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THE CONTRIBUTION OF PARTNER INVESTMENTS TO ROMANTIC RELATIONSHIP
COMMITMENT

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of
Philosophy at Virginia Commonwealth University.

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Abstract

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Interdependence theory (Kelley & Thibaut, 1978), one of the most widely used theories in the literature on interpersonal relationships, posits that both partners in a romantic relationships play integral roles in maintaining their relationship. Based in interdependence theory, research on the investment model of commitment (Rusbult, 1980) has revealed that individuals' greater satisfaction and investments and lower alternatives predict greater commitment to their relationships, and commitment in turn promotes a variety of relationship-maintenance behaviors. However, no past research had examined the role of partners. Across three studies, I examined the notion that partner investments would predict individuals' commitment above and beyond their own satisfaction, investments, and alternatives. Study 1 found that higher levels of partner investments predicted higher levels of commitment within ongoing marriages. Study 2 provided experimental support by manipulating the degree to which individuals thought their romantic partners would sacrifice for their relationship. Specifically, participants told their partners would

sacrifice a great deal reported higher levels of commitment than did those told their partner would sacrifice very little. Further, the perception of partner investments mediated the relationship between the partner investments prime and commitment. Study 3 was a couples study designed to examine both actual and perceived partner investments. Despite failing to provide additional support, the findings can inform designs for future dyadic research. Studies 1 and 2 provided the first evidence of partner effects in the investment model and advance the understanding of relationship functioning by demonstrating how both partners can work to strengthen each others' commitment.

The Contribution of Partner Investments to Romantic Relationship Commitment

Relationship counselors, marriage coaches, and pop psychology books often give individuals in troubled romantic relationships the same advice when it comes to mending relationships – do the dishes! However, beyond the simple notion of either partner needing to do more housework, this advice reveals a greater truth: investing in relationships, by putting time, effort, and other resources into it, may strengthen partners' desire to remain in the relationship. This notion is striking, because it proposes that individuals may not be entirely in control of how committed they feel. Rather, this feeling may be interpersonally determined through contributions of both individuals and partners. This research sought to empirically test this notion by examining the influence of partner investments on individuals' relationship commitment.

Romantic relationships, and close relationships in general, have a number of benefits. Specifically, feeling a partner can be highly trusted led to better health due to a reduction in anxiety and depression (Schneider, Konijn, Righetti, & Rusbult, 2011). Similarly, having a good romantic relationship predicted greater happiness due to the shared sense of identity the relationship provides (Demir, 2008). Moreover, simply hearing about the single most positive event from a romantic partner's day improved positive affect for both partners, whereas venting about negative events did not result in greater negative affect (Hicks & Diamond, 2008). Finally, greater partner attentiveness to daily needs was related to greater relationship-based and general positive emotions for individuals (Le & Agnew, 2001).

However, these same relationships may exert a harmful influence as well. Specifically, an imbalance between relationship and personal needs, in either direction, reduced life satisfaction and well-being (Kumashiro, Rusbult, & Finkel, 2008). In addition, individuals may be dependent on negative or abusive relationships (Rusbult & Martz, 1995) and simply recalling negative

relationships altered short-term cardiovascular health, especially among women (Bloor, Uchino, Hicks, & Smith, 2004). Finally, a romantic partner may become viewed as a reduced threat to the self, allowing for riskier behaviors, including those related to safe sex (Agnew & Dove, 2011).

From this brief discussion, it is clear that continuing to investigate factors that differentiate high and low functioning relationships, and the ways in which relationships and relationship quality can be improved, should be a focus for researchers. The investment model of commitment (Rusbult, 1980; 1983), stemming from interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959), has been one of the most useful and widely utilized approaches in this pursuit over the past several decades. This proposal seeks to continue in this tradition by utilizing the investment model to continue to explore a key variable in relationship functioning, commitment.

Interdependence Theory

Interdependence theory (Kelley & Thibaut, 1978) is one of the most widely used theories in social psychology, having contributed to a number of related theories and models (e.g., social exchange theory, the investment model of commitment). At the most basic level, interdependence theory is a theory of interpersonal behavior in dyads or groups. The name *interdependence theory* comes from the notion that during interactions, two individuals may influence each other's outcomes. This interaction can be represented in the form of an outcome matrix (see Figure 1).

It should be explicitly stated that the outcome matrix is simply a theoretical representation of interactions and not an attempt to accurately illustrate the related thought processes. As Kelley and Thibaut (1978) noted, the number of behavioral options and overall psychological experience of these decisions is far more complicated than can be represented in a

matrix. A 2x2 matrix is merely the simplest form in which these interactions can be illustrated. The matrix includes two individuals who can each choose one of two behaviors to enact; the inner cells of the matrix represent the positivity of outcomes for each individual should that particular behavioral pattern take place.

		Robert	
		Buy Groceries	Not Buy Groceries
Mary	Buy Groceries	4 / 4	2 / 4
	Not Buy Groceries	4 / 1	0 / 0

Figure 1. Possible interaction matrix for buying groceries

Figure 1 provides a sample matrix in which Robert and Mary need to purchase groceries. If Robert and Mary buy groceries together, they both experience equal outcomes (4 and 4). Of course, neither is happy if neither does the shopping and there is no food in the house (0 and 0). However, if Mary has to buy groceries on her own, she experiences lower outcomes than does Robert (2 and 4). Similarly, if Robert has to buy groceries without Mary, he experiences lower outcomes than does Mary (1 and 4). These discrepancies may exist for many reasons; Robert may be disappointed that he would be unable to spend time with Mary, or Robert may tend to forget the items Mary likes when he goes alone.

Regardless of the reasons, the matrix illustrates that individuals have preferences for both their own behavior and their partners' behavior in any interaction. Moreover, it illustrates that interaction partners may have some degree of control, varying from a complete lack of control to complete control, over each other's outcomes based on the behavior they choose to enact. When both partners have some degree of control over the outcomes, they become reliant on each other to receive the most positive outcomes possible in the situation, or are interdependent.

To better illustrate the interdependent nature of interactions, the previous example can be altered from the obvious choice that Robert and Mary shop together, to a situation in which they only moderately enjoy shopping together (see Figure 2). This results in no behavior being the obvious choice for either individual. That is, if either Robert or Mary attempt to get out of shopping for groceries, it could result in either a better or worse outcome for both, depending on the decision the other makes. Thus, Robert and Mary are interdependent: One or both partners must decide to buy groceries for either to eat.

		Robert	
		Buy Groceries	Not Buy Groceries
Mary	Buy Groceries	2 / 2	4 / 2
	Not Buy Groceries	4 / 1	0 / 0

Figure 2. Alternative interaction matrix for buying groceries

The matrices do not represent behaviors and outcomes as they occur in real life. Indeed, Kelley and Thibaut (1978) stated that individuals respond to the pattern of outcomes and not the outcomes contained within each cell. This is likely to be especially true when two individuals expect to have repeated interactions with each other (e.g., in a romantic relationship), because there may be an expectation that the outcomes will balance over time. This notion, combined with mixed empirical findings on the usefulness of outcome matrices at predicting behavior resulted in the development of a two-matrix theory consisting of the given and effective matrices.

The given matrix is the matrix encountered upon entering into an interaction with another individual. Outcomes in the given matrix are strongly under the control of factors unrelated to the present relationship (i.e., environmental factors) and momentary preferences in response to

these factors (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). For instance, if Robert and Mary are attempting to decide who will wash the dishes, the simple fact that the dishes need to be washed acts as a controlling factor for the current interaction. Generally, these momentary preferences reflect selfish impulses; if Robert does not enjoy washing the dishes, he may finish eating quickly and begin another task to avoid washing them.

The second matrix, known as the effective matrix (Kelley & Thibaut, 1978), occurs as the result of considering partners' preferences or motives associated with a long-term relationship in addition to individuals' own preferences. Generally, individuals consider others' preferences when attempting to begin or maintain relationships. Thus, the effective matrix tends to contain a more pro-social, or pro-relationship, pattern of outcomes. For instance, if Robert would like to continue his relationship with Mary in the future, he will likely stop to think about Mary's preferences, in addition to his own, and may realize that Mary has washed the dishes the past two nights, and he should probably take a turn. Kelley and Thibaut (1978) labeled this consideration of partner preferences as a *transformation of motivation*.

A transformation of motivation is the process of moving from a given matrix to an effective matrix (Kelley & Thibaut, 1978). When this process occurs, the given matrix is revised to reflect the pro-relationship outcomes in the effective matrix that are needed to maintain relationships. Research confirms this description; individuals considered behaving in a negative manner in response to negative partner behavior to a greater degree than the actual behavior exhibited (Yovetich & Rusbult, 1994). Furthermore, factors that promoted this transformation process included time to allow consideration of partner outcomes (Yovetich & Rusbult; 1994), and commitment to ensure individuals are motivated to consider partner outcomes (Finkel, Rusbult, Kumashiro, & Hannon, 2002). If individuals do not have the time to consider partner

preferences, or feel little commitment to the relationship, a transformation may not occur and individuals may select a behavior based upon the outcomes in the given matrix, typically resulting in selfish behavior.

Though the possible combination of matrices and transformations are rather extensive, Kelley and Thibaut (1978) described the most common transformations. These include “MaxOther,” “MaxJoint,” “MinDiff,” and “MaxRel.” “MaxOther” is a transformation that maximizes partners’ outcomes regardless of the behavior individuals select. Often times, this leaves individuals to incur some costs on the partners’ behalf and may be considered altruistic or sacrificial behavior. For example, Robert may hate doing the dishes so Mary generally does them. However, if Mary is particularly busy one night due to work, Robert may opt to do the dishes to ease Mary’s burden, maximizing her outcomes. The “MaxJoint” transformation is one in which individuals tend to seek out the best outcome for both themselves and partners. This results in improved outcomes for both. For example, if Robert washes the dishes to relieve Mary of the burden and because he knows that doing them will prevent him from doing an even less enjoyable chore, Robert would have maximized the outcomes for both himself and Mary. The “MinDiff” transformation is still pro-social, though to a lesser degree, in seeking to reduce the differences between the outcomes of two partners. In other words, this transformation seeks equality. For example, Robert may opt to wash the dishes to avoid a less enjoyable chore (e.g., laundry) that Mary must now do. However, if Mary dislikes washing the dishes more than she dislikes doing the laundry, Robert would have minimized the difference between their outcomes in a pro-relationship manner (i.e., the difference may have also been minimized if Robert had opted for his less enjoyable chore, sentencing Mary to do the dishes, which she enjoys less). Finally, the “MaxRel” transformation is thought to be entirely selfish in the pursuit of getting the

most out of the interaction as possible. That is, individuals seek to maximize their own outcomes relative to partners' outcomes even if it means that their own outcomes are lowered in the process. For example, Robert may decide to watch sports, his preferred behavior, instead of doing the dishes when Mary is overwhelmed with work, resulting in greater outcomes for him and lower outcomes for Mary, who now has to do the dishes and complete her work. In more competitive situations, individuals may actively seek out a way to lower partner outcomes (e.g., sabotage), even if this means lowering their own outcomes, as long as it increases the discrepancy between individual and partner outcomes.

