friendships

*Note. N = 159. * p < .05.

3.5 Supplemental Analyses

3.5.1 Model Modifications

Predictive pathways from anxiety. To better focus on testing anxiety as a moderator (as seen in Tran and Simpson, 2009), the primary models (e.g., Model 1A) had anxiety share a covariate relationship with the bases of commitment. However, variations on Models 1A, 2A, 3A, and 4A were tested to investigate if anxiety should remain mediated by the bases of commitment as seen in the replication of Etcheverry et al.’s (2012) model but with the addition of the interactions presented above. Between each of the paired models: Model 1A vs Model 1A1, Model 2A vs Model 2A1, Model 3A vs Model 3A1, and Model 4A vs Model 4A1 (Appendix H), identical
goodness of fit values were found and the same proportion of variance was explained in accommodation by the attachment and investment model variables.

**Additional interactions.** Due to the lack of extant work involving interactions between attachment and investment model variables (outside of Tran and Simpson, 2009 which did not include the bases of commitment), initial expectations regarding the interactions were conservative. In order to further expand our understanding of these interactions, exploratory models were conducted to determine if the interaction relationships found in the initials models would persist when additional interactions between anxiety and other investment model variables were introduced—by adding anxiety by alternatives predicting commitment to Models 1A and 3A, as well as adding partner anxiety by alternatives and partner anxiety by investment to Models 2A and 4A.

In Model 1A2 (Figure 3.6), the CFI and SRMR respectively suggested modest and good fit to the data whereas the RMSEA suggested inadequate fit, CFI = 0.929, 95% CI [0.915, 0.937], SRMR = 0.048, 95% CI [0.045, 0.051], RMSEA = 0.113, 95% CI [0.107, 0.124]. In this model, 8% of the variance in satisfaction, 3% of the variance in investment size, and 3% of the variance in alternatives were explained by avoidance. Also, 66% of the variance in commitment was explained by its three bases and attachment variables, and 43% of the variance in accommodation was explained by the investment model and attachment variables.

Similar to Model 1A, all structural paths were significant with the exception of pathways from avoidance to commitment and from alternatives to accommodation, and both interactions from Model 1A maintained their direction and remained nonsignificant. Additionally, a significant interaction between anxiety and alternatives predicting commitment was found such
that the effect of alternatives on commitment increased as anxiety increased. Consideration of the implications regarding this interaction will be deferred to the discussion section.

Figure 3.6 Model 1A2. Actor Anxiety as Moderator in Romantic Relationships (Actor Anxiety x Alternatives Added)

Note. N = 270. * p < .05.

In Model 3A2 (Figure 3.7), the CFI and SRMR suggested modest fit to the data whereas the RMSEA suggested inadequate fit, CFI = 0.909, 95% CI [0.907, 0.911], SRMR = 0.063, 95% CI [0.062, 0.063], RMSEA = 0.127, 95% CI [0.125, 0.129]. In this model, 10% of the variance in satisfaction, 2% of the variance in investment size, and 1% of the variance in alternatives were explained by avoidance. Also, 71% of the variance in commitment was explained by its three bases and attachment variables, and 47% of the variance in accommodation was explained by the investment model and attachment variables.
Figure 3.7 Model 3A2. Actor Anxiety as Moderator in Friendships (Actor Anxiety x Alternatives Added)

*Note. N = 270. * p < .05.

Similar to Model 3A, all structural paths were significant with the exception of pathways from avoidance to alternatives, from alternatives to accommodation, and from anxiety to accommodation; also, the pathway from anxiety to commitment was not significant, and both interactions from Model 3A maintained their direction and significance. Additionally, a significant interaction between anxiety and alternatives predicting commitment was found in Model 3A2 such that the relationship effect of alternatives on commitment decreased as anxiety increased. An interaction between anxiety and alternatives predicting commitment was also found in Model 1A2 (the romantic partner model equivalent to Model 3A2), however, the interaction found in Model 1A2 (romantic relationships) was positive whereas the interaction
between anxiety and alternatives predicting commitment in Model 3A2 (friendships) was negative. This disparity will be considered further in the discussion section.

Models 2A2 (romantic) and 4A2 (friendship) [Appendix H] tested two additional interactions between partner anxiety and alternatives as well as partner anxiety and investment size predicting commitment. However, none of the additional interactions in either Model 2A2 or Model 4A2 were significant. Additionally, all previous interactions found in Model 2A and 4A maintained their direction and significance.

### 3.5.2 Extraversion and Neuroticism

To test the discriminant validity of attachment variables, additional models were conducted including extraversion and neuroticism as covariates of attachment avoidance and anxiety respectively. Due to potential suppression effects, two models were conducted: one in which both attachment and Big Five variables were included (e.g., Model 1B), and one where the attachment variables were removed and replaced with extraversion and neuroticism (e.g., Model 1B1).

**Model 1B.** Model 1B (Figure 3.8) tested extraversion and neuroticism as covariates in Model 1A (romantic relationships). In Model 1B, the CFI and SRMR suggested good fit to the data whereas the RMSEA suggested modest fit to the data, CFI = 0.969, 95% CI [0.963, 0.974], SRMR = 0.042, 95% CI [0.041, 0.044], RMSEA = 0.08, 95% CI [0.07, 0.09]. In this model, 9% of the variance in satisfaction, 3% of the variance in investment size, and 4% of the variance in alternatives were explained by avoidance and extraversion. Also, 69% of the variance in commitment was explained by its three bases, attachment variables, extraversion, and neuroticism, and 47% of the variance in accommodation was explained by the investment model, attachment variables, as well as extraversion and neuroticism.
Figure 3.8 Model 1B. Actor Anxiety as Moderator in Romantic Relationships (Extraversion and Actor Neuroticism Added)


All structural paths were significant with the exception of pathways from extraversion to each of the three bases of commitment, from satisfaction to accommodation, from alternatives to accommodation, from anxiety to accommodation, and from neuroticism to accommodation. Additionally, a significant interaction was found between anxiety and satisfaction predicting commitment such that the effect of satisfaction on commitment decreased as anxiety increased. Further, a significant interaction between neuroticism and satisfaction was found such that the effect of satisfaction on commitment increased as neuroticism increased.

Model 1B1. Some of the observed parameter coefficients in Model 1B suggested the presence of suppression effects in the model. For example, anxiety and neuroticism share a high,
positive covariate relationship but show opposite signed pathway coefficients to commitment and accommodation. To address this, an additional model (Model 1B1; Figure 3.9) was tested in which extraversion and neuroticism replaced avoidance and anxiety respectively.

![Diagram showing the relationship between extraversion, neuroticism, satisfaction, alternatives, commitment, accommodation, and investment.](image)

**Figure 3.9** Model 1B1. Mediated Extraversion and Actor Neuroticism as Moderator in Romantic Relationships

*Note. N = 270. * p < .05.*

Initial attempts to fit Model 1B1 were troublesome to fit, thus the interactions as well as the covariances between neuroticism and satisfaction, and between neuroticism and alternatives were removed from the model. In Model 1B1, the CFI and SRMR suggested good fit to the data, whereas the RMSEA suggested modest fit, CFI = 0.995, 95% CI [0.993, 0.997], SRMR = 0.027, 95% CI [0.026, 0.029], RMSEA = 0.06, 95% CI [0.05, 0.07]. In this model, 3% of the variance in satisfaction, <1% of the variance in investment size, and 0% of the variance in alternatives were explained by extraversion. Also, 66% of the variance in commitment was explained by its three bases, extraversion, and neuroticism, and 42% of the variance in accommodation was explained by the investment model, extraversion, and neuroticism. All structural paths were
significant with the exception of pathways from extraversion to alternatives and investment size, from alternatives to accommodation, and from neuroticism to commitment and accommodation.