The important aspect of these transformations that should be considered for the purposes of the current work is that over repeated interactions, individuals tend to gain a better idea of the partners with whom they are interacting and the habitual nature of their transformations that may occur in response to repeatedly encountered situations (Rusbult & Arriaga, 2000; Rusbult & Van Lange, 1996). That is, if an individual continuously interacts with a partner who consistently implements a "MaxOther" transformation, this relationship will likely provide great rewards in the face of little costs, resulting in a feeling of satisfaction about the relationship. On the other hand, if an individual interacts with a partner who consistently implements a "MaxRel" transformation, this relationship will quickly become extremely taxing in the face of few benefits, and may cause the individual to feel dissatisfied with the relationship. However, Thibaut and Kelley (1959; Kelley and Thibaut, 1978) posited an additional factor that may play a role in these decisions – the likelihood that individuals could obtain the benefits they receive from the current interaction partner (or better outcomes) from other interaction partners or "alternatives." The following sections discuss both of these components (i.e., satisfaction and alternatives) and the empirical findings pertaining to each.

Satisfaction. The satisfaction level consists of weighing the costs and rewards associated with the relationship (e.g., Kurdek, 2006; Rusbult, 1980); although these can be thought of separately, they are often combined into a single scale of the positivity or negativity of outcomes. If rewards, or positive outcomes, outweigh the costs, or negative outcomes, then overall evaluation of the relationship will have a positive valence. However, Kelley and Thibaut (1978) added an additional component to the analysis of rewards and costs, the *comparison level*. Specifically, they proposed that the overall valence is not enough to accurately assess the status of the relationship. Rather, the outcomes experienced in the current relationship are compared to the expected outcomes for the relationship. That is, if an individual has high expectations for relationship outcomes, and the relationship falls short of these expectations – even if rewards outweigh costs – the individual is likely to feel dissatisfied. Likewise, if an individual expects to incur costs and reap very little benefit upon entering into a relationship and the relationship has fewer costs and greater benefits than expected – even if the costs still outweighed the rewards – the individual is likely to feel satisfied. This leads to the conclusion that two individuals may have similar outcomes (i.e., the degree to which they view their outcomes as positive or negative) but one individual may be satisfied with these outcomes due to a relatively low comparison level, whereas the second may be unsatisfied with these outcomes due to a relatively high comparison level.

In this sense, the comparison level is an important aspect of determining satisfaction. Thibaut and Kelley (1959) stated that the comparison level is based on all of the potential outcomes that are known and salient. For instance, if Mary's friend recently went on a trip with her husband, Mary may have the same expectation of travel for her relationship with Robert. In addition, the knowledge of outcomes that set the comparison level may be based on a number of

experiences. These include societal norms (Thibaut & Kelley, 1959), experiences in similar past relationships (Rusbult & Buunk, 1993), others' ongoing relationships (Broemer & Diehl, 2003), and based on Kelley and Thibaut's (1978) description, past experiences in the ongoing relationship.

Moreover, the comparison level aspect of satisfaction has received support in the literature. Specifically, comparison level predicted satisfaction above and beyond inequality or inequity in romantic relationships (Michael, Edwards, & Arock, 1984), and the type of comparison that was made was important (i.e., with romantic ideals, other relationships; Broemer & Diehl, 2003). However, Broemer and Diehl (2003) stated that the comparison level aspect of satisfaction has received far less research than work simply utilizing measurements of satisfaction, and a literature search revealed that this trend has continued (i.e., only one study cites Broemer & Diehl, 2003). Thus, in the current research I utilize the more common measurement of satisfaction (Rusbult, Martz, & Agnew, 1998).

The research utilizing measures of satisfaction is extensive. Two meta-analyses confirm that satisfaction is the strongest predictor of relationship commitment (Le & Agnew, 2003) as well as one of the strongest predictors of breakups among dating couples (Le, Dove, Agnew, Korn, & Mutso, 2010). In addition, Arriaga (2001) found that fluctuations in satisfaction were related to both commitment and breakups. Specifically, across two longitudinal studies, individuals who reported greater fluctuations in satisfaction over time (i.e., larger standard deviation) reported less commitment and had a greater chance of breaking up, regardless of the mean level of satisfaction (i.e., average of fluctuations) they reported. However, these fluctuations in satisfaction were more predictive for individuals who reported relatively high levels of satisfaction. That is, greater fluctuations in satisfaction level, especially when the

average across the fluctuations was high, resulted in a greater likelihood of breakup. Finally, in terms of more general affective outcomes, having daily needs met by partners was associated with greater positive emotions (Le & Agnew, 2001).

Alternatives. Kelley and Thibaut (1978) included a second variable in their conceptualization of interdependence theory, *comparison level of alternatives*, which is the comparison between the lowest level of outcomes an individual deems acceptable in the current relationship and the outcomes that could be expected upon exiting the relationship. Kelley and Thibaut stated that this minimum is likely set based upon “the quality of the most attractive of alternative relationships readily available to the participant” (1978, p. 9). This comparison is not limited to a single alternative but rather the outcomes associated with all possible alternative partners and being alone (Rusbult & Arriaga, 2000). The purpose of the comparison level for alternatives is to act as an indicator of when individuals should exit relationships. That is, when outcomes for a relationship drop below the comparison level for alternatives, better outcomes could be acquired elsewhere and the relationship should be terminated. As expected, a meta-analysis found that alternatives are related to breakups (Le et al., 2010). However, this research has largely utilized a scale measuring quality of alternatives (Rusbult et al., 1998) rather than a comparison level. As will be discussed in subsequent sections, the most heavily researched aspects of alternatives concerns how individuals act towards both their own alternatives (e.g., derogation, attention) and partners’ alternatives (e.g., jealousy) to maintain a committed relationship.

Commitment and dependence. As mentioned previously, interdependence theory is based on the notion that, to some degree, individuals in a relationship are reliant on each other for some reward associated with the relationship. Indeed, Thibaut and Kelley state, “a

prerequisite for the existence of a dyad is a dependence of the rewards of each upon the other's behavior, that is, a condition of interdependence" (1959, p. 22). These rewards may consist of companionship, intelligent conversation, sex, or a variety of other outcomes. The more individuals must rely on partners for these outcomes, the more dependent they are on partners. As described previously, when individuals' needs in relationships were fulfilled by partners, individuals reported greater positive affect both within and outside of relationships (Le & Agnew, 2001), demonstrating just how important outcomes controlled by a relationship partner can be to everyday functioning – greater positive affect has been linked to increased job performance (Cropanzano, James, & Konovsky, 1993) and physical and mental health outcomes (Step toe, Dockray, & Wardle, 2009), among others.

Perhaps the most relevant research conducted on dependence is Drigotas and Rusbult's (1992) work on the dependence model. They found that to the extent that outcomes exceeded the comparison level (i.e., greater satisfaction) and the comparison level of alternatives (i.e., poor quality of alternatives) individuals were more dependent on their relationship. Thibaut and Kelley (1959) put forth this model in their seminal writings, but as Drigotas and Rusbult stated, "although much of the existing theory and research on stay-leave decisions has loosely adopted interdependence theory constructs, the translation from that theory frequently has been rather imprecise" (1992, p. 63). In their test of dependence, Drigotas and Rusbult (1992) conceptualized five areas of dependence: intimacy, sex, emotional involvement, companionship, and intellectual involvements, and asked individuals to rate how much they relied on their partners to fulfill each need, the importance of each, the degree to which each was being satisfied in their current relationship, and the degree to which each need could be satisfied by a single alternative partner. Across two studies, individuals who stayed in their relationship or were left

by their partners reported higher levels of dependence and satisfaction than did individuals who left the relationship. Both of these findings were supported in the results of a subsequent meta-analysis examining breakups in dating relationships (Le et al., 2010). Moreover, Drigotas and Rusbult (1992) provided evidence that satisfaction and alternatives predicted dependence, which in turn predicted stay-leave behavior. Thus, dependence mediated the relationship between both satisfaction and alternatives, and stay-leave behavior. Their research also examined the role of commitment and found that commitment mediated the relationship between dependence and stay-leave behavior. In addition, meta-analytic findings support the notion that commitment is more strongly related to stay-leave behavior than dependence (Le et al., 2010). In contrast to the “specific, concrete” notion of dependence (Drigotas & Rusbult, 1992, p. 83), commitment can be defined as the *global and subjective experience of dependence*; put differently, commitment is the *feeling* of dependence. This is important to note due to the fact that commitment has been the more widely studied construct in the literature on interpersonal relationships.

Although dependence and commitment have been conceptualized as separate constructs, research has demonstrated that the same predictors from the dependence model, satisfaction and alternatives, predict commitment (e.g., Rusbult, 1980; 1983). Furthermore, a meta-analysis found that, across more than 50 studies, satisfaction and alternatives both predicted commitment (Le & Agnew, 2003). At this point, it is important to differentiate commitment from related interpersonal constructs. Conceptualized as the subjective experience of dependence, empirical research has determined that commitment is characterized by three components: psychological attachment, long-term orientation, and intent to persist in the relationship (Arriaga & Agnew, 2001; Rusbult & Buunk, 1993). The first component, psychological attachment, can be conceptualized as the affective component. Though similar to the conceptualization of love (e.g.,

Aron & Westbay, 1996; Sternberg, 1986), partners need not feel as though they are in love to remain committed. Furthermore, aspects of love did not improve upon the investment model (Panayiotou, 2005). Perhaps this affective component is most similar to the notion of a secure attachment in attachment theory (e.g., Bowlby, 1969), but research has found that partners need not have secure attachments to remain together (e.g., Kirkpatrick & Davis, 1994). In addition, a meta-analysis of breakups found that attachment theory constructs were poor predictors of breakups, whereas commitment constructs were among the best (Le et al., 2010). The second component, long-term orientation, can be described as a cognitive component in which individuals envision themselves with their partners in the future. This component may be similar to the concept of self-expansion (e.g., Aron, Aron, Tudor, & Nelson, 1991), but does not involve a shared sense of identity. The third component, intent to persist, can be considered the motivational component and is distinct from long-term orientation. Though related, Arriaga and Agnew (2001) note, and Johnson (1991) found that it is possible to see the relationship persisting in the future but lack the motivation to behave in a manner that promotes persistence. Thus, in spite of and perhaps due to these similarities with related interpersonal constructs, commitment is theoretically and empirically distinct from related constructs.

Investment Model of Commitment

Building on interdependence theory, Rusbult (1980; 1983) expanded the model with the addition of a third predictor of commitment. Along with higher satisfaction level and lower quality of alternatives, Rusbult predicted that greater investments in a relationship would also be related to greater commitment felt towards that relationship. In the seminal research, *investments* were defined as any “resources ‘put into’ a relationship [that] increase the costs of withdrawing from it” (Rusbult, 1980, p. 174). Put another way, investments are anything that would be lost

should the relationship end. Furthermore, resources can be categorized into intrinsic and extrinsic types. Intrinsic resources are those that are expected to be invested into a relationship (e.g., time, self-disclosure, money); whereas, extrinsic resources are those things that are separate from a relationship at the start but ultimately become a part of the relationship and would be lost should it dissolve (e.g., house, car, other property that becomes shared).

More recently, Goodfriend and Agnew (2008) re-categorized investments into tangible and intangible resources. Tangible resources include physical objects such as a house, car, and money, whereas intangible resources consist of non-physical contributions such as time, self-disclosures, and sacrifices. Intangible investments were particularly strong predictors of commitment and stay-leave behavior, with greater intangible investments predicting greater commitment and a greater chance of remaining together. They also made a distinction between planned investments (e.g., planning to share a bank account) and past investments (e.g., a past vacation). Planned tangible investments predicted commitment but past tangible investments did not, and there was little difference between planned and past intangible investments. Goodfriend and Agnew speculated that tangible investments, as a whole, may be less emotionally based than intangible investments. This explanation seems reasonable because planned tangible investments likely have a greater emotional component (e.g., the excitement associated with buying a new house) than past tangible investments (e.g., the hard work it takes to maintain a house).

In the seminal research, Rusbult (1980) manipulated satisfaction, investments, and alternatives using a role-playing experiment, and measured these components in both ongoing and past relationships. Rusbult (1983) then replicated that work using a longitudinal design to examine stay-leave behavior in relationships, demonstrating the predictive validity of the model.

Across dozens of studies conducted over 20 years, greater satisfaction and investments, and lower alternatives, were related to greater commitment (Le & Agnew, 2003; see Figure 3).

Figure 3. Standard investment model.

Subsequent to Rusbult's initial examination, a great deal of research has supported the investment model across a variety of demographics, including education level, sex, income, and sexual orientation (Le & Agnew, 2003; Rusbult, Johnson, & Morrow, 1986). In addition, the investment model has received cross-cultural support in studies of dating relationships and friendships in both the United States and China (Lin & Rusbult, 1995). Furthermore, the investment model has received support across multiple non-relational contexts including job commitment (Farrell & Rusbult, 1981), commitment to the natural environment (Davis, Le, & Coy, 2011), and students' commitment to schools (Geyer, Brannon, & Shearon, 1987). These findings demonstrate the robust nature of the investment model. However, it should be noted that meta-analytic findings (Le & Agnew, 2003) only support alternatives as a predictor of commitment to jobs, likely because other non-relational contexts have less clear alternatives that would provide many of the same benefits (e.g., no alternative to the natural environment). Overall, the investment model antecedents account for approximately 60% of the variance in commitment; moreover, although satisfaction ($\beta = .51$) was the primary predictor, both

alternatives ($\beta = -.22$) and investments ($\beta = .24$) explained additional, unique variance in commitment (Le & Agnew, 2003).

Commitment and Relationship Maintenance

Beyond the simple fact that commitment is a unique construct that is predicted by satisfaction, investments, and alternatives, the importance of feeling committed in a relationship cannot be overstated because commitment predicts a variety of pro-relationship behaviors and orientations. Thus, commitment could be described as a gateway to maintaining relationships; it is the thoughts, feelings, and motivation required to perform the behaviors that maintain and improve relationships.

One such orientation is the tendency to perceive one's own relationship as superior to others' relationships (Van Lange & Rusbult, 1995). That is, individuals tended to view the qualities that existed in their own relationship as more desirable than those found in other individuals relationships, and this was reflected in the thoughts and beliefs individuals maintained about these relationships. Moreover, this tendency was so pervasive that even the positive thoughts individuals had about others' relationships were not as positive as the positive thoughts individuals had about their own (Van Lange & Rusbult, 1995). One possible explanation for this finding is that individuals tend to view themselves more positively than others, and develop a cognitive interdependence with their partners. The spontaneous use of plural pronouns and a difficulty distinguishing between self and partner traits provide evidence for this notion (Agnew, Van Lange, Rusbult, & Langston, 1998) and this results in the collective relationship being viewed as a part of the self, and thus, more positively. Commitment increases the perception of relationship superiority, and these overly positive perceptions work to maintain and enhance relationships (Rusbult, Van Lange, Wildschut, Yovetich, & Verette, 2000).

A second set of maintenance process involves reactions and responses to negative partner behavior. Specifically, individuals may accommodate or forgive partners when faced with such behavior. Accommodation is the act of reacting constructively in the face of destructive partner behavior (Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991). Although individuals had the tendency to react in a destructive manner when faced with such acts (i.e., reciprocity), when negative behavior occurred in more committed relationships, individuals were more likely to engage in transformation of motivation and react with a more constructive behavior instead (e.g., talking about a problem rather than yelling at their partners; Yovetich & Rusbult, 1994), ultimately maintaining and enhancing the relationship. In addition, accommodative behavior is independent of the attributions individuals make about partners' behavior (Menzies-Toman & Lydon, 2005). Although individuals in more committed relationships tended to make more benign attributions about the transgressions partners committed, these attributions did not mediate the relationship between commitment and accommodation. Therefore, the transformation of motivation that takes place in committed relationships is not due to partners overlooking transgressions but occurs in spite of holding transgressors accountable for their poor behavior. Furthermore, forgiveness is an additional way in which individuals may react positively in the face of destructive partner behavior. More committed individuals tended to forgive partner transgressions to prevent deterioration of the relationship (Molden & Finkel, 2010) and stronger commitment predicted greater forgiveness (Finkel et al., 2002). Thus, both accommodation and forgiveness work to maintain and enhance relationships.

A third outcome of commitment involves the reactions individuals have towards other potential partners for themselves or their partners. Specifically, more committed individuals devalued and derogated potential partners (Johnson & Rusbult, 1989; Simpson, Gangestad, &

Lerma, 1990) and individuals in relationships rated attractive partners as less attractive than individuals not in relationships (Simpson et al., 1990). Moreover, more committed individuals reported being, and actually were, less attentive to images of alternatives, and this lack of attentiveness predicted later relationship status (Miller, 1997). In a similar vein, individuals have an opposite reaction to potential alternatives for their partners through the experience of jealousy. That is, more committed individuals tended to experience greater jealousy when their relationship was threatened than did individuals who were less committed (Rydell, McConnell, & Bringle, 2004). Thus, commitment acts to regulate reactions to alternatives for both partners as a way to maintain the relationship.

A final process by which relationships are maintained is the willingness to sacrifice for the good of the relationship or partner (Van Lange et al., 1997). Such sacrifices may involve actively enacting a behavior that would rather be avoided. For example, an active sacrifice might consist of going dancing with one's partner, rather than partaking in a preferred activity, such as staying at home to watch a movie. Alternatively, sacrifices may involve inhibiting a preferred behavior. An example of this more passive form of sacrifice might be forgoing watching a sport that a partner does not enjoy. As illustrated in the example, passive sacrifice need not take place in response to destructive partner behavior, differentiating sacrifice from accommodation. Moreover, more committed individuals reported a greater willingness to sacrifice for their partners and this willingness predicted the intention to remain in the relationship (Van Lange et al., 1997). Thus, willingness to sacrifice is another way in which relationships can be maintained.

Given that commitment has an important influence on behaviors that maintain and enhance relationships, it seems critical that research continues to explore additional predictors of commitment. Although satisfaction, investments, and alternatives account for 60% of the

variance in commitment, a fair amount remains unexplained. Indeed, some research has begun to find explanations for the remaining variance. Panayiotou (2005) examined variables from the triangular theory of love (i.e., passionate love, intimate love, and commitment; Sternberg, 2000) but found that adding predictors of the triangular theory to the investment model did not improve the base investment model. Rather, adding the investment model antecedents, specifically investments, to the triangular theory of love did increase the amount of variance in commitment the model was able to explain (Panayiotou, 2005). Similarly, investment model predictors mediated, along with commitment, the effects of attachment anxiety (i.e., the degree to which individuals desire closeness with, and worry about losing, their current romantic partners) and avoidance (i.e., the degree to which individuals desire to maintain a relatively shallow, intimacy-free relationship with partners) on pro-relationship behaviors such as accommodation and breakups (Etcheverry, Le, Wu, & Wei, under review). Finally, research explored the role of subjective norms, or beliefs about close others' approval (or disapproval) for behavior, in interpersonal relationships (Etcheverry & Agnew, 2004). Subjective norms predicted unique variance in commitment, although the contribution of subjective norms was far less than that of the other antecedents. Although each of these studies demonstrated the predictive power of the investment model, it would seem useful to continue to explore additional aspects of the model. Specifically, examining the influence of *partners'* satisfaction, investments, and alternatives on individuals' commitment may be particularly fruitful.

Partner Effects

Before proceeding with a description of the research on partner effects, it is important to explicitly clarify the terms typically used to describe dyadic data analyses: actor effects and partner effects. Actor effects consist of individuals' own predictor variable(s) predicting their

own outcome(s). In contrast, partner effects consist of partners' predictor variable(s) predicting individuals' outcome(s). Figure 4 illustrates basic partner effects, with Paths A as actor effects, and Paths P as partner effects.

Figure 4. Model illustrating actor and partner effects.

Partner effects can be characterized as two distinct varieties, partner presence and partner disposition. Partner presence effects are those changes in affect, cognition, or behavior that occur due to the physical presence of a partner. However, the current proposal examines partner disposition effects. These partner effects are due to some aspect of partners' personality (e.g., extraversion, agreeableness) or interpersonal tendencies (e.g., attachment anxiety, avoidance) and do not differ based on partner presence (though an interaction between the two types could occur).

There is a range of evidence supporting partner disposition effects. Motivation orientation (Righetti, Finkenauer, & Rusbult, 2011) is one aspect of dispositions with these effects. Specifically, partners with a greater promotion orientation (i.e., a desire to seek out positive outcomes) were more instrumental in goal pursuits, resulting in individuals reporting greater motivation and enjoyment in their goal pursuit after receiving advice from their partners when individuals had a promotion orientation as well. However, individuals with a prevention orientation (i.e., a desire to avoid negative outcomes), and individuals whose partners were

prevention-oriented (regardless of their own orientation) did not experience these same effects. Though a more complicated partner effect, resulting from an interaction with an actor effect, this is an example of a partner disposition effect.

More traditional (i.e., main effects rather than interactive effects) partner disposition effects have been found for aspects of partners' personalities predicting relationship quality. Specifically, greater partner antisocial, paranoid, and avoidant tendencies were associated with lower relationship quality (Knabb, Vogt, Gibbel, & Brickley, 2012). In addition, greater partner agreeableness, conscientiousness, and emotional stability were related to greater life and relationship satisfaction in Australian, British, and German samples (Dyrenforth, Kashy, Donnellan, & Lucas, 2010).

Research on partner effects for interpersonal variables associated with dispositions largely focuses on the attachment variables of anxiety and avoidance. Specifically, higher levels of men's attachment anxiety and women's attachment avoidance predicted higher levels of sexual dissatisfaction across members of a couple (Brassard, Péroquin, Dupuy, Wright, & Shaver, 2012). In addition, men's, but not women's, attachment anxiety and avoidance predicted higher levels of empathic concern among women for their partners (Péroquin, Lafontaine, & Brassard, 2011). Finally, Coy, Green, and Davis (2012) found an interaction between partner avoidance and partner presence, such that individuals with less avoidant partners reported greater positive affect when exploring alone than when with their partners, but partner presence made no difference for individuals with highly avoidant partners. From this research it is clear that partners are important to the everyday functioning of both the relationship and each member. I proposed that investment model predictors would be an additional component of partner

dispositions that may exert partner effects on commitment. That is, partners' satisfaction, investments, and alternatives may directly influence individuals' commitment to the relationship.

Wieselquist, Rusbult, Foster, and Agnew's (1999) research on a mutual cyclical model of pro-relationship behavior provides some initial evidence for the notion of partners affecting commitment. They found that the perception of partner pro-relationship behavior increased trust, and trust then increased dependence. In turn, dependence increased commitment, which ultimately resulted in a pro-relationship behavior partners could then perceive, continuing the cycle. In addition, Kubacka, Finkenauer, Rusbult, and Keijsers (2011) conceptualized the trust to dependence to commitment steps of the Wieselquist et al. (1999) model as gratitude and provided additional support that maintenance behaviors tend to perpetuate each other in close relationships. Here the partner effect of pro-relational behavior is mediated by one (i.e., gratitude) or more variables (i.e., perception of the behavior, trust, and dependence) before increasing commitment. In related work, Ramirez (2008) found that the more that partners used relationship maintenance behaviors, such as assurances and positivity, the more committed individuals felt even when controlling for the individuals' maintenance behaviors. However, as in the previous research discussed, this study focused on these maintenance behaviors and did not include predictors of commitment (i.e., satisfaction, investments, and alternatives) in the research.