Comparing the three models: Model 1A (attachment and investment model variables), Model 1B1 (extraversion, neuroticism, and investment model variables), and Model 1B (attachment, investment model variables, extraversion, and neuroticism), the attachment variables appear to be a bit more stable than extraversion and neuroticism. From Model 1A to Model 1B (adding extraversion and neuroticism), structural pathways remained the same except avoidance to commitment (which became significant), as well as anxiety to accommodation (which became nonsignificant). From Model 1B1 to 1B (adding attachment variables), the structural pathway from extraversion to satisfaction became nonsignificant, neuroticism to commitment became significant, and neuroticism to accommodation flipped signs, becoming positive (though it is nonsignificant in both models). Further, compared to Model 1B1 (Big Five-investment), Model 1A (attachment-investment) and was able to be fit without trouble (parameters had to be removed in Model 1B1).

**Model 2B.** A model containing attachment variables, investment model variables, extraversion, and partner neuroticism (romantic relationships) could not be fit to the data. The simplest possible model, with interactions and all non-significant covariances removed, did not produce fit to the data (see Appendix H for a diagram of the attempted model, Model 2B).

**Model 2B1.** Model 2B1 (Figure 3.10) in which extraversion and *partner* neuroticism replaced avoidance and *partner* anxiety respectively in Model 2A (romantic relationships) was tested and all three indices of fit suggested inadequate model fit to the data, CFI = 0.57, 95% CI [0.563, 0.575], SRMR = 0.132, 95% CI [0.131, 0.132], RMSEA = 0.340, 95% CI [0.338, 0.341]. In this model, 3% of the variance in satisfaction, < 1% of the variance in investment size, and 0%
of the variance in alternatives were explained by extraversion. Also, 66% of the variance in commitment was explained by its three bases and extraversion, and 42% of the variance in accommodation was explained by the investment model, extraversion, and partner neuroticism.

Figure 3.10 Model 2B1. Mediated Extraversion and Partner Neuroticism as Moderator in Romantic Relationships
Note. N = 169. * p < .05.

All structural paths were significant with the exception of pathways from extraversion to alternatives and investment as well as pathways from partner neuroticism to commitment and accommodation. Additionally, unlike Model 2A where a negative interaction between partner anxiety and satisfaction predicting commitment was found, no significant interactions were found in Model 2B1. Compared to Model 2A, Model 2B1 showed poor fit to the data, though it did explain more of the variance in accommodation (34% vs 42%). Consideration regarding this disparity will be deferred to the discussion section.

Model 3B. Model 3B (Figure 3.11) tested extraversion and neuroticism as covariates in Model 3A (friendships). The CFI and SRMR suggested modest fit to the data whereas the
RMSEA suggested inadequate fit, CFI = 0.928, 95% CI [0.927, 0.929], SRMR = 0.065, 95% CI [0.065, 0.065], RMSEA = 0.114, 95% CI [0.113, 0.115]. In this model, 10% of the variance in satisfaction, 2% of the variance in investment size, and 1% of the variance in alternatives were explained by avoidance and extraversion. Also, 75% of the variance in commitment was explained by its three bases, attachment variables, extraversion, and neuroticism, and 48% of the variance in accommodation was explained by the investment model, attachment variables, as well as extraversion and neuroticism.

**Figure 3.11** Model 3B. Actor Anxiety as Moderator in Friendships (Extraversion and Actor Neuroticism Added)


All structural paths were significant with the exception of pathways from avoidance to alternatives, from extraversion to all investment model variables and accommodation, from alternatives to accommodation, from anxiety to commitment and accommodation, as well as
from neuroticism to accommodation. Additionally, three significant interactions were found: (1) between anxiety and satisfaction predicting commitment such that the effect of satisfaction on commitment increased as anxiety increased, (2) between neuroticism and satisfaction predicting commitment such that the effect of satisfaction on commitment decreased as neuroticism increased, and (3) between neuroticism and investment predicting commitment such that the effect of investment on commitment increased as neuroticism increased.

Compared to Model 3A, the anxiety by satisfaction interaction remained positive and significant, and the anxiety by investment interaction remained nonsignificant but became negative. The flipped signs between the sets of interactions (between anxiety by satisfaction and between neuroticism by satisfaction, as well as between anxiety by investment and between neuroticism by investment) likely indicates that suppression effects between anxiety and neuroticism are present in the model.

**Model 3B1.** An additional model (Model 3B1; Figure 3.12) in which extraversion and neuroticism replaced avoidance and anxiety respectively was tested. In Model 3B1, the CFI and SRMR suggested good fit to the data, whereas the RMSEA suggested modest fit, CFI = 0.973, 95% CI [0.971, 0.975], SRMR = 0.041, 95% CI [0.041, 0.042], RMSEA = 0.075, 95% CI [0.072, 0.078]. In this model, 2% of the variance in satisfaction, 1% of the variance in investment size, and 1% of the variance in alternatives were explained by extraversion. Also, 70% of the variance in commitment was explained by its three bases, extraversion, and neuroticism, and 42% of the variance in accommodation was explained by the investment model, extraversion, and neuroticism.
Figure 3.12 Model 3B1. Mediated Extraversion and Actor Neuroticism as Moderator in Friendships

*Note. N = 270. * p < .05.

All structural paths were significant with the exception of pathways from extraversion to alternatives, investment, and commitment, from alternatives to accommodation, and from neuroticism to accommodation. Additionally, a significant interaction was found between neuroticism and satisfaction predicting commitment such that the effect of satisfaction on commitment decreased as neuroticism increased, as well as between neuroticism and investment predicting commitment such that the relationship between investment and commitment increased as neuroticism increased.

Comparing the three models: Model 3A (attachment and investment model variables), Model 3B1 (extraversion, neuroticism, and investment model variables), and Model 3B (attachment, investment model variables, extraversion, and neuroticism), various changes in the
relationships between variables were observed. From Model 3A to Model 3B (adding extraversion and neuroticism), all structural pathways involving attachment remained the same with the exception of anxiety to satisfaction (which became nonsignificant, but the magnitude of the coefficient remained similar) as well as the interaction between anxiety and investment predicting commitment (which became negative and remained nonsignificant). From Model 3B1 to 3B (adding attachment variables), the structural pathway from extraversion to satisfaction flipped signs, becoming negative and nonsignificant, and extraversion to accommodation became nonsignificant. Both Model 3B1 (Big Five-investment) and Model 3A (attachment-investment) similarly showed modest fit to the data, but Model 3A explained slightly more of the variance in accommodation than Model 3B1 (48% vs 42%). Consideration regarding this disparity will be deferred to the discussion section.

**Model 4B.** A model containing attachment variables, investment model variables, extraversion, and partner neuroticism (friendships) could not be fit to the data. The simplest possible model, with interactions and all non-significant covariances removed, did not produce fit to the data (see Appendix H for a diagram of the attempted model, Model 4B).

**Model 4B1.** Model 4B1 (Figure 3.13) in which extraversion and *partner* neuroticism replaced avoidance and *partner* anxiety respectively in Model 4A (friendships) was tested. In this Model 4B1, all three indices of fit suggested inadequate fit, CFI = 0.37, 95% CI [0.31, 0.41], SRMR = 0.154, 95% CI [0.153, 0.155], RMSEA = 0.51, 95% CI [0.47, 0.59]. In this model, 3% of the variance in satisfaction, < 1% of the variance in investment size, and < 1% of the variance in alternatives were explained by extraversion. Also, 61% of the variance in commitment was explained by its three bases and extraversion, and 54% of the variance in accommodation was explained by the investment model, extraversion, and partner neuroticism.
Figure 3.13 Model 4B1. Mediated Extraversion and Partner Neuroticism as Moderator in Friendships

*Note. N = 159. * p < .05.

All structural paths were significant with the exception of pathways from extraversion to alternatives, investment, and commitment, from alternatives to commitment and accommodation, as well as from partner neuroticism to commitment and accommodation. Additionally, like Model 2A, no significant interactions were found in Model 2B1. However, unlike Model 2A, which showed reasonable fit to the data, Model 2B1 showed poor fit to the data, and explained less of the variance in accommodation (54% vs 59%).

Overall, the influence of attachment variables appears to remain relatively consistent with the introduction of extraversion and neuroticism as covariates to the model. Across models, the magnitude and significance of parameter estimates of attachment sometimes changed with the introduction of extraversion and neuroticism, but the direction of these estimates remained the same with the exception of one interaction term, anxiety by investment in friends, which became
negative but remained nonsignificant in both models. Parameter estimates for extraversion and neuroticism appeared to be slightly less persistent than the attachment variables as both Big Five variables had an instance where a parameter estimate flipped signs when attachment variables were introduced to the model. In addition, models involving extraversion and neuroticism generally fit similarly well to the data as models involving attachment variables; but models involving extraversion and neuroticism were more difficult to fit properly, necessitating simplification of one model (Model 1B1). Two models, Model 2B and 4B, completely failed to be fit to the data.

3.5.3 Wave 2 Analyses
The original intent of the following was to investigate causal priority in the primary models (Model 1A, Model 2A, Model 3A, and Model 4A) by fitting models predicting Wave 2 outcomes from Wave 1 predictors. However, circumstances surrounding participant recruitment led to severely reduced sample sizes that impeded the ability to draw meaningful conclusions from such models. The decision was therefore made to limit the following analyses to correlations between Wave 1 and Wave 2 variables.

Participants. The study attrition rate for Wave 2 data was severe, due largely to the onset of the global COVID-19 pandemic in the United States. The second wave of data collection was originally set to be three months after the initial data were collected in spring 2020. Wave 2 data collection began a few weeks after stay-at-home orders were implemented across the country. Because the study collected participants from the university subject pool, changes to university policies regarding the subject pool such as the reduction of research participation requirements made it difficult to collect a large second wave of data from students. Alongside other likely factors such as emotional and motivational changes to participants from the COVID-19
pandemic, the data attrition rate was worse than what would normally be expected. The time between data collections were therefore reduced to be at least two weeks after the initial data collection in order to collect as much data as possible. Approximately 50% of the Wave 2 data was collected at least three months apart from the initial data; the remaining half were collected at varying shorter lengths (keeping it as close to three months as possible) with a minimum gap of two weeks.

Wave 2 correlations were conducted on a sample of 85 primary participants (79 in the romantic relationship model due to six participants reporting the dissolution of their romantic relationship), 43 romantic partner participants, and 37 friend participants. Due to the small sample sizes, it is important to interpret the following results with great caution. They are at best suggestive of relationships that will need verification in future research.

**Descriptive statistics and correlations.** A summary of Wave 2 means, standard deviations, measurement alphas, and correlations are presented on Table 3.3 (romantic relationships) and Table 3.4 (friendships). The correlations for the most part replicated the direction of the correlations found in the initial wave of data collection. Partner anxiety shows significant relationships with actor satisfaction (negative direction) and actor anxiety (positive direction) but were not significant in the initial wave.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>C</th>
<th>S</th>
<th>I</th>
<th>A</th>
<th>Acc</th>
<th>Anx</th>
<th>Av</th>
<th>PA</th>
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</thead>
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<td>.92</td>
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<td>-.19</td>
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<td>.70</td>
<td>-.23</td>
<td>-.06</td>
<td>-.34</td>
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Table 3.4 Means, Standard Deviations, Cronbach’s Alphas, and Correlations in Friendships (Wave 2)

<table>
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<tr>
<th>Variable</th>
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<th>SD</th>
<th>C</th>
<th>S</th>
<th>I</th>
<th>A</th>
<th>Acc</th>
<th>Anx</th>
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<td>.11</td>
<td>.16</td>
<td>.85</td>
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*Note. N = 85 for all actor variables, N = 37 for friend partner anxiety. Values on the main diagonal indicate Cronbach’s alphas. Values below the main diagonal indicate composite correlations. Values above the main diagonal indicate latent variable correlations. C = Commitment, S = Satisfaction, I = Investment Size, A = Alternatives, Acc = Accommodation, Anx = Anxiety, Av = Avoidance, PA = Partner Anxiety. Means and standard deviations were calculated prior to imputation. Bolded values indicate significant values p < .05.*

Correlations between Wave 1 and Wave 2 variables are presented on Table 3.5 (romantic) and Table 3.6 (friendships). All Wave 1 variables were significantly and positively correlated with their Wave 2 counterparts. These correlations showed strong relationships, although some were a bit more modest (between .55 and .67): satisfaction, alternatives, and partner anxiety in romantic relationships, as well as commitment, satisfaction, and partner...
anxiety in friendships—the lowest of these were alternatives (.55) in romantic relationships and commitment (.65) in friendships. Relationships between other variables, for the most part, showed similar relationships as the correlations within Wave 1 and within Wave 2. However, some differences were found between romantic relationships and friendships. For one, in romantic relationships, Wave 1 investment did not share a significant relationship with Wave 2 commitment and satisfaction, but a relationship between these variables did emerge in friendships. Further consideration of these findings will be deferred to the discussion section.

Table 3.5 Composite Correlations Between Wave 1 and Wave 2 Study Variables in Romantic Relationships

<table>
<thead>
<tr>
<th>Wave 2</th>
<th>C</th>
<th>S</th>
<th>I</th>
<th>A</th>
<th>Acc</th>
<th>Anx</th>
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<td>.62</td>
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</table>

Note. N = 78 for all actor variables, N = 43 for romantic partner anxiety. C = Commitment, S = Satisfaction, I = Investment Size, A = Alternatives, Acc = Accommodation, Anx = Anxiety, Av = Avoidance, PA = Partner Anxiety. Bolded values indicate significant values p < .05.

Table 3.6 Composite Correlations Between Wave 1 and Wave 2 Study Variables in Friendships

<table>
<thead>
<tr>
<th>Wave 2</th>
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<th>I</th>
<th>A</th>
<th>Acc</th>
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<td>-.22</td>
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<td>0.11</td>
<td>-0.52</td>
<td>0.29</td>
<td>0.85</td>
<td>-0.06</td>
</tr>
<tr>
<td>P Anx</td>
<td>-0.22</td>
<td>-0.29</td>
<td>0.03</td>
<td>-0.09</td>
<td>-0.16</td>
<td>0.21</td>
<td>0.14</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Note. $N = 84$ for all actor variables, $N = 32$ for friend partner anxiety. C = Commitment, S = Satisfaction, I = Investment Size, A = Alternatives, Acc = Accommodation, Anx = Anxiety, Av = Avoidance, PA = Partner Anxiety. Bolded values indicate significant values $p < .05$.

**Bias check in Wave 2 sample.** Independent samples t-test were conducted on study variables to investigate whether differences existed between individuals who completed the study at Wave 2 and those who did not. All t-tests were conducted prior to imputation.

**Romantic relationship sample.** t-tests showed that there were no significant differences in six of the eight the study variables: commitment, $t(188) = -2.00, p = .05, 95\% CI [-0.746, 0.001]$, satisfaction, $t(156) = -1.30, p = 0.20, 95\% CI [-0.64, 0.13]$, investment size, $t(168) = -1.60, p = 0.10, 95\% CI [-0.72, 0.84]$, attachment anxiety, $t(145) = -1.60, p = 0.30, 95\% CI [-0.42, 0.13]$, partner anxiety, $t(66) = 0.90, p = 0.40, 95\% CI [-0.20, 0.54]$, and accommodation, $t(145) = -1.60, p = 0.10, 95\% CI [-0.44, 0.04]$.