Only one study, to my knowledge, has included these predictors when examining relationship maintenance behaviors: Wieselquist (2009) found that perceiving partner forgiveness predicted greater trust, which in turn predicted greater satisfaction and somewhat greater investments, with both predicting greater commitment. However, this research did not examine direct partner effects, but rather the effect of perceiving partner forgiveness. Moreover,

it seems to complicate the distinction between predictors of commitment and outcomes of commitment. Thus, I propose a model simplifying this past research by examining direct partner effects for partners' antecedents on commitment. However, the past research on relationship maintenance behaviors does raise the question of how perceptions fit into the current research.

Perception of Partner Characteristics

Perception effects consist of individuals' perceptions of a partner variable. Perception effects are not a direct partner effect because they are individuals' perceptions and not a pure actor effect because it is partners' traits (e.g., personality, attachment) that are being perceived. In this sense, perception effects are unique from the aforementioned actor and partner effects. For example, Mary's perception of Robert's cleanliness resulting in Mary becoming more cleanly is a perception effect – Mary changed her behavior because of her perception of Robert. However, from a perception effect perspective, it may not matter if this perception is accurate (i.e., partners actually possesses the characteristic) or inaccurate (i.e., partners do not possess the characteristic). That is, it may not matter if Robert is a cleanly person or not. Rather, Mary's perception that Robert is a cleanly person is what ultimately results in a shift in Mary's cleanliness. Perception may not always reflect reality. Of course, it may be equally likely that Robert is actually a very cleanly person and Mary is accurate in her perception of Robert's cleanliness. In this case, Mary's perception would reflect reality.

Research supports both perspectives. Research on the Michelangelo phenomena supports the notion that *accurate* perception matters (Rusbult, Kumashiro, Kubacka, & Finkel, 2009). In this research, when partners characteristics or behaviors approximate a portion of individuals' ideal self (i.e., a desired future self), individuals tend to become more like their ideal self. However, it is important that individuals accurately perceive these characteristics and behavior in

partners for the change to occur. That is, if partners were not accurate representations of some aspect of individuals' ideal self, individuals were less likely to change to become more like their ideal self, than they were if partners were accurate representations. However, other work supports the idea that accurate perceptions may not matter. Specifically, the perception that partners were concealing information, regardless of accuracy of this perception, was related to lower levels of relationship adjustment, trust, and higher levels of conflict, even when controlling for individuals own concealment of information (i.e., projection effects; Finkenauer, Kerhof, Righetti, & Branje, 2009).

Moreover, a great deal of research has demonstrated the importance of perception effects without examining accuracy. Specifically, individuals who perceived that partners thought less positively about them than normal were more likely to perform negative behaviors the following day (Murray, Bellavia, Rose, & Griffin, 2003). In addition, individuals who perceived their relationship as more negative tended to make more negative attributions about their partners' behavior (Bradbury & Fincham, 1990). In contrast, perceiving partners as more positive, by recalling fewer negative words about partners, was related higher levels of marital satisfaction (Whisman & Delinsky, 2002).

From the previous discussion it is clear that the perception of partner characteristics, accurate or not, is related to a variety of relationship outcomes and must be examined in the current research. That is, the current research must test both direct partner effects and perception effects. Moreover, two additional possibilities exist for how these two types of variables relate to each other. The first possibility is that partner effects and perception effects independently predict the outcome variable(s). The second possibility is that perception effects may mediate direct partner effects. That is, partner variables may directly predict the perception of that partner

variable, which in turn predict the outcome variable(s). Past research has found evidence for both possibilities.

Independent effects. The literature provides support for a model in which both the partner characteristic and the perception of that partner characteristic predict an outcome simultaneously (see Figure 5). For example, individuals reported greater marital satisfaction when partners empathized with them, particularly on the part of women empathizing with the negative emotions of men, and the more they perceived that their partners were actively attempting to understand their negative emotions (i.e., the perception of partner empathic effort; Cohen, Schulz, Weiss, & Waldinger, 2012). However, this research examined empathy and the perception of empathic effort, which may not conceptually be the same. More precise evidence was provided by Sprecher and Hendrick (2004) in their examination of self-disclosure in romantic relationships. Specifically, partner self-disclosure and perceived partner self-disclosure were both significantly related to satisfaction, love, and commitment. That is, the more partners disclosed, the more satisfied and committed individuals were. More importantly, the more individuals thought their partners had self-disclosed, the more satisfied and committed individuals were. In addition, perceived partner self-disclosure was the strongest correlate with satisfaction and commitment for both men and women. However, this research did not test these relationships simultaneously, so it is difficult to gauge how truly independent these effects were. That being said, Sprecher and Hendrick (2004) reported that women's perception of men's self-disclosure was predictive of breakups at a six-month follow-up, with couples in which the woman perceived less self-disclosure from her partner being more likely to have broken up. Finally, individuals tended to overestimate the amount of disclosure they received from their partners; this finding was supported by other research on romantic relationships (Rubin, Hill,

Peplau, & Dunkel-Schetter, 1980) as well as roommates (Rubin & Shenker, 1978). This leads to the conclusion that individuals may not be good at accurately perceiving partner characteristics, a conclusion that is also supported in work examining emotional reactions to various situations (Senecal, Murard, & Hess, 2003). Specifically, in this research romantic partners were no better at predicting each other's emotional reactions than strangers. Moreover, individuals tended to over-predict the extremity of partners emotional reactions. From this summary, it is clear that partner effects and perception effects may independently predict relationship outcomes due to individuals lacking the ability to accurately perceive partner characteristics.

Figure 5. Sample model demonstrating independent effects for partner characteristics and individuals perception of partner characteristics.

Mediation effects. Situations in which perception effects mediate partner effects (see Figure 6) likely rely on the accurate perception of partner characteristics. This notion is supported in the relationship maintenance models discussed previously (Kubacka et al., 2011; Wieselquist et al., 1999) in which perceived pro-relationship behavior, trust, and dependence, mediated the relationship between partners' pro-relationship behavior and individuals' commitment level. However, Holmes (2004) reached an interesting conclusion in his review on trust and regulatory functions of relationships. Specifically, he stated that "...people's trust is calibrated relatively well with partners' actual commitment" (p. 149). This leads to a re-conceptualization of Wieselquist et al.'s (1999) model as perception of partner pro-relationship behavior predicting partner commitment and, in turn, partner commitment predicting individuals'

level of dependence and ultimately commitment. This re-conceptualized model then calls into question exactly how the relationship maintenance cycle might truly work. Regardless, it is clear that the possibility of perception effects mediating partner effects on commitment must be examined in the present research. Furthermore, as illustrated in Figure 6, it is possible that perception effects could partially or fully mediate the relationship between a partner effect and commitment. Although Wieselquist et al. (1999) presented a fully mediated model they offered no test of a partially mediated model or direct effects, as such techniques were less emphasized at that time, and given the evidence for independent effect models, both partial and full mediation needed to be considered as possibilities in the current research.

Figure 6. Simple mediation model demonstrating perception of partner characteristics mediating actual partner characteristics.

Conclusion. In this dissertation, I sought to elucidate how partner effects and perception effects in the investment model of commitment influence commitment in the context of both mediated and independent effects models. In addition, I tested the novel idea that partners may have some direct influence on each other's commitment. Although it would be reasonable to predict that all three partner predictors (i.e., satisfaction, investments, and alternatives) would each have direct partner effects on commitment, the meta-analytic finding that approximately 60% of the variance in individuals' commitment is explained by their own predictors (i.e., own reports of satisfaction, investments, and alternatives; Le & Agnew, 2003) made this seem less likely.

An examination of related research leads to the proposition that investments may be a particularly strong predictor. Specifically, Sprecher and Hendrick's (2004) finding that partners' self-disclosure was related to commitment, satisfaction, love, and predicted breakups, provides support for this proposition. In addition, Goodfriend and Agnew's (2008) conceptualization of self-disclosure as an intangible investment provides additional support for this notion. Furthermore, the very nature of most, if not all, of Goodfriend and Agnew's intangible investments (e.g., time, common intellectual life, shared leisure activities) makes it seem likely that these investments are generally known to partners. That is, partners are likely to know about a recent time something was self-disclosed and may even have knowledge of planned intangible investments. For instance, individuals may know of sacrifices that partners plan to make (e.g., Robert intends to forgo watching a major sporting event to attend a wedding with Mary).

However, Goodfriend and Agnew (2008) speculated that, "there might be a difference between those resources individuals are consciously aware of investing and those they are not (e.g., sacrifices vs. an established routine which slowly becomes automatic over time)" (p. 1651). This idea is similar to Rusbult and Arriaga's (2000) description of transformation of motivation processes becoming habitual. Over time, putting resources into relationships may become less effortful and individuals may come to no longer consider these behaviors as true investments. However, it may be that even though individuals lack the awareness of these investments, partners may still perceive them as investments. For instance, Robert may always give up watching sports when he and Mary are invited to a wedding and no longer considers this as an investment, whereas Mary may still perceive it as an investment. On the other hand, the exact opposite may be true as well. That is, individuals may perceive investments as effortful, whereas partners may begin to take them for granted. Regardless of the pattern, these ideas lead to the

conclusion that partner investments and the perception of partner investments may exert independent effects on commitment.

Arguably, partners' satisfaction level and quality of alternatives are less likely to be known because these have been described as more independent, subjective experiences. Indeed, according to Thibaut and Kelley's (1959) original work, the point at which individuals set their comparison levels is subjectively, and independently, determined. That is, what individuals think they should be getting out of relationships or could get out of relationships with another partner may not be known to the current partners. Rusbult's (1980) writings also reflect the subjective nature of these variables, stating that the rewards and costs that determine satisfaction "...may either exist objectively or merely in the subjective perception of the individual" (p. 173). Moreover, it is not a stretch to think this same logic would hold true for alternatives to the relationship as well – some alternatives may truly be alternative partners interested in a relationship, whereas in other cases this may only be an inaccurate perception.

Purpose and Aim of Present Research

The primary focus of the present research was to continue to explore factors that promote commitment in romantic relationships. Although a great deal of research has already examined Rusbult's (1980; 1983) investment model of commitment and demonstrated the importance of the investment component of this model, the question of how romantic partners affect relationship commitment remains unexplored. This seems surprising given the fact that the primary theoretical framework for the investment model is rooted in interdependence theory, which focuses on the interactions between two individuals. However, it is less surprising when one considers that the statistical techniques to analyze dyadic data have only recently gained a

foothold in close relationships research and psychology as a whole (see Kenny, Kashy, & Cook, 2006).

I proposed three studies to clarify the impact romantic partners may have on individuals' commitment. Specifically, I sought to examine both direct partner effects and perception effects for investments. Each study advanced its own hypotheses; however, three broad questions guided my research: 1) Do partners exert any influence on individuals' commitment through the investments partners put into the relationship? For example, if Mary sacrifices watching a favorite show to wash the dishes for Robert on a night when Robert is busy, will that make Robert feel more committed? 2) If so, is this influence of partner investments exerted via direct partner effects, perception effects, or a combination of both? Put another way, will Mary's sacrifice automatically result in increases in Robert's commitment, or does Robert need to perceive Mary's sacrifice to feel more committed? Or is it some combination of Mary sacrificing and Robert perceiving Mary's sacrifice that results in Mary's increased commitment? Though again oversimplified, I expect that the latter is true, leading to my third question: 3) If a combination of both, does the perception of partner investments mediate (fully or partially) the effect of partner investments on commitment, or do both the perception of partner investments and partner investments independently contribute to commitment? Restated, does Robert perceiving Mary's sacrifice account for some portion or all of the greater commitment he feels due to Mary's sacrifice, or do both Mary's sacrifice and Robert recognizing Mary's sacrifice contribute to this greater commitment. Again, I suspect the latter is the case, especially in relationships where investments, and sacrifices in particular, consist of more than just dishwashing.