However, a significant difference between groups was found for alternatives, $t(162) = 2.30, p = 0.02, 95\% CI [0.06, 0.93]$. Primary participants who completed the second round of data collection ($M = 2.93, SD = 1.65$) rated themselves lower on the perceived quality of alternatives regarding their romantic partner than participants who only completed the initial study, ($M = 3.43, SD = 1.69$). In addition, a significant difference between groups was found for attachment avoidance, $t(166) = 2.90, p = .004, 95\% CI [0.14, 0.72]$. Participants who completed the second round of data collection ($M = 2.99, SD = 1.10$) rated themselves as being lower on attachment avoidance regarding their romantic partner than participants who only completed the initial study ($M = 3.43, SD = 1.14$).
**Friendship sample.** t-tests showed that there were no significant differences in seven of the eight study variables: commitment, $t(195) = -1.70, p = .09, 95\% \text{ CI } [-0.54, 0.04]$, satisfaction, $t(149) = 0.53, p = .60, 95\% \text{ CI } [-0.29, 0.50]$, investment size, $t(171) = -1.20, p = .20, 95\% \text{ CI } [-0.72, 0.18]$, alternatives, $t(160) = 1.10, p = .30, 95\% \text{ CI } [-0.19, 0.72]$, attachment anxiety, $t(141) = -1.30, p = .20, 95\% \text{ CI } [-0.50, 0.11]$, partner anxiety, $t(54) = 0.32, p = .70, 95\% \text{ CI } [-0.35, 0.48]$, and accommodation, $t(171) = -1.20, p = .20, 95\% \text{ CI } [-0.38, 0.09]$. However, a significant difference between groups was found for attachment avoidance, $t(163) = 2.70, p = .01, 95\% \text{ CI } [0.11, 0.73]$. Primary participants who completed the second round of data collection ($M = 2.82, SD = 1.18$) rated themselves lower on attachment avoidance regarding their best friend than participants who only completed the initial study ($M = 3.25, SD = 1.21$).

Results suggest there is a small amount of selection bias related to disengagement from the relationship in participants who completed the Wave 2 study. Individuals higher in alternatives regarding their romantic partner, as well as individuals higher in attachment avoidance regarding their romantic partner or friend were less likely to complete Wave 2 of the study.

**Chapter 4: Discussion**
The current study expands upon previous attempts to join two major frameworks in relationships literature—attachment theory and the investment model of commitment. In the discussion that follows, I will first discuss the primary findings in relation to the expectations described in the
introduction regarding the moderations in the models. Then I will discuss findings in relation to further tests of the primary models, including moderations between attachment anxiety and other investment model variables, followed by a discussion of finding involving the inclusion of extraversion and neuroticism as covariates to avoidance and anxiety. Lastly, I will discuss the correlations observed between Wave 1 and Wave 2 study variables before discussing the limitations of the current study as well as promising directions for future research.

4.1 Primary Findings
Initial expectations of the models involved the replication of mediation pathways from Etcheverry et al.’s (2012) model. Further, expansions of the previous model to include moderations of attachment anxiety with investment model variables were of central importance. Actor anxiety was expected to negatively moderate the relationship between satisfaction and commitment (i.e., the effect of satisfaction on commitment decreases as anxiety increases) and positively moderate the relationship between investment and commitment. Additionally, partner anxiety was expected to negatively moderate the relationship between satisfaction and commitment, and also negatively moderate the relationship between commitment and accommodation. Lastly, models were expanded to friendships. Due to less extant work with friendships to provide guidance, expectations regarding these models were kept consistent with romantic relationships.

In general, study models showed modest to good fit to the data, and Model 1A compared favorably with the replication model of Etcheverry et al.’s (2012) model (the two models using actor anxiety in romantic relationships). However, evidence for anxiety as a moderator in the model was a bit mixed. Contrary to expectations, actor anxiety did not interact with investment size to predict accommodation, and partner anxiety did not interact with commitment to predict
accommodation in both romantic relationships and friendships. Actor anxiety also did not interact with relationship satisfaction to predict commitment in romantic relationships but did interact in friendships. However, the interaction found in the friendships model was opposite to the direction expected such that the effect of satisfaction on commitment increased as anxiety increased.

It is not entirely clear why the interaction was in the positive direction in friendships. Past research suggest that highly anxious individuals are more willing to sacrifice their own happiness for the relationship (Feeney, 1994; Feeney, 2016), which suggests a negative interaction should be found, and in romantic relationships, the interaction, while nonsignificant, was in the expected negative direction. This suggests that there might be a difference in how highly anxious individuals approach happiness and satisfaction in their friendships as compared to their romantic relationships.

One possible explanation is that individuals high in anxiety use happiness and satisfaction in the relationship as a stronger gauge to assess their friendships. Individuals generally have multiple close friends whereas the vast majority of individuals choose monogamous romantic relationships (Conley et al., 2013) [unfortunately I do not have that data specific to this sample]; because individuals have multiple close friends, withdrawing (at least temporarily) from one friendship when less satisfied may be perceived as a more appropriate or allowable response in friendships compared to within a romantic relationship. Highly anxious individuals tend to have more difficulty regulating their own emotions (Mikulincer et al., 1993, Shaver & Mikulincer, 2007) and may therefore be more likely to allow their emotional state to affect their level of commitment to the friendship.
Further, partner anxiety did not interact with satisfaction to predict commitment in friendships but did interact in romantic relationships in the expected direction such that the effect of satisfaction on commitment decreased as partner anxiety increased. This suggests that individuals with highly anxious partners are relying less on their own happiness to determine their commitment to their partner. A possible explanation is that highly anxious individuals are more likely to be demanding in their relationship (Campbell et al., 2005), seeking attention and reassurance from their partner. The additional task of managing their partners’ emotional and cognitive states may in turn take individuals’ focus away from their own emotions (i.e., relationship satisfaction) when regarding the relationship.

Some of the expected results did not emerge, but it is possible that significant interactions may be observed in future studies. The current study did not provide the most powerful tests of all of the models. Although, a power analysis indicated adequate power in the primary analyses when the sample size was 270 (e.g., Models 1A [romantic, actor anxiety], 3A [friend, actor anxiety]), power was poorer for models conducted with smaller sample sizes (e.g., Model 2A [romantic, partner anxiety], Model 4A [friend, partner anxiety]). In addition, the magnitude of some of the interaction coefficients suggest a marginal effect may be present. For example, a significant interaction between actor anxiety and satisfaction was not found in romantic relationships (Model 1A), but the direction of the interaction was in the expected direction and had a modest coefficient magnitude of -.07; in friendships, the same interaction was significant with a coefficient magnitude of .09.

It is also likely that some of the null findings are in fact, not present. Although the current study models drew from previous research, the expectations regarding the moderations were mostly exploratory. Again, looking to Model 1A, the interaction between anxiety and investment
was not significant and had a small coefficient magnitude of .02. Attachment anxiety shows many ambiguous outcomes due to conflicting motivations that lead to both constructive and destructive relationship behaviors (see Campbell et al., 2005) and it is possible that different motivations involved with attachment anxiety may counteract each other, leading to a null moderation effect on investment to commitment. However, it is also possible that this effect may emerge in longer romantic relationships. Highly anxious individuals are motivated to avoid loss in their relationships (Bowlby, 1969; Hazan & Shaver, 1994) and higher investment size in longer relationships may provide perceptions to individuals that there is more to lose from the relationship if it were to end. This greater perception of loss from the relationship in highly anxious individuals may in turn increase commitment in order to maintain the relationship and prevent losses. It may be beneficial in future studies to investigate more diverse relationships such as longer, more well-established adult relationships.

Although the study expectations regarding moderations were generally exploratory, a surprising null effect in the study was the lack of a significant interaction found between partner anxiety and commitment predicting accommodation in both romantic relationships and friendships. Expectations regarding these interactions were guided by Tran and Simpson’s (2009) study, who investigated interactions between actor anxiety and partner anxiety with commitment (did not include bases of commitment). The one interaction that emerged in their study was the interaction between partner anxiety and actor commitment predicting actor accommodation such that high actor commitment appeared to buffer the negative effect of partner anxiety on actor constructive accommodative behaviors, the interaction tested in the current study. A possible explanation for this disparity may be due to difference in measurement; the current study used a self-report measure of accommodation while Tran and Simpson (2009)
measured in-person accommodative behaviors during a conversation between the two members in the relationship. All measurements used in the study are well-established in the literature and it may be that self-perceptions of accommodative behaviors do not always align with actual accommodative behaviors during a relationship interaction.

Insufficient power to the current models may also explain why findings did not replicate Tran and Simpson (2009). The parameter coefficients for the interactions between anxiety and commitment predicting accommodation in the present study were modest at .09 (romantic) and -.09 (friendships); and if the effect does, in fact, exist, the current study results suggest that the variables may function differently between romantic relationships and friendships as the direction of the interaction was positive (expected direction) in romantic relationships and negative in friendships.

It is not clear why this disparity exists, but one possible explanation may be in how burdening demands for support by the anxious partner may be on the relationship. Highly anxious individuals are more likely to be demanding of their partner (Campbell et al., 2005), and the increase in demands may be decreasing the positive effect of commitment on accommodation in romantic relationships. Relationship demands are focused on a single partner in monogamous romantic relationship and so the burden on the support provider may be higher, leading to exhaustion and withdrawal from the relationship. However, people generally have multiple close friends and demands for support from the partner may be more spread out in friendships. Because each individual friend experiences less burden, exhaustion may be felt less and high anxiety may instead serve as a cue for increased attention to the relationship leading to more constructive maintenance behaviors. Employing a variety of methods and measurement types in future research will be needed to determine if the interaction between partner anxiety and
commitment is sensitive to measurement type; and additional measures of support demand in the relationship across multiple relationships will be necessary to further investigate possible differences between types of relationships.

4.2 Supplementary Model Tests

Study results also provided evidence for the validity and stability of the effects found in the primary study models (Models 1A, 2A, 3A, 4A). Additional interactions between anxiety and investment models were tested in the context of the primary models and models including extraversion and neuroticism covariates to the primary models. Generally, attachment avoidance and anxiety remained consistent across the new models, maintaining the direction of their coefficients in all but one instance; however, statistical significance of anxiety pathways in the additional models did not always replicate in the presence of additional variables.

One additional test of the models introduced other moderations between attachment anxiety and investment model variables to the initial models to determine if the primary study findings above would persist. In these models, all eight moderations from the initials models did not change in either direction or statistical significance. However, unexpected interactions were found between actor anxiety and alternatives predicting commitment in both romantic relationships and friendships. In romantic couples, anxiety interacted with alternatives such that the effect of alternatives on commitment increases as anxiety increases. Highly anxious individuals tend to have difficulty regulating negative emotions (Shaver & Mikulincer, 2007), and are often preoccupied with their own emotional experience, worried about the availability and attention of the attachment figure (Bowly, 1973, Brennan et al., 1998). It is possible that highly anxious individuals are less focused on who is providing them with attention and support but are instead more focused on the act of receiving attention and support. Thus, when highly
anxious individuals perceive a potentially better source of support, they may be more likely to withdraw from their current relationship, and if they feel that a better option is not available to them, they are more likely to commit to staying in the relationship.

An interaction between anxiety and alternatives predicting commitment was also found in friendships, however, opposite in the direction to that found within romantic couples, the effect of alternatives on commitment decreased as anxiety increased. It is not entirely clear why this difference was found but it may be explained by different expectations involved in romantic relationship versus friendships. Appealing alternatives are naturally more available in friendships compared to monogamous romantic relationships because individuals generally have multiple close friends; and because they have multiple close friends, switching targets to ask for support and attention from may be a more accepted, perhaps expected, behavior in friendships. For example, a person might seek support from a school friend for matters related to schoolwork but talk to a different friend about a family matter, or perhaps the person may simply seek support from the first friend that is available to them (a particular friend might be at work or traveling). Additionally, close friendships are not mutually exclusive (though a conflict among friends might lead to such a situation) and the individual might seek attention from multiple friends about the same matter (perhaps even at the same time). If highly anxious individuals are more focused on the receiving of support (as presented regarding the anxiety by alternatives interaction found in romantic relationships) rather than receiving support from a specific person, the availability of appealing alternatives may impact commitment to the target friendship less because friendships naturally allow more alternatives. Follow up research will need to determine if highly anxious individuals do, in fact, perceive the availability of support from their close friendships and romantic partner differently. Additionally, expanded models including some
measure of perceived availability of support in romantic relationships and friendships may be helpful to verify the above explanations.

A second additional test introduced extraversion and neuroticism as covariates of avoidance and anxiety respectively. Initial investigations of the larger model presented unusual model coefficients (including attachment variables as well as extraversion and neuroticism; e.g., Model 1B) suggesting that suppression effects were present in the model, particularly between anxiety and neuroticism. Anxiety and neuroticism, which share a high positive correlation, predicted commitment and accommodation in opposite directions in Model 1B (attachment and Big Five), and compared to Model 1A (attachment only), introducing the Big Five variables did not change the direction of attachment pathways. Also, both anxiety interaction terms from the initial model (Model 1A) increased in magnitude when the Big Five variables were added (Model 1B); anxiety by satisfaction was nonsignificant in Model 1A but became significant when the Big Five variables were added whereas anxiety by investment remained nonsignificant.

Testing extraversion and neuroticism in the models without the attachment variables also showed evidence of suppression effects. For example, between Models 1B1 (romantic, Big Five only) and Model 1B (romantic, attachment and Big Five), neuroticism pathways were nonsignificant in Model 1B1 but increased in magnitude when attachment variables were added and the pathway from neuroticism to satisfaction became significant as well. Finally, three pathway coefficients changed direction across the models—neuroticism to accommodation in Model 1B1 (romantic, Big Five only) to Model 1B (romantic, attachment, and Big Five) became positive but remained nonsignificant; the anxiety by investment interaction in Model 3B1 (friend, Big Five only) to Model 3B (friend, attachment, and Big Five) became negative but remained nonsignificant; and extraversion to satisfaction in Model 3B1 to Model 3B became
negative and nonsignificant, further suggesting suppression between variables was present when attachment and Big Five variables were both included into models.

Two other model results involving the Big Five variables may suggest that further consideration of the placement of the variables may be necessary. First, Model 2B1 (romantic, Big Five only, partner neuroticism) showed inadequate fit to the data but explained more of the variance in accommodation (42%) than Model 2A (romantic, attachment only, partner anxiety; 34%). This may be explained by the larger direct effect of extraversion on accommodation (pathway coefficient of .42) in Model 2B1 compared to the direct effect of avoidance on accommodation (pathway coefficient of -.32) in Model 2A. Additionally, between Model 3A (friend, attachment only, actor anxiety) and Model 3B1 (friend, Big Five only, actor neuroticism), both models had similarly modest fit to the data, but the attachment model explained more of the variance in accommodation (48%) than the Big Five model (42%). In this case, extraversion appears to have weaker mediated effects when it is in the model than when avoidance is in the model. These results may indicate that extraversion may function in a role less similar to avoidance in a model with investment model variables. Future investigations focusing on Big Five variables and the investment model may require alternate model structures.

Comparing the role played by attachment variables and Big Five variables across the models, the attachment variables appear to fit the data better than extraversion and neuroticism, particularly when introducing partner variables. Although most of the models tested in the study showed modest to good fit to the data, models including extraversion and neuroticism were generally more difficult to achieve fit. Some models, such as Model 1B (romantic, attachment, actor anxiety, and Big Five), required simplifying the model to achieve fit (essentially meaning that the original model formulation could not be fit at all). Also, Models 2B (romantic,
attachment, partner anxiety, and Big Five) and 4B (friend, attachment, partner anxiety, and Big Five) could not be fit to the data, and Models 2B1 and 4B1 (partner neuroticism, no attachment variables) showed poor fit to the data. This is consistent with previous investigations between attachment and Big Five variables. Studies have found that both sets of variables uniquely predicted relationship variables (Noftle & Shaver, 2006; Shaver & Brennan, 1992), but attachment avoidance and anxiety were consistently better predictors of relationship variables than any of the Big Five variables (Noftle & Shaver, 2006).