Study 1

Study 1 examined basic partner effects in the investment model of commitment. Though a central feature of interdependence theory (Kelley & Thibaut, 1978) is that partners affect each other's outcomes, little research has been conducted on the influence partners have on commitment in the context of the investment model. It would be reasonable to predict that each partners' investment model antecedents (i.e., own and partner satisfaction, investments, and alternatives) influence commitment. However, given Goodfriend and Agnew's (2008) finding that intangible investments (e.g., self-disclosure, sacrifices), which are likely to be known by partners, were the strongest predictor of commitment, and theoretical descriptions of satisfaction and alternatives as subjective evaluations (i.e., Kelley & Thibaut, 1978; Rusbult, 1980), it is likely that partner investments would have the strongest effect on individuals' commitment. Therefore, I hypothesized that greater partner investments would predict individuals' greater commitment when controlling for individuals' own satisfaction, investments, and alternatives.

Method

Participants. Seventy-seven married opposite-sex couples (154 participants) took part in a larger study on married couples at the University of North Carolina. Participants were 34 years old on average (range 22-76 years), had been married for an average of 6 years (range 1 month to 50 years), and most were childless (73% of couples reported having no children; range 0 to 5 children). Eighty percent of participants self-identified as Caucasian (10.5% African American, 1.9% Asian American, 3.9% Latino, and 3.8% other or unreported). In exchange for participating, participants were paid a small amount.

Measures. To assess commitment to the marriage, I used a 15-item measure of commitment, designed for married couples, modeled on Rusbult et al.'s (1998) scale. The commitment measure assesses long-term orientation, psychological attachment, and intent to

persist in the marriage (e.g., “When I make plans about future events in my life, I carefully consider the impact of my decisions on our marriage”). I measured the antecedents to commitment using Rusbult et al.’s (1998) scales, adapted for married couples. Five items measured satisfaction with the marriage (e.g., “Our marriage is close to ideal”), investments in the marriage (e.g., “I have invested a great deal in our marriage, in both material and nonmaterial ways”), and alternatives to the marriage (e.g., “I have acceptable alternatives to our marriage [seeing another person, spending time with friends or on my own]”), on a 9-point scale (0 = *do not agree at all*; 8 = *agree completely*). Means, standard deviations, and correlations for all scales in Study 1 are reported in Table 1.

Table 1

Intercorrelations among Measures in Study 1

	SAT	INV	ALT	COM	PSAT	PINV	PALT	PCOM
<i>M</i> =	6.89	6.36	4.20	6.79	6.93	6.21	4.13	6.88
<i>SD</i> =	1.25	1.10	2.07	1.05	1.31	1.35	2.00	0.99
SAT	$\alpha = .95$	.37**	-.24	.76***	.71***	.13	-.01	.56***
INV		$\alpha = .71$	-.26*	.45***	.18	.09	-.05	.26*
ALT			$\alpha = .89$	-.27*	-.15	-.08	.20	-.19
COM				$\alpha = .92$	.63***	.27*	.04	.69***
PSAT					$\alpha = .94$	.30*	-.08	.70***
PINV						$\alpha = .83$	-.21	.45***
PALT							$\alpha = .89$	-.23
PCOM								$\alpha = .91$

Note. *** $p < .001$; ** $p < .01$; * $p < .05$; $N = 77$. Variable names are satisfaction with the relationship (SAT/PSAT), investments in the relationship (INV/PINV), alternatives to the relationship (ALT/PALT), commitment to the relationship (COM/PCOM).

Results

I performed a path analysis using mPlus software (Muthén & Muthén, 2009), the mean-corrected maximum likelihood method of parameter estimation to allow for non-normal and missing data, and the full dataset as the input (see Table 1 for correlations). I analyzed the data at couple level, with models specified separately for men and women to account for non-independence of observations (Kenny et al., 2006). First, I examined the standard investment model (Rusbult, 1980) for both sexes while constraining the parameter estimates to be the same for both models. I allowed the antecedents for each participant to correlate as well as corresponding antecedents for partners (e.g., actor investments with partner investments). The model provided a good fit, $\chi^2(18) = 21.90, p = .24$; comparative fit index (CFI) = .95 and residual mean square error of approximation (RMSEA) = .06 (see Figure 7), explaining 49% of the variance in commitment and 53% of the variance in partner commitment.

Next, I examined the addition of partner effects to the model, first testing the predicted partner effect for investments. The addition of a direct path from partner investments to commitment and investments to partner commitment (with the paths constrained to be the same) significantly improved the model, $\Delta\chi^2(1) = 1.57, p = .21$, and provided an excellent fit, $\chi^2(17) = 15.77, p = .54$; CFI = 1.00, and RMSEA = .00 (see Figure 8). Alternative models failed to provide better fit; thus, I retained this model. Partner investments predicted individuals' commitment, $\beta = .18, p < .01$, with the model explaining 53% of the variance in commitment. In addition, individuals' investments predicted partner commitment, $\beta = .14, p < .05$, with the model explaining 56% of partner commitment.

Figure 7. Path model examining the investment model in Study 1. Curved lines represent correlations. Solid lines represent significant standardized path coefficients. Paths with the same number in parentheses were constrained to be the same.

Figure 8. Path model examining partner effects in the investment model in Study 1. Curved lines represent correlations. Solid lines represent significant standardized path coefficients. Paths with the same number in parentheses were constrained to be the same.

Discussion

Study 1 demonstrated that individuals' commitment was predicted not only by their own satisfaction, investments, and alternatives, but also by partner investments, supporting my hypothesis. Thus, it seems that partners may influence how committed individuals feel via the level of the partners' investments. This is noteworthy for two reasons. First, it is the first study to test and find partner effects using the framework of the investment model (Rusbult, 1980). Second, since commitment may act as a gateway to pro-relationship behaviors, the fact that partners may control any aspect of this gate is particularly interesting. However, this noteworthiness is tempered by the inability to confidently state a causal relationship given the correlational design. Moreover, this study is limited due to the lack of a measure of perception of partner investments and cannot test more complex, mediational models. An additional limitation of the current study was the relatively small sample, which could have led to reduced power for identifying additional effects. The inclusion of only married couples may also be a weakness. Le and Agnew's (2003) meta-analysis revealed that relationship status (e.g., dating vs. engaged/married) may moderate the effect of investments on commitment, with investments being more highly correlated with commitment for dating relationships than when couples were engaged or married. Therefore, it would be useful to conduct an experiment with a larger and more diverse sample.

Study 2

Study 1 found that partner investments predicted commitment. However, Study 1 lacked experimental evidence to support a causal relationship. In Study 2, I examined the possibility of a causal relationship between partner investments and commitment. According to Goodfriend and Agnew's (2008) research on investments, *intangible investments* – consisting of all things immaterial that are put into the relationship (e.g., self-disclosure, effort) – predicted commitment

better than *tangible investments* (e.g., shared monetary investments, pets). Moreover, intangible investments were a particularly powerful predictor of commitment when they were planned for the future (as opposed to past investments). The item assessing *planned sacrifices* loaded most strongly onto their measure of planned intangible investments. Thus, in this study, I manipulated the perception of partner investments in the relationship by priming the perception of the degree to which partners planned to sacrifice for their relationship. Specifically, participants read a short paragraph describing their partners as planning to make many (or few) sacrifices and compromises for the individuals' benefit. In addition, I examined the perception of partner investments following the partner investments prime to determine if the perception of partner investments would mediate the relationship between the partner investments prime and commitment. I proposed two hypotheses.

Hypothesis 1: I predicted that individuals primed with high partner investments would report greater commitment than individuals primed with low partner investments. Furthermore, I predicted that this would be the case when controlling for individuals' own levels of satisfaction, investments, and alternatives (see Figure 9).

Figure 9. Model illustrating Study 2, Hypothesis 1.

Hypothesis 2: I predicted that the perception of partner investments would mediate the relationship between the partner investments prime and commitment, such that those primed with high partner investments would report greater perceptions of partner investments than those primed with low partner investments, and these differences in the perception of partner investments would predict differences in commitment. Furthermore, I predicted that this would be the case when controlling for individuals' own satisfaction, investments, and alternatives (see Figure 10).

Figure 10. Model illustrating Study 2, Hypothesis 2.

Method

Design. A between-groups design was used to experimentally test the hypotheses that primed partner investments would predict commitment (Hypothesis 1) and that the perception of partner investments would mediate this relationship (Hypothesis 2). Specifically, I randomly assigned participants to either the high partner investments prime condition or the low partner investments prime condition. Participants reported their perception of partner investments following the prime, as well as their own satisfaction, investments, and alternatives.

Participants. The number of participants needed was determined using Cohen's (1992) power primer; estimating sample size based on expected power and anticipated effect size. In this case, the expected effect size was estimated based on the findings of Study 1 and the effect sizes found in related research. Though Study 1 found relatively small effects for partner investments, Goodfriend and Agnew's (2008) research found large correlations between intangible investments and commitment (i.e., $r = .79$ and $.73$ in two studies). In addition,

Sprecher and Hendrick's (2004) research examining partners' self-disclosure, one form of intangible investments, found small to medium correlations between partner disclosure and commitment (i.e., $r = .22$). Due to the variation in these effect sizes, I expected a medium effect (i.e., $r \sim .30$) at a power = .80. Based on Cohen's (1992) suggestions and my expectations, this study would require 91 participants for a regression model with 5 independent variables. However, given that one of the variables was a dummy coded, categorical variable that was manipulated, and Cohen suggests 64 participants per condition, a target of 150 participants represented a conservative estimate of the sample size that would be needed to detect effects and would allow for participants to be removed from the sample due to patterned responding or other anomalies in the data collection process.

Recruitment of participants took place via the SONA research participation system using the introductory psychology participant pool at Virginia Commonwealth University. Participants completed the study for partial course credit, receiving one credit of participation towards a six to 10 credit requirement of the introductory psychology courses at Virginia Commonwealth University. Participants consisted of 177 undergraduate students who had been in a dating relationship for at least one month. Of those, 12 participants reported being in a same-sex relationship and four participants failed to report their sex or their partner's sex; these 16 participants also were removed. Of the remaining participants, 19 were removed due to concerns related to patterned responding based on responses to items designed to assess such patterns. Finally, five participants were removed as they reported that they were only friends with their partner.

The final sample consisted of 137 participants. 66% were female ($N = 91$), 50% self-reported as Caucasian ($N = 69$), 17% as Asian American ($N = 23$), 17% as African American (N

= 123, 5% as Hispanic ($N = 7$), and 11% as another race ($N = 15$). On average, participants were 19.49 years old ($SD = 3.10$, range 18-48 years). The average relationship length was a year and 5 months ($SD = 15.24$ months, range = 1 to 60 months). Nearly two-thirds of participants (64%, $N = 88$) reported that they were steadily dating their partner, 15% were dating regularly ($N = 21$), 12% were dating casually ($N = 17$), 5% were engaged or married ($N = 6$), and 4% identified as being in another type of relationship ($N = 5$). In addition, 89% of participants reported that neither they nor their partner saw other people ($N = 122$), 5% indicated that their partner dated other people ($N = 7$), 2% indicated that they dated other people ($N = 3$), 3% indicated both they and their partner dated other people ($N = 4$), and one participant declined to answer. Only 4% reported that they had been married previously ($N = 5$), and 4% reported having children ($N = 6$).