Correlations between Wave 1 and Wave 2 variables for the most part showed expected relationships between variables. However, some notable differences between romantic relationships and friendships emerged. In romantic relationships, Wave 1 investment did not share a significant relationship with Wave 2 commitment or satisfaction and even showed a slight negative relationship with Wave 2 satisfaction; Wave 2 investment did correlate with Wave 1 commitment in the expected direction. This suggests that current investment levels may not provide much insight into future commitment or satisfaction, but current commitment may help inform future investment. However, in friendships, Wave 1 investment did share significant positive associations with Wave 2 commitment and satisfaction; and also showed significant relationships between Wave 2 investment and Wave 1 commitment and satisfaction.

It is not entirely clear why this difference was found and the small sample size alongside theory provide reasons to consider Type II error. Investment model theory (Rusbult, 1980, 1983) conceptualizes investment as the extent to which resources have already been invested into the relationship that would degrade or be lost by exiting the relationship and has been well established as a predictor of commitment. As a measurement of resources that have already been invested in the past, the relationship between investment and commitment could be viewed as a
longitudinal one, where past behaviors predict current commitment, and Wave 1 investment should predict Wave 2 commitment. Further, the negative direction of the correlation between Wave 1 investment and Wave 2 satisfactions is unexpected and may be further evidence for Type II error.

However, to speculate, if these nonsignificant correlations found in romantic relationships are, in fact, null, one possible explanation for the difference between romantic relationships and friendships may have to do with relationship length. Relationship length in our sample was generally much longer in friendships ($M = 47.62$ months, $Mdn = 30.5$) than in romantic relationships ($M = 16.51$ months, $Mdn = 11.0$). Investment naturally changes and grows over time as a relationship lengthens, and it may be possible that the effect of investment on satisfaction and commitment changes over time as well, at least during earlier stages of relationships. Further investigations of longitudinal relationships between investment model variables will need to provide more powerful tests of the effects and may need to account for relationship length as well.

### 4.3 Limitations and Future Directions

The current research expanded upon prior attempts (Etcheverry et al., 2012, Tran & Simpson, 2009) to join attachment and the investment model by using anxiety as a moderator in the models. Although the study successfully demonstrated anxiety in a moderating role in the models, several limitations exist.

One limitation of the study is that the validity and reliability of the study models have yet to be rigorously tested. The models involving additional interactions as well as extraversion and neuroticism show promising preliminary evidence for the persistence of the model effects but not all of the parameter coefficients remained consistent across the models. Also, due to small
sample sizes, initial plans to conduct models testing causal priority were halted for more rudimentary analyses (i.e., correlations). Although the correlations between Wave 1 and Wave 2 provided some insight into the covariance between study variables over time, more meaningful interpretations of Wave 2 data were restricted. Future studies should be conducted using much larger sample sizes so that more sophisticated longitudinal tests of the data are possible.

In addition, the study sample was simplified to only include female primary participants attending college with male romantic partners and same-sex female friendships. Generalizability of the study findings regarding friendships may be particularly restricted as past studies have found some gender differences in social support giving within friendship. For example, compared to men, women tend to be more attentive and supportive of their close friends (Oswald et al., 2004) as well as being more involved and intimate in their friendships (Townsend et al., 1988). Further, women are more likely than men to seek support from their friends when stressed (Benenson & Koulnazarian, 2008; Tamres et al., 2002). These differences motivated the simplification of the study models, but they also restrict its generalizability.

The study sample was also heavily skewed to participants who self-identified as White or Asian, making it difficult to generalize the data beyond the study sample. Attachment researchers have found some evidence that individuals in collectivistic cultures may view and respond to attachment relationships differently than in more individualistic cultures (e.g., Keller, 2013; Rothbaum et al., 2000). A more balanced cultural demographic in the sample may increase variability in the study variables than what was seen in the current study.

A third qualification that affects interpretation of the results is that participant data described college relationships and the models may not generalize to other relationships. There is some support in the literature to suggest that the models may not hold for post-college
relationships. Research has found that motivations for entering romantic relationships differed across age (Sumter et al., 2017) where motivations for love, casual sex, and ease of communication were positively related with age. It is possible that changing motivations related to commitment level may show slightly different relationships between model variables in later life relationships. Also, specific to friendships, researchers have suggested that friendships may be a particularly important predictor for well-being in young adults (Demir et al., 2015; Demir & Weitekamp, 2007). Young adults increasingly become independent from their family and parents, and many have not yet started on building their own families; friends therefore become an important source of social support. Further, opportunities for meeting new friends may diminish over time after college, and increasing responsibilities related to work and family members may lead to lower perceptions regarding the availability of alternatives, increasing commitment and positive relationship maintenance behaviors in existing relationships.

However, there is some support for generalizability of the models as well. Etcheverry et al.’s (2012) models (from which the current study models are based) were tested with three separate samples: two of which involved undergraduates while the third sample was recruited through Facebook and Craigslist. This sample was still primarily composed of undergraduates at 63% but non-college students were significantly older (mean difference of about 7 years) and also included married and engaged couples (18%). Models tested by these researchers successfully replicated across their samples.

Indications of whether the study models would hold, or not hold, for other relationships exist are both present. Etcheverry et al. (2012) has, to a limited extent, tested their model with a more diverse sample and motivations for entering relationships and relationships context shift over time. However, it is possible that models may not hold for more different relationships, as
various motivations and social circumstances may impact the interplay between model variables. A conservative perspective is that stronger effects within the model may hold but that some weaker relationships between model variables may change with different relationship contexts. Investigating the generalizability of the study models across different relationships context (alongside the inclusion of more diverse types of relationships across gender and ethnicity) will be an important expansion in future studies.

Another important consideration of the current study is that partner variables were treated rather simplistically with a set of primary participants as the focus of the analyses and data collected from their partners were treated as variables of the primary participants. Future studies should pursue a more dyadic approach to the analyses. Conducting fully dyadic path models incorporating all study variables from both partners would be an ambitious undertaking requiring extensive resources and sample sizes. However, including both actor and partner anxiety, or including both actor and partner accommodation as dependent variables would be a good first step.

The current study models are a selection of many alternative models that could be tested. Importantly, I tested models that make assumptions about causal priority. However, I believe that the general structure of the current study’s models is theoretically and empirically sound. Attachment variables are more distal, trait-like variables compared to the bases of commitment, and study findings indicate stronger associations between satisfaction, investment, and alternatives with commitment compared to the attachment variables with commitment. Further, previous research (Etcheverry et al., 2012) demonstrates the causal role played by the investment bases as determinants of commitment. It is therefore unlikely that the attachment variables would mediate the relationships between the investment model variables and commitment. Alternative
model structures are possible, but such models stray from existing theory and would require extensive trial and error to determine what models might provide appropriate fit. Further, such models would require cross-validation before firm conclusions could be reached.

Nonetheless, improvements should be made where possible and study findings suggest that a more sophisticated approach to the models may be necessary in future studies. Due to the limited research on friendships, expectations regarding the direction of interactions in the models were set to be the same across both romantic relationships and friendships. However, numerous interactions in the study were inconsistent across relationship type. Actor anxiety did not interact with satisfaction to predict commitment in romantic relationships, but it did interact to predict commitment in the opposite direction in friendships. Meanwhile, partner anxiety did interact with satisfaction to predict commitment in romantic relationship, but it did not interact to predict commitment in friendships. Further, exploratory analyses found an interaction between anxiety and alternatives predicting commitment in both types of relationships, but the two interactions predicted commitment in opposite directions—positively in romantic relationships and negatively in friendships. These results suggest a different dynamic may be involved between variables such as satisfaction, alternatives, and anxiety in romantic relationships versus friendships. One possible approach for future research involves more distinct investigations between models targeting romantic relationships and friendships; particularly, future studies may benefit from a focus on interactions between alternatives and anxiety. Another, more ambitious, approach may be to consider romantic relationships and friendships in the same model, as part of a system of relationships in which relationships between variables in one relationship may have implications for variables in the other relationships. Such a model would provide a more complete view of the interplay between relationships.
Lastly, additional variables should be considered for future studies. Agreeableness, another Big Five variable, is also associated with the attachment variables in the literature (if less consistently than extraversion and neuroticism). Two particular facets of agreeableness, trust and compliance (Costa et al., 1991), are relevant to current study variables. Level of trust strongly determines the formation and persistence of attachment orientations (e.g., Campbell et al., 2005) whereas compliance and accommodation are both related to how individuals respond to and behave during social conflicts. It is less clear whether agreeableness should be placed as a covariate to an attachment variable in the way extraversion and neuroticism were, and it is possible that agreeableness could function more independently due to its associations to multiple model variables via trust and compliance. Further, the study models can be expanded to test whether other relationship variables such as persistence and conflict are guided by the same causal variables that guide commitment and accommodation. Similarly, relationship maintenance behaviors including self-disclosure, communication, and willingness to sacrifice are commonly investigated in the relationships literature and would be important targets for future research on attachment and the investment model.

4.4 Concluding Remarks
Constructive maintenance of interpersonal relationships holds significant implications for the quality of relationships and the well-being of those involved in them. The present research integrates two prominent frameworks, attachment theory and the investment model of commitment, to better understand how people maintain their close relationships. Attachment theory provides a broad perspective focused on dispositional factors developed through past relationship experiences whereas the investment model provides a more focused framework using more proximal elements of the current relationship.
The presented research drew upon two previously tested integrated models in the literature, blending and expanding upon them. Using these expanded models, moderation predictions were tested to help further understanding of how attachment theory and the investment model jointly contribute to relationships maintenance. Further, support was found for the inclusion of partner variables and study models were successfully applied to another type of close relationship, friendships, with unique effects, highlighting the importance of distinct considerations of the two theoretical frameworks in different relationship contexts.
References


Appendix A

Adult Attachment Questionnaire

Please indicate how you typically feel toward romantic (dating) partners in general. Keep in mind that there are no right or wrong answers. Use the 7-point scale provided below and darken the appropriate number for each item on the scantron.

1. I find it relatively easy to get close to others.
2. I’m not very comfortable having to depend on other people.
3. I’m comfortable having others depend on me.
4. I rarely worry about being abandoned by others.
5. I don’t like people getting too close to me.
6. I’m somewhat uncomfortable being too close to others.
7. I find it difficult to trust others completely.
8. I’m nervous whenever anyone gets too close to me.
9. Others often want me to be more intimate than I feel comfortable being.
10. Others often are reluctant to get as close as I would like.
11. I often worry that my partner(s) don’t really love me.
12. I rarely worry about my partner(s) leaving me.
13. I often want to merge completely with others, and this desire sometimes scares them away.
14. I’m confident others would never hurt me by suddenly ending our relationship.
15. I usually want more closeness and intimacy than others do.
16. The thought of being left by others rarely enters my mind.
17. I’m confident that my partner(s) love me just as much as I love them.
Appendix B

Adult Attachment Questionnaire (adopted for friendships)

Please indicate how you typically feel toward your close friends in general. Keep in mind that there are no right or wrong answers. Use the 7-point scale provided below and darken the appropriate number for each item on the scantron.

1. I find it relatively easy to get close to others.
2. I’m not very comfortable having to depend on other people.
3. I’m comfortable having others depend on me.
4. I rarely worry about being abandoned by others.
5. I don’t like people getting too close to me.
6. I’m somewhat uncomfortable being too close to others.
7. I find it difficult to trust others completely.
8. I’m nervous whenever anyone gets too close to me.
9. Others often want me to be more intimate than I feel comfortable being.
10. Others often are reluctant to get as close as I would like.
11. I often worry that my friend(s) don’t really love me.
12. I rarely worry about my friend(s) leaving me.
13. I often want to merge completely with others, and this desire sometimes scares them away.
14. I’m confident others would never hurt me by suddenly ending our relationship.
15. I usually want more closeness and intimacy than others do.
16. The thought of being left by others rarely enters my mind.
17. I’m confident that my friends(s) love me just as much as I love them.
Appendix C

Investment Model Scale

Please indicate the degree to which you agree with each of the following statements regarding your current relationship.

Commitment
1. I want our relationship to last for a very long time
2. I am committed to maintaining my relationship with my partner.
3. I would not feel very upset if our relationship were to end in the near future.
4. It is likely that I will date someone other than my partner within the next year.
5. I feel very attached to our relationship-very strongly linked to my partner.
6. I want our relationship to last forever.
7. I am oriented toward the long-term future of my relationship (for example, I imagine being with my partner several years from now).

Satisfaction Level
1. I feel satisfied with our relationship.
2. My relationship is much better than others’ relationships.
3. My relationship is close to ideal.
4. Our relationship makes me very happy.
5. Our relationship does a good job of fulfilling my needs for intimacy, companionship, etc.

Quality of Alternatives
1. The people other than my partner with whom I might become involved are very appealing.
2. My alternatives to our relationship are close to ideal (dating another, spending time with friends or on my own, etc.).
3. If I weren’t dating my partner, I would do fine-I would find another appealing person to date.
4. My alternatives are attractive to me (dating another, spending time with friends or on my own, etc.).
5. My needs for intimacy, companionship, etc., could easily be fulfilled in an alternative relationship.

Investment Level
1. I have put a great deal into our relationship that I would lose if the relationship were to end
2. Many aspects of my life have become linked to my partner (recreational activities, etc.), and I would lose all of this if we were to break up.
3. I feel very involved in our relationship-like I have put a great deal into it.
4. My relationships with friends and family members would be complicated if my partner and I were to break up (e.g., partner is friends with people I care about).
5. Compared to other people I know, I have invested a great deal in my relationship with my partner.
Appendix D

Investment Model Scale (adopted for friendships)

Please indicate the degree to which you agree with each of the following statements regarding your best friend. (circle an answer for each item).

Commitment
1. I want our friendship to last for a very long time
2. I am committed to maintaining my relationship with my friend.
3. I would not feel very upset if our friendship were to end in the near future.
4. It is likely that I will find a new best friend within the next year.
5. I feel very attached to our relationship—very strongly linked to my friend.
6. I want our friendship to last forever.
7. I am oriented toward the long-term future of my relationship (for example, I imagine being best friends several years from now).

Satisfaction Level
1. I feel satisfied with our friendship.
2. My friendship is much better than others’ friendships.
3. My friendship is close to ideal.
4. Our friendship makes me very happy.
5. Our friendship does a good job of fulfilling my needs for closeness, companionship, etc.

Quality of Alternatives
1. The people other than my friend with whom I might come to know are very appealing.
2. My alternatives to our friendship are close to ideal (dating someone, spending time with other friends, or on my own, etc.).
3. If I weren’t best friends with my friend, I would do fine—I would find another appealing person to be friends with.
4. My alternatives are attractive to me (dating someone, spending time with other friends, or on my own, etc.).
5. My needs for closeness, companionship, etc., could easily be fulfilled in an alternative relationship.

Investment Level
1. I have put a great deal into our friendship that I would lose if the relationship were to end.
2. Many aspects of my life have become linked to my friend (recreational activities, etc.), and I would lose all of this if we were to stop being friends.
3. I feel very involved in our friendship—like I have put a great deal into it.
4. My relationships with other friends and family members would be complicated if my friend and I were to stop being friends (e.g., my friend is friends with people I care about).
5. Compared to other people I know, I have invested a great deal in my relationship with my friend.
Appendix E

Accommodation Scale

Please read each of the following statements concerning the manner in which you respond to problems in your relationship. Use the following scale to record a response for each item.