Measures. Participants completed the same measures as Study 1 with two exceptions. First, participants completed the original scales designed by Rusbult et al. (1998) for individuals in any type of relationship (i.e., not exclusively marriage). Means, standard deviations, and correlations for all scales in Study 2 are reported in Table 2. In addition, participants completed versions of both Rusbult et al.'s (1998) and Goodfriend and Agnew's (2008) investments scales revised to assess state-level (i.e., how do you feel at the current moment) perceptions of partner investments in the relationship following the manipulation (e.g., "My partner feels very involved in our relationship – like s/he puts a great deal into it;" see Appendices D and E).

Table 2.

Intercorrelations among Measures in Study 2

	SAT	INV	ALT	COM	PINV	PGAINV
<i>M</i> =	6.05	4.73	3.81	5.66	5.02	5.49
<i>SD</i> =	1.58	1.77	1.52	2.25	1.88	2.16
SAT	$\alpha = .92$	.38***	-.18*	.49***	.37***	.41***
INV		$\alpha = .85$	-.21*	.42***	.49***	.35***
ALT			$\alpha = .78$	-.26**	-.16	-.16
COM				$\alpha = .95$	.61***	.81***
PINV					$\alpha = .89$	.77***
PAGINV						$\alpha = .97$

Note. *** $p < .001$; ** $p < .01$; * $p < .05$; $N = 137$. Variable names are satisfaction with the relationship (SAT), investments in the relationship (INV), alternatives to the relationship (ALT), commitment to the relationship (COM), perception of partner investments (PINV), perception of partner (Goodfriend and Agnew's) investments (PGAINV).

Manipulation. To prime the perception of partner investments as either high or low, participants read a brief scenario in which they were asked to imagine that in the future their partners would make many or few sacrifices and compromises for their benefit. To make the manipulation more powerful, participants entered the initial of their partners' first name on the screen prior to the scenario and imagined that the blanks in the scenario were their partners' initial. The specific manipulation read as follows:

Think about your current partner, _____. Imagine that in the future, _____ will make (many) sacrifices and compromises for your benefit. For example, _____ will rarely do what's best for you, instead of what's best for _____. Similarly, _____ will rarely make choices based on what you prefer rather than on what _____ prefers. In fact, 9 out of 10 people will sacrifice and compromise for their partners less (more) than _____ will for you. In other words, _____ will sacrifice and compromise for your benefit more (less) than 90% of people in romantic relationships will for their partner.

Please take a few minutes to imagine what it would feel like for _____ to behave this way in your relationship. Think about at least one specific EXAMPLE of _____ not sacrificing or compromising for you, and imagine that this is just one example of the type of thing that _____ will do often.

Please take a few minutes to visualize the details of this scenario about your relationship with _____. Visualize how this would affect you and your relationship with _____. Re-read this scenario as many times as needed so that you are truly able to visualize this scenario before continuing with the study.

Participants then described the specific example that they thought about in an open-ended writing prompt and then visualized how the scenario would affect the relationship.

Procedure. Participants completed the study online via the REDCap survey tool and were randomly assigned to either the high or low sacrifice condition upon agreeing to complete the survey. Specifically, participants were assigned to their condition based on the REDCap link available on the SONA recruitment website at the time of their participation.

Prior to starting the survey participants were asked to be sure they were in a quiet location, had turned off cell phones, closed potentially distracting windows on their computer, and exited instant messenger services to ensure that they were able to focus entirely on the survey. In addition, three questions embedded at different points in the survey asked participants to select a specific answer (e.g., “Please select ‘2’ for this question.”) to check for patterned responding.

Participants first completed measures of their own satisfaction, investments, and alternatives. Next, participants read either the high or low partner investments prime as previously described. Participants then completed two measures assessing their current perception of partner investments, followed immediately by the commitment scale. Finally, participants completed demographic measures. On this same page, participants recalled how much they were told their partner would sacrifice (i.e., many sacrifices vs. few sacrifices) as a manipulation check in the form of an open-ended question. Finally, participants read an on-

screen debriefing that included the researchers' email addresses should they have any questions regarding the nature of the study and a message of thanks for their participation. The study took no longer than 30 minutes to complete.

Results

To test Hypothesis 1 – that individuals primed with high partner investments would report greater commitment than participants primed with low partner investments while controlling for the effects of individuals' satisfaction, investments, and alternatives – I first entered the standard investment model predictors of satisfaction, investments, and alternatives with commitment as the outcome. This model significantly predicted commitment, $F(3,133) = 21.31, p < .001, R^2 = .33$, with satisfaction, $\beta = .37, t(133) = 4.78, p < .001$, and investments, $\beta = .25, t(133) = 3.24, p = .001$, as significant predictors of commitment, and alternatives marginally predicted commitment, $\beta = -.14, t(133) = -1.90, p = .06$. I next specified a model with a dummy coded variable representing the partner investments prime. This model explained an additional 5% of the variance in commitment, $F(4,132) = 19.85, p < .001, R^2 = .38$. In addition, the prime significantly predicted commitment, with those in the high partner sacrifice group reporting greater commitment, $\beta = .23, t(132) = 3.28, p = .001$, with satisfaction, $\beta = .36, t(132) = 4.78, p < .001$, and investments, $\beta = .24, t(132) = 3.17, p < .01$, each remaining significant predictors, and alternatives a marginal predictor, $\beta = -.14, t(132) = -1.93, p = .06$, confirming Hypothesis 1.

To test Hypothesis 2 – that perception of partner investments would mediate the relationship between the partner investments prime and individuals' commitment – I tested an additional model with the perception of partner investments added to the model. This model explained an additional 11% of the variance in commitment, $F(5,131) = 25.12, p < .001, R^2 = .49$, with the perception of partner investments significantly predicting commitment, $\beta = .41,$

$t(131) = 5.41, p < .001$. As expected, the partner investments prime became less significant of a predictor of commitment, $\beta = .15, t(131) = 2.25, p < .05$. Further, satisfaction, $\beta = .28, t(131) = 3.96, p < .001$, remained a significant predictor of commitment, and alternatives remained a marginal predictor, $\beta = -.12, t(131) = -1.90, p = .06$. However, investments no longer significantly predicted commitment, $\beta = .08, t(131) = 1.09, p = .28$. To determine if this latter finding might be an artifact of participants completing the same, albeit slightly revised, measure for both investments and the perception of partner investments within a short time frame, I conducted an additional analysis using Goodfriend and Agnew's (2008) measure of intangible investments as an alternative measure of the perception of partner investments. This model explained 33% more of the variance in commitment than the model with perception of partner investments measured using Rusbult et al.'s (1998) investments scale, and 38% more than the unmediated model, $F(5,131) = 63.95, p < .001, R^2 = .71$. The perception of partner investments significantly predicted commitment, $\beta = .68, t(131) = 12.27, p < .001$, and the dummy coded sacrifice variable was now a non-significant predictor, $\beta = .05, t(131) = 1.10, p = .27$. However, in this analysis, investments predicted commitment, $\beta = .11, t(131) = 2.00, p < .05$, along with satisfaction, $\beta = .15, t(131) = 2.84, p < .01$, and alternatives again failed to reach significance, $\beta = -.10, t(131) = -2.01, p < .05$. Thus, these findings support Hypothesis 2 – that the perception of partner investments would mediate the relationship between primed partner investments and commitment – making the perception of partner investments an important factor in predicting commitment. To confirm this mediation, I used Hayes (2009) process method of bootstrapping at 5000 iterations to examine the indirect effect of the dummy coded manipulation variable on commitment through perception of partner intangible investments. This analysis confirmed the non-significant direct effect, $b = .12, t(131) = 1.10, p = .27$, but a significant total effect, $b = .51,$

$t(131) = 3.28, p < .001$, with an indirect effect, $b = .39$, 95% CIs [.15; .67]. Thus, perception of partner intangible investments mediated the relationship between the partner investments prime and commitment (see Figure 11).¹

Figure 11. Model showing perception of partner perception of intangible investments mediating the relationship between the partner investments prime and commitment. Standardized beta values are shown.

Discussion

Study 2 experimentally confirmed that greater partner investments, in terms of the expectation for partner sacrificial behavior (or lack thereof) that participants were primed with, lead to greater commitment in relationships, extending the findings of Study 1. In addition, these results point to the importance of perceived partner investments, as the perception of partner investments mediated the relationship between the partner investments prime and commitment. Overall, these findings represent clear support for partner influences in determining commitment,

¹The same process was used to confirm mediation in the model using perception of partner investments as the mediator for both manipulated sacrifice and investments with both having significant total effects, and indirect effects with bootstrapped confidence intervals above .04.

which ultimately predicts pro-relationship behaviors. Although pro-relationship behaviors were not examined in the present study, this relationship has been widely supported in past research (e.g., Finkel, et al., 2002; Rusbult, et al., 2000), and future research should test the current findings with pro-relationship outcomes to better understand the larger framework of relationship processes. The combined findings of Studies 1 and 2 provide clear empirical support for views frequently offered on how individuals might improve relationships, both romantic and otherwise. Thus, the findings have a clear and ongoing application.

However, the experimental nature of Study 2 has the potential drawback of possibly being lower in external validity. That is, people may not always be explicitly informed of a partner's intention to invest in their relationship, as was the case in Study 2. Thus, a more naturalistic study of the perception of investments in ongoing relationships would complement Studies 1 and 2.

Study 3

Study 1 provided correlational evidence that partner investments are associated with individuals' commitment to their relationships. Study 2 provided experimental evidence for this finding and initial evidence for the importance of the perception of partner investments. However, alternative explanations still remained untested. Specifically, it may simply be that only the perception of partner investments matter, and not the actual investments. Furthermore, it may be the case that partner investments and perception of partner investments independently predict individuals' commitment. Though this idea has yet to be tested in the literature on the investment model (i.e., utilizing all predictors), evidence for independent effects is offered in research on self-disclosure (e.g., Sprecher & Hendrick, 2004) and empathy (Cohen et al., 2012). For example, individuals with partners who were highly empathetic were more committed to

their relationship. Moreover, this effect was separate from the effect of perceiving that their partner was putting forth effort to be empathic, which was positively related to commitment as well. Moreover, measurement of these complex variables in ongoing relationships could yield a different pattern of results than those found in Study 2 in which partner investments were manipulated. Research concerning the accuracy of perceptions about partners is mixed (e.g., Finkenauer, Meij, Reis, & Rusbult, 2010; Hodges, Kiel, Kramer, Veach, & Villanueva, 2010; Thomas & Fletcher, 2003) and supports the idea that the effects could differ. Specifically, research on individuals' innate negativity bias has found that individuals tend to be better at accurately perceiving negative partner behavior, and worse at perceiving positive partner behavior, such as investments (e.g., Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Drigotas, Whitney, and Rusbult, 1995; Finkenauer et al., 2010). Based on this past research, I put forth five hypotheses for Study 3.

Hypothesis 1: I predicted the effect of partner investments on commitment would differ from the effect of the perception of partner investments on commitment. Stated in statistical terms used in path modeling, I predicted that allowing the path coefficient for partner investments predicting commitment (i.e., path d) and the path coefficient for the perception of partner investments predicting commitment (i.e., path P) to be independently estimated (i.e., differ) would significantly increase model fit compared to a model in which these paths were constrained to be the same (see Figure 12).

Figure 12. Path model illustrating an independent effects model. Curved lines represent correlations. Paths with the same letter indicate they are constrained to be the same.

Hypothesis 2: I predicted that partner investments would significantly predict commitment, such that greater partner investments would be related to greater commitment.

Hypothesis 3: I predicted that the perception of partner investments would significantly predict commitment, such that greater perceived partner investments would be related to greater commitment.

Hypothesis 4: I predicted that Hypotheses 1-3 would hold true even when controlling for individuals' satisfaction, investments, and alternatives.