1) When my partner says something really mean, I threaten to leave him/her.
2) When my partner is rude to me, I try to resolve the situation and improve conditions.
3) When my partner behaves in an unpleasant manner, I forgive my partner and forget about it.
4) When my partner does something thoughtless, I avoid dealing with the situation.
5) When my partner is rude to me, I feel so angry I want to walk right out the door.
6) When my partner behaves in an unpleasant manner, I calmly discuss things with him/her.
7) When my partner does something thoughtless, I patiently wait for things to improve.
8) When my partner says something really mean, I sulk and don’t confront the issue.
9) When my partner behaves in an unpleasant manner, I do something equally unpleasant in return.
10) When my partner does something thoughtless, I try to patch things up and solve the problem.
11) When my partner says something really mean, I hang in there and wait for his/her mood to change – these times pass.
12) When my partner is rude to me, I ignore the whole thing.
13) When my partner does something thoughtless, I do things to drive my partner away.
14) When my partner behaves in an unpleasant manner, I spend less time with him/her.
15) When my partner says something really mean, I talk to my partner about what’s going on, trying to work out a solution.
16) When my partner is rude to me, I give him/her the benefit of the doubt and forget about it.
Appendix F

Accommodation Scale (adopted for friendships)

Please read each of the following statements concerning the manner in which you respond to problems in your friendship. Use the following scale to record a response for each item.

1) When my friend says something really mean, I threaten to end the friendship.
2) When my friend is rude to me, I try to resolve the situation and improve conditions.
3) When my friend behaves in an unpleasant manner, I forgive my friend and forget about it.
4) When my friend does something thoughtless, I avoid dealing with the situation.
5) When my friend is rude to me, I feel so angry I want to walk right out the door.
6) When my friend behaves in an unpleasant manner, I calmly discuss things with him/her.
7) When my friend does something thoughtless, I patiently wait for things to improve.
8) When my friend says something really mean, I sulk and don’t confront the issue.
9) When my friend behaves in an unpleasant manner, I do something equally unpleasant in return.
10) When my friend does something thoughtless, I try to patch things up and solve the problem.
11) When my friend says something really mean, I hang in there and wait for his/her mood to change – these times pass.
12) When my friend is rude to me, I ignore the whole thing.
13) When my friend does something thoughtless, I do things to drive my friend away.
14) When my friend behaves in an unpleasant manner, I spend less time with him/her.
15) When my friend says something really mean, I talk to my friend about what’s going on, trying to work out a solution.
16) When my friend is rude to me, I give him/her the benefit of the doubt and forget about it.
Appendix G

Big Five Inventory-2; Extraversion and Neuroticism Subscales

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who \textit{likes to spend time with others}? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Extraversion subscale
\textit{I am someone who...}

Is outgoing, sociable.
Has an assertive personality.
Rarely feels excited or eager.
Tends to be quiet.
Is dominant, acts as a leader.
Is less active than other people.
Is sometimes shy, introverted.
Finds it hard to influence people.
Is full of energy.
Is talkative.
Prefers to have others take charge.
Shows a lot of enthusiasm.

Neuroticism subscale
\textit{I am someone who...}

Is relaxed, handles stress well.
Stays optimistic after experiencing a setback.
Is moody, has up and down mood swings.
Can be tense.
Feels secure, comfortable with self.
Is emotionally stable, not easily upset.
Worries a lot.
Often feels sad.
Keeps their emotions under control.
Rarely feels anxious or afraid.
Tends to feel depressed, blue.
Is temperamental, gets emotional easily.
Appendix H

Additional Models

**Figure A.1** Model 1A1. Mediated Actor Anxiety in Romantic Relationships

*Note.* CFI = 0.972, 95% CI [0.969, 0.978], SRMR = 0.044, 95% CI [0.041, 0.045], RMSEA = 0.074, 95% CI [0.066, 0.078]. In this model, 16% of the variance in satisfaction, 7% of the variance in investment size, and 3% of the variance in alternatives were explained by avoidance and anxiety. 65% of the variance in commitment was explained by its three bases and attachment variables, and 43% of the variance in accommodation was explained by the investment model and attachment variables. *N = 270,* *p < .05*
Figure A.2 Model 2A1. Mediated Partner Anxiety in Romantic Relationships

Note. CFI = 0.953, 95% CI [0.948, 0.960], SRMR = 0.085, 95% CI [0.082, 0.088], RMSEA = 0.10, 95% CI [0.09, 0.11]. In this model, 13% of the variance in satisfaction, 8% of the variance in investment size, and 4% of the variance in alternatives were explained by avoidance and partner anxiety. 69% of the variance in commitment was explained by its three bases and attachment variables, and 34% of the variance in accommodation was explained by the investment model and attachment variables. $N = 270, * p < .05$
**Figure A.3** Model 3A1. Mediated Actor Anxiety in Friendships

*Note. CFI = 0.929, 95% CI [0.915, 0.937], SRMR = 0.048, 95% CI [0.045, 0.051], RMSEA = 0.113, 95% CI [0.107, 0.124]. In this model, 25% of the variance in satisfaction, 3% of the variance in investment size, and 2% of the variance in alternatives were explained by avoidance and anxiety. 70% of the variance in commitment was explained by its three bases and attachment variables, and 48% of the variance in accommodation was explained by the investment model and attachment variables. N = 169, * p < .05
Figure A.4 Model 4A1. Mediated Partner Anxiety in Friendships

Note. CFI = 0.92, 95% CI [0.91, 0.93], SRMR = 0.107, 95% CI [0.103, 0.111], RMSEA = 0.14, 95% CI [0.13, 0.15]. In this model, 25% of the variance in satisfaction, 4% of the variance in investment size, and 3% of the variance in alternatives were explained by avoidance and partner anxiety. 65% of the variance in commitment was explained by its three bases and attachment variables, and 59% of the variance in accommodation was explained by the investment model and attachment variables. \( N = 159, * p < .05 \)
Figure A.5 Model 2A2. Partner Anxiety as Moderator in Romantic Relationships (Partner Anxiety x Investment Added)

Note. The interaction between partner anxiety and commitment predicting accommodation was removed to achieve proper fit. CFI = 0.939, 95% CI [0.934, 0.945], SRMR = 0.088, 95% CI [0.085, 0.090], RMSEA = 0.092, 95% CI [0.087, 0.096]. In this model, 7% of the variance in satisfaction, 1% of the variance in investment size, and 4% of the variance in alternatives were explained by avoidance. 69% of the variance in commitment was explained by its three bases and attachment variables, and 35% of the variance in accommodation was explained by the investment model and attachment variables. * p < .05
Figure A.6 Model 4A2. Partner Anxiety as Moderator in friendships (Partner Anxiety × Investment Added)

Note. CFI = 0.89, 95% CI [0.88, 0.91], SRMR = 0.093, 95% CI [0.089, 0.096], RMSEA = 0.15, 95% CI [0.13, 0.16]. In this model, 16% of the variance in satisfaction, 3% of the variance in investment size, and 1% of the variance in alternatives were explained by avoidance and partner anxiety. 66% of the variance in commitment was explained by its three bases and attachment variables, and 59% of the variance in accommodation was explained by the investment model and attachment variables. * $p < .05$
**Figure A.7** Model 2B. Partner Anxiety as Moderator in Romantic Relationships (Extraversion and Partner Neuroticism Added)

Base Covariates:
(aa) Avoid <-> Extra
(ab) Avoid <-> p.Anx
(ac) Avoid <-> p.Neuro
(ad) p.Anx <-> p.Neuro
(ae) Extra <-> p.Anx
(af) Extra <-> p.Neuro
(ag) Satis <-> Alt
(ah) Alt <-> Invest
(ai) Satis <-> Invest
(aj) p.Anx <-> Satis
(ak) p.Anx <-> Alt
(al) p.Anx <-> Invest
(am) p.Neuro <-> Satis
(an) p.Neuro <-> Alt
(ao) p.Neuro <-> Invest

Product Covariates:
(bc) p.Anx-Satis <-> p.Anx-Commit
(be) p.Anx-Commit <-> p.Neuro-Commit

Figure A.8 Model 4B. Partner Anxiety as Moderator in Friendships (Extraversion and Partner Neuroticism Added)