Hypothesis 5: I predicted that a model with independent effects for both partner investments and the perception of partner investments on commitment (see Figure 12) would

provide a better model fit than a model with perception of partner investments mediating the relationship between partner investments and individuals' commitment (see Figure 13).

Figure 13. Alternative path model illustrating a mediated model. Curved lines represent correlations. Paths with the same letter indicate that they are constrained to be the same.

Method

Design. A correlational design was used to model partner effects and perception effects of investments on individuals' commitment.

Participants. To determine sample size, I took into account the 5:1 to 10:1 participant-to-variable ratio recommendation made by Field (2005) to determine the sample size needed for the path model analysis. As couple processes were of interest in this study and with 10 variables in the expected model, 120 couples would meet the criteria well.

Couples were recruited from the introductory psychology participant pool via the SONA research participation system. The description emphasized that partners must be able to attend the session or must be willing to allow the in-lab participant to provide an email address by which partners could be contacted to complete a brief survey. For participants from the

participant pool, compensation for completing the study was in the form of partial course credit. Specifically, participants were given one credit of participation towards a six to 10 credit requirement of the introductory psychology courses at Virginia Commonwealth University. For partners who were not in introductory psychology, compensation was in the form of an entry into a drawing for one \$50 gift card or one of five \$20 gift cards.

One hundred seventy-nine participants participated and volunteered their partner to complete the survey. Of these, 24 partners did not complete the survey when prompted via email and were removed from the sample. An additional 14 couples reported being in a homosexual relationship and were removed. Of the remaining couples, nine reported that they were only friends and were removed from the sample. Finally, nine couples were removed due to concerns with patterned responding with at least one of the partners.

The final sample consisted of 123 heterosexual couples (246 participants). Of the 123 participants who volunteered their partners, 56% were women ($N = 69$), and 41% self-identified as Caucasian ($N = 50$), 29% as African American ($N = 35$), 15% as Asian American ($N = 19$), 7% as Hispanic ($N = 8$), and 9% identified with another ethnicity ($N = 11$). Partners primarily self-identified as Caucasian (47%, $N = 58$), 23% as African American ($N = 29$), 12% as Asian American ($N = 15$), 7% as Hispanic ($N = 9$), and 10% identified with another ethnicity ($N = 12$). The average age of all participants was 20.07 years ($SD = 3.74$, range 16-46). The average relationships length was a year and 7 months ($SD = 14.81$ months, range = 2 to 84 months). 80% of participants reported that they were dating steadily ($N = 98$), 9% were dating regularly ($N = 11$), 6% were dating casually ($N = 7$), 4% were engaged or married ($N = 5$) and 2% reported being in another type of relationship ($N = 2$). Only 2% of participants reported that they or their partner were seeing other people ($N = 3$), and only 5% reported having children ($N = 6$).

Measures. Participants completed the investment model measures as described in Study 2. However, the momentary measure of perception of partner investments was replaced with a general version, and the Goodfriend and Agnew (2008) measure was not included (see Appendix F; see Table 3 for means, standard deviations and correlations among the measures).

Table 3.

Intercorrelations among Measures in Study 3

	SAT	INV	ALT	COM	pINV	PSAT	PINV	PALT	PCOM	PpINV
<i>M</i> =	6.64	5.48	3.21	6.69	5.79	6.76	5.68	2.96	7.09	5.71
<i>SD</i> =	1.29	1.62	1.68	1.56	1.34	1.41	1.47	1.86	1.44	1.67
SAT	$\alpha = .91$	.49***	-.35***	.59***	.53***	.45***	.19*	-.23*	.31***	.23*
INV		$\alpha = .73$	-.36*	.51***	.71***	.30***	.30***	-.30***	.30**	.43***
ALT			$\alpha = .85$	-.53***	-.30***	-.24**	-.11	.20*	-.26**	-.18*
COM				$\alpha = .93$	.44***	.32**	.21*	-.18*	.39***	.37***
pINV					$\alpha = .79$	.44***	.33***	-.32***	.41***	.38***
PSAT						$\alpha = .90$	.45***	-.40***	.61***	.44***
PINV							$\alpha = .82$	-.16	.36***	.71***
PALT								$\alpha = .84$	-.57***	-.20*
PCOM									$\alpha = .92$	.27***
PpINV										$\alpha = .84$

Note. *** $p < .001$; ** $p < .01$; * $p < .05$; $N = 123$. Variable names are satisfaction with the relationship (SAT), investments in the relationship (INV), alternatives to the relationship (ALT), commitment to the relationship (COM), perception of partner investments (pINV), partner satisfaction with the relationship (PSAT), partner investments in the relationship (PINV), partner alternatives to the relationship (PALT), partner commitment to the relationship (PCOM), partner perception of investments (PpINV).

Dual partner in-lab procedure. After being informed about the study, members of couples were separated and grouped with other individuals of the same sex to complete all measures individually. Participants completed measures of their own satisfaction, investments,

and alternatives, followed by a measure of the perception of partner investments and then a measure of their own commitment. Afterwards, participants were debriefed about the nature of the study and had any questions answered before being thanked and dismissed. Sessions were conducted with up to five couples and sessions took no longer than 30 minutes.

In-lab/partner online procedure. After being informed about the study, participants were grouped with other participants of the same sex and asked to enter an email address for partners prior to beginning the study so that partners could be contacted and provided a link to the survey. Participants then completed the measures in the same order described previously. After completing the measures, participants were then reminded that it was critical to the nature of the study that partners complete the online survey. Participants were asked not to discuss the research with partners, beyond mentioning the incentive and providing them with an information form. Participants were then partially debriefed about the nature of the study, had any questions answered, and were thanked for their participation.

Prior to starting the survey, partners who completed the study online were asked to confirm that they were in a quiet location and had turned off cell phones, closed potentially distracting windows on their computer, and exited instant messenger services to ensure they were able to focus entirely on the survey. In addition, the checks for patterned responding used in Study 2 were again used. Partners who completed the study online responded to the measures in the same order as participants who completed the study in the lab and the information form, containing the researcher's email address in the event partners have questions regarding the study, provided the same information. Further, partners were asked to enter the email address at which they received the email to ensure their responses could be paired with the answers for the in-lab participants and asked to confirm that they did not speak with their partners about the

nature of the study prior to completing it. Specifically, partners were told that they would not be disqualified from participating in the drawing but that their honest response was needed. Finally, upon completion of the study, partners read a complete debriefing form and were asked to share with the in-lab participants.

Results

To test my hypotheses, I performed a series of path analyses in mPlus (Muthén & Muthén, 2009) using the mean-corrected maximum likelihood method of parameter estimation to allow for non-normal and missing data and the full dataset as the input (see Table 3 for correlations). I analyzed the data at the couple level to account for non-independence of observations (Kenny et al., 2006). Specifically, Hypothesis 1 predicted that the effect of partner investments would differ from that of the perception of partner investments. To test this hypothesis, I first examined a model with the relevant parameters unconstrained. Although this model provided a poor fit to the data, $\chi^2(28) = 67.30, p < .001$; CFI = .78, and RMSEA = .11, the basic investment model predictors were significant, with satisfaction, $\beta = .38, p < .001$, investments, $\beta = .26, p < .001$, and alternatives, $\beta = -.34, p < .001$, predicting commitment, and partner satisfaction, $\beta = .42, p < .001$, partner investments, $\beta = .24, p < .001$, and partner alternatives, $\beta = -.37, p < .001$, predicting partner commitment. Contrary to expectations, partner investments did not predict commitment, $\beta = .06, p = .22$, and investments did not predict partner commitment, $\beta = .06, p = .22$. However, perception of partner investments predicted commitment, $\beta = -.15, p < .05$, and partner perception of partner investments predicted commitment, $\beta = -.17, p < .05$, but these effects were in the opposite direction expected. A second model with perception of partner investments constrained to be the same as partner investments resulted in significantly worse model fit, $\Delta\chi^2(1) = 6.11, p < .05$, and this was

consistent across fit statistics, $\chi^2(29) = 73.41, p < .001$; CFI = .75, and RMSEA = .11. In addition, neither partner investments, $\beta = -.02, p = .49$, nor perception of partner investments, $\beta = -.02, p = .49$, predicted commitment, and this was true for investments, $\beta = -.02, p = .49$, and partner perception of partner investments, $\beta = -.02, p = .49$, predicting partner commitment (although paths for the basic model were still significant). Therefore, I retained the initial model with different estimates for the effect of partner investments and perception of partner investments, which explained 44% of the variance in commitment and 51% of the variance in partner commitment, confirming Hypothesis 1, though these results should be interpreted with caution due to the poor model fit (see Figure 14). However, this model offers no support for Hypothesis 2, that partner investments would significantly predict individuals' commitment, such that greater partner investments would be related to greater commitment, because this effect was found to be non-significant in the model. Moreover, Hypothesis 3, that individuals' perception of partner investments would significantly predict individuals' commitment, such that greater perceived partner investments would be related to greater commitment, was not supported by the model, despite a significant effect, because the effect was in the opposite direction as predicted.

Figure 14. Unmediated model with perception paths unconstrained. Curved lines represent correlations. Solid lines represent significant standardized path coefficients. Paths with the same number in parentheses were constrained to be the same.

The poor model fit from the previously described analysis could have indicated that perception of partner investments better act to mediate the relationship between partner investments and commitment, as was found in Study 2. Thus, I tested Hypothesis 5, concerning the difference in model fit between unmediated and mediated models, by examining a model with perception of partner investments mediating the effect of partner investments on commitment. This model was a poor fit to the data as well, $\chi^2(33) = 214.78, p < .001$; CFI = .51, and RMSEA = .21. Although these models cannot be directly compared using chi-square statistics due to the fact the models are not nested, the totality of the fit statistics clearly indicate that the mediated model represents a worse fit to the data, and thus, the unmediated model should be retained, confirming Hypothesis 5. However, it should be noted that partner investments did

significantly predict the perception of these investments, $\beta = .38, p < .001$, and, in turn, this perception significantly predicted commitment, $\beta = -.12, p < .05$, and the same was true for investments predicting partners perception of partner investments, $\beta = .34, p < .001$, and this perception predicting partner commitment, $\beta = -.15, p < .05$. Finally, it was necessary to test a partially mediated model, as direct paths from partner investments to commitment (and investments to partner commitment) may have further improved model fit for the mediated model. However, this was not the case, $\Delta\chi^2(1) = 1.54, p = .21$, and the fit statistics provide further support, $\chi^2(32) = 213.24, p < .001$; CFI = .51, and RMSEA = .22. Furthermore, the direct effects of partner investments on commitment, $\beta = .06, p = .21$, and investments on partner commitment, $\beta = .06, p = .21$, were not significant, although, the mediated paths (i.e., partner investments predicting perception of partner investments, and perceptions predicting commitment and investments predicting partner perceptions of partner investments, and those perceptions predicting partner commitment) remained significant. Again it should be noted that all of these findings are to be interpreted with caution due to poor model fit throughout the models that may be due, in part, to concerns regarding multicollinearity described further in the following discussion.

Discussion

Despite providing apparent support for my hypotheses that the effects of partner investments would differ from those of the perception of partner investments and that an unmediated model would provide better fit than a mediated model, these findings must be interpreted with caution due to the poor fit of the models. Moreover, my predictions stated that both partner investments and the perception of these investments would predict greater

commitment, but this was not the case. Therefore, potential explanations for findings that are inconsistent with both Study 1 and Study 2 must be considered.

Study 2 may provide a plausible explanation for the current results. In Study 2, it appeared that individuals projected their own level of investments to some extent when indicating their perception of partner investments on the same scale (i.e., Rusbult et al.'s [1998] investments scale). The high correlations between investments and perception of partner investments, $r = .71$, and partner investments and partner perception of individuals' investments, $r = .71$, in the current study is consistent with this explanation. Although these correlations are not above the suggested cut off of .80 to raise concern about multicollinearity (Field, 2005), it is likely that these high correlations still contributed to the anomalous finding that higher levels of perceiving partner investments predicted lower levels of commitment. That is, the overlap in variance between investments and the perception of partner investments may have influenced the path coefficients in the analysis. The simple correlations between perception of partner investment and commitment provide more support for this notion because they are positive for both partners ($r_s = .44$ and $.27$). Further support is provided by the modification indices provided by mPlus that suggest the greatest change in model fit would be found by regressing these measures onto one another. In other words, the program statistically determined that the best way to improve the model would be to have investments explain variance in (i.e., predict) perception of partner investments, as well as partner investments explain variance in partner perception of individuals investments. In addition, this multicollinearity issue likely contributed to the overall poor fit of the model, though the degree to which it contributed is unclear.

Furthermore, it is unfortunate that the standard corrections for multicollinearity are inapplicable to the current situation. The first solution is to eliminate the multicollinearity

entirely by removing one of the two offending measures from the analysis (Field, 2005). However, this strategy would disallow tests of the hypotheses for the current study as it would mean removing one of the two primary variables of interest from the analysis entirely. The second solution is the creation of a latent variable to account for the shared variance between the two offending measures (Field, 2005). However, this is only recommended when the resulting variable would be theoretically interesting. For example, if measures of verbal and mathematical intelligence were multicollinear, it would be reasonable to assume that a latent variable created from these two measures would represent general intelligence – a meaningful construct. However, in the current study it would be unclear if the latent variable would represent variance due to investments alone and act as a control of the projection effect, or shared measurement error due to using similar scales to measure the two constructs, or some other underlying construct. Thus, it is not appropriate to use this technique in the current study. However, Study 2 offers a methodological correction that should be made in future studies of this type. Specifically, this was remedied by having participants rate a novel scales for the perception of partner investments measure (i.e., Goodfriend and Agnew's [2008] measure in Study 2) and it may be fruitful to follow a similar framework in future research.

General Discussion

The series of studies provided preliminary evidence for the importance of partner investments in predicting commitment to romantic relationships. That is, greater partner investments are related to higher levels of individuals' commitment to the relationship. Specifically, Study 1 provided correlational evidence for the importance of partner investments on commitment using path modeling. Study 2 then provided experimental evidence for this finding and introduced the notion that the perception of partner investments may mediate the

relationship between partner investments and commitment. Study 3 was designed to provide a test of this mediated model in ongoing romantic relationships. Unfortunately, the results of Study 3 do not allow for a conclusion to be drawn due to poor model fit. However, the findings of Studies 1 and 2 are noteworthy, because they suggest that, at least to some degree, commitment to romantic relationships may be interpersonally determined with both partners contributing to the others' commitment. This differs from the traditional view of commitment as determined by only individuals' satisfaction with the relationship, investments in the relationship, and alternatives to the relationship (e.g., Rusbult, 1980; 1983). However, these findings are consistent with the interdependence theory notion that one partner's behavior, in this case investments, can influence the other's outcomes, in this case commitment (Kelley & Thibaut, 1978).

Furthermore, as commitment may be conceptualized as the gateway to various pro-relationship behaviors (e.g., derogating attractive alternative partners, greater willingness to sacrifice), the findings from Studies 1 and 2 add another interesting component to the larger context of relationships research in terms of the role of commitment in romantic relationships. That is, it may be the case that partner investments predict pro-relationship behaviors, or that commitment mediates the relationship between partner investments and these behaviors, as is the case with satisfaction, investments, and alternatives. The goal of the current research was to examine the basic relationship between partner investments and commitment, but future research on partner investments should include outcomes of commitment to better understand the role of partner investments on pro-relationship behaviors.

The primary limitation of the current research is the inability to draw a conclusion on the importance of perceiving partner investments due to the poor model fit in Study 3. Future

research should continue to explore this possibility to better understand the role of perceiving partner investments, as the experimental evidence in Study 2 suggests these perceptions should mediate the direct effect of partner investments on commitment. In addition, the samples used may represent another limitation. Specifically, participants in Study 1 were married couples, whereas participants in Studies 2 and 3 were primarily college students in dating relationships. This represents a potential limitation because a meta-analysis of research using the investment model of commitment found that investments were less predictive of commitment in relationships when the couple was cohabiting, engaged, or married compared to those couples in dating relationships who were not living together. It is then interesting to consider how this might relate to the current findings. Perhaps partner investments play a greater role in more established relationships than they do in dating relationships due to the structural dependence of these more established relationships. That is, individuals are already highly invested in established relationships, so perhaps partner investments contribute to a greater degree to *feeling* committed to the relationship. Thus, the role of relationship type should be examined in future research. A final limitation is the short-term nature of the studies. That is, in Study 1, the measurements were taken from both partners during the same session and, in Study 2, the measure of commitment immediately followed the prime. Thus, we are unable to determine if partner investments may have prolonged effects on the relationship, or if they only act as a temporarily boost to commitment. Moreover, it may be that the effects of partner investments are cyclical as Wieselquist and colleagues' (1999) research suggests. That is, one partner's investment may increase the other's commitment and, in turn, the second partner may choose to invest in the relationship, increasing the first partner's commitment, and this process continues

over time. Thus, future longitudinal research could better reveal the long-lasting benefits of investing in relationships.

These findings should act as a call to relationships researchers to examine commitment and the processes related to commitment at the dyadic level rather than the individual level. Although some researchers had approximated this approach prior to the development of dyadic analyses (e.g., Wieselquist et al., 1999), the statistical tools now exist to develop a truly dyadic understanding of romantic relationships. However, this should not be heard as a call to abandon all research at the individual level; rather, the processes found at each level should be confirmed at the other to allow for the best understanding of relationship functioning. Studies 1 (dyadic) and 2 (individual) represent an example of the dual-level confirmation approach I recommend. Moreover, it is important that researchers confirm earlier findings at the individual level using dyadic analyses to ensure these phenomena hold true and that interdependence does not account for a substantial portion of the variance, rendering generally accepted findings non-significant.

Finally, it is likely the case that individuals take steps to improve relationships based on notions popular in media prior to seeking professional help. Therefore, it is important to individuals attempting these popular “fixes,” and the counselors who may be sought following these attempts, that these popular notions are empirically tested to determine the true effect, particularly when they dovetail with existing psychological theory. Counselors now have an additional piece of evidence for use in their practices. Studies 1 and 2 provide initial evidence for the idea that putting effort (i.e., investments) into a relationship may lead the partner to experience greater felt commitment to the relationship, examining the notion from the highly supported investment model of commitment. Whether it is doing the dishes, sharing secrets, or

sacrificing for a partner, investing in a romantic relationship appears to help both individuals and partners to feel more committed to their relationships.

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Appendices

Appendix A

Satisfaction with the Relationship Scale

To what extent does each statement describe your attitudes about your partner? Please use the following scale to record your answers.

Response Scale:

0	1	2	3	4	5	6	7	8
Do Not Agree			Agree			Agree		
At All			Somewhat			Completely		

- _____ 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.

Appendix B

Alternatives to the Relationship Scale

To what extent does each statement describe your attitudes about your partner? Please use the following scale to record your answers.

Response Scale:

0	1	2	3	4	5	6	7	8
Do Not Agree			Agree			Agree		
At All			Somewhat			Completely		

- _____ 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.

Appendix C

Investments in the Relationship Scale

To what extent does each statement describe your attitudes about your partner? Please use the following scale to record your answers.

Response Scale:

0	1	2	3	4	5	6	7	8
Do Not Agree			Agree			Agree		
At All			Somewhat			Completely		

- _____ 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

Perceptions of Partner Investments in the Relationship Scale (State)

Keep imagining that the description of your partner's behaviors that you read is a REAL description of how your partner will act toward you in the future. Given that description, please indicate your perception of how your partner views your relationship.

Response Scale:

0	1	2	3	4	5	6	7	8
Do Not Agree			Agree			Agree		
At All			Somewhat			Completely		

- _____ 1. My partner feels that she/he puts a great deal into our relationship that s/he would lose if the relationship were to end.
- _____ 2. My partner would say that many aspects of his/her life have become linked to mine (recreational activities, etc.), and s/he would lose all of this if we were to break up.
- _____ 3. My partner feels very involved in our relationship – like s/he puts a great deal into it.
- _____ 4. My partner would say that his/her relationships with his/her friends and family members would be complicated if the relationship were to break up (e.g., you are friends with people your partner cares about).
- _____ 5. Compared to other people s/he knows, my partner feels that s/he invests a great deal in his/her relationship with me.

Appendix E

Perceived Tangible and Intangible Investments Scale (State)

Keep imagining that the description of your partner's behaviors that you read is a REAL description of how your partner will act toward you in the future. Given that description, please indicate your perception of how your partner views your relationship.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
at All				Somewhat				Completely

1. ____ In the future, my partner will invest a great deal of time in our relationship.
2. ____ In the future, my partner will have many emotional ties to me.
3. ____ In the future, my partner will tell me many private things about himself or herself (he/she will disclose secrets to me).
4. ____ In the future, my partner and I will have many major shared possessions.
5. ____ In the future, my partner and I have will make at least one joint financial investment (stocks, etc.).
6. ____ In the future, my partner's sense of personal identity (who s/he is) will be linked to me and our relationship.
7. ____ In the future, my partner and I will own a pet which we consider "ours" (not exclusively mine nor my partner's).
8. ____ In the future, my partner and I will have at least one joint bank account.
9. ____ In the future, my partner and I will have an intellectual life together that would be difficult to replace.
10. ____ In the future, my partner will put a lot of effort into our relationship.
11. ____ In the future, my partner and I will have at least one joint loan or debt (credit cards, etc.).
12. ____ In the future, my partner will make many sacrifices and compromises for my benefit.
13. ____ In the future, my partner and I will enjoy sharing leisure activities together.

Appendix F

Perceptions of Partner Investments in the Relationship Scale (General)

To what extent does each statement describe your partner's attitudes about your relationship?
Please use the following scale to record your answers.

Response Scale:

0	1	2	3	4	5	6	7	8
Do Not Agree			Agree			Agree		
At All			Somewhat			Completely		

- _____ 1. My partner feels that she/he has put a great deal into our relationship that s/he would lose if the relationship were to end.
- _____ 2. My partner would say that many aspects of his/her life have become linked to mine (recreational activities, etc.), and s/he would lose all of this if we were to break up.
- _____ 3. My partner feels very involved in our relationship – like s/he has put a great deal into it.
- _____ 4. My partner would say that his/her relationships with his/her friends and family members would be complicated if the relationships were to break up (e.g., you are friends with people your partner cares about).
- _____ 5. Compared to other people s/he knows, my partner feels that s/he has invested a great deal in his/her relationship with you.

Appendix G

Commitment to the Relationship Scale

To what extent does each statement describe your attitudes about your partner? Please use the following scale to record your answers.

- 1) I want our relationship to last a very long time.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

- 2) I am committed to maintaining my relationship with my partner.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

- 3) I would NOT feel very upset if our relationship were to end in the near future.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

- 4) It is likely that I will date someone other than my partner within the next year.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

- 5) I feel very attached to our relationship – very strongly linked to my partner.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

- 6) I want our relationship to last forever.

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

- 7) I am oriented toward the long-term future of my relationship (for example, I imagine being with my partner several years from now).

0	1	2	3	4	5	6	7	8
Do Not Agree				Agree				Agree
At All				Somewhat				Completely

Vita

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