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The Reciprocal Influence between Individuals' Perceptions of Spouse's Attachment and Marital Satisfaction

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THE RECIPROCAL INFLUENCE BETWEEN INDIVIDUALS' PERCEPTIONS OF
SPOUSE'S ATTACHMENT AND MARITAL SATISFACTION

A Thesis Presented

by

FEIRAN GE

Submitted to the Graduate School of
the University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

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The Reciprocal Influence between Individuals' Perceptions of Spouse's Attachment and
Marital Satisfaction

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By

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ABSTRACT

THE RECIPROCAL INFLUENCE BETWEEN INDIVIDUALS' PERCEPTIONS OF SPOUSE'S ATTACHMENT AND MARITAL SATISFACTION

FEBRUARY 2015

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There is a large body of research documenting the link between individuals' perceptions of partners' traits and relationship satisfaction (Simpson, Fillo, & Myers, 2012). Prior work indicates that both accurate understanding and idealized perception of partners' traits are associated with greater relationship satisfaction (e.g., Luo & Snider, 2009). However, research in this area has predominantly focused on the impact of partner perception on relationship satisfaction. There is very limited evidence on whether relationship satisfaction in turn affects partner perception. The present study followed newlywed heterosexual couples during their first 2-3 years of marriage and examined the relations between individuals' perceptions of spouses' attachment style and marital satisfaction over time using two waves of data. Using cross-lagged structural equation models, the study finds that individuals' greater satisfaction significantly predicted their greater accuracy in tracking their partner's anxiety, lower accuracy in tracking their partner's avoidance, increased positive illusions of their partner's avoidance, and their partner's decreased positive illusions of individuals' avoidance one year later. Furthermore, individuals' greater positive illusions of their partner's anxiety and avoidance led to their partner's increased satisfaction and individuals' decreased

satisfaction down the line, respectively. Potential explanations for contradictory results between anxiety and avoidance are discussed at length. The study extends the literature by investigating the directionality of the link between partner perception and relationship outcomes using cross-lagged models in a longitudinal design.

Keywords: close relationships, tracking accuracy, mean level bias, marital satisfaction

TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
CHAPTER	
1. INTRODUCTION.....	1
2. METHOD.....	15
3. RESULTS.....	20
4. DISCUSSION.....	26
APPENDICES	
A. FOOTNOTES.....	37
B. TABLES.....	38
C. FIGURES.....	50
BIBLIOGRAPHY	58

LIST OF TABLES

Table	Page
1. An Example of Tracking Accuracy and Mean-level Bias.....	38
2. Inter-correlations for Tracking Accuracy and Mean Level Bias.....	39
3. Model Comparisons for Cross-lagged Models	40
4. Model Fit Indices for the Final Cross-lagged Models	41
5. Final Estimation of the Relationship between Tracking Accuracy of Partner's Anxiety and Marital Satisfaction: Actor Only Model.....	42
6. Final Estimation of the Relationship between Tracking Accuracy of Partner's Avoidance and Marital Satisfaction: Actor Only Model.....	43
7. Final Estimation of the Relationship between Mean Level Bias of Partner's Anxiety and Marital Satisfaction: Actor and Partner Interdependence Model.....	44
8. Final Estimation of the Relationship between Mean Level Bias of Partner's Avoidance and Marital Satisfaction: Actor and Partner Interdependence Model.....	45
9. Model Comparisons for Cross-lagged Models Using PRQC.....	46
10. Model Comparisons for Cross-lagged Models using DAS.....	47
11. Model Comparisons for Cross-lagged Models Using PRQC and DAS.....	48
12. Model Comparisons for Cross-lagged Models Using the Satisfaction Subscales of PRQC and DAS.....	49

LIST OF FIGURES

Figure	Page
1. A visual representation of conceptualizing mean-level bias	50
2. Histograms of husbands and wives' tracking accuracy of attachment anxiety and avoidance at Time 1 and Time 2.....	51
3. Histograms of husbands and wives' mean level biases of attachment anxiety and avoidance at Time 1 and Time 2.	52
4. A sample structural cross-lagged model of the relationships between husbands and wives' Time 1 and Time 2 satisfactions and perceptions. All variables presented in the figure are latent variables. To reduce clutter, indicators, error terms, and error covariances have been excluded in the figure. However, all terms were estimated in the analyses.	53
5. Unstandardized path coefficients between satisfaction and individuals' tracking accuracy of partners' anxiety: Actor only model.	54
6. Unstandardized path coefficients between satisfaction and individuals' tracking accuracy of partners' avoidance: Actor only model.....	55
7. Unstandardized path coefficients between satisfaction and individuals' mean level bias of partners' anxiety: Actor and partner interdependence model	56
8. Unstandardized path coefficients between satisfaction and individuals' mean level bias of partners' avoidance: Actor and partner interdependence model	57

CHAPTER 1

INTRODUCTION

Satisfaction has long been recognized as a key feature of successful romantic relationships. As a result, there is sufficient research devoted to investigating different mechanisms that can lead to a satisfying relationship. Indeed, many factors have been found to play a role in contributing to greater relationship satisfaction. For example, good interpersonal communication skills, captured as emotional responsiveness, distinguished satisfied couples from dissatisfied pairs (Gottman, 1982). Greater sexual communication was linked to better marital adjustment (Banmen & Vogel, 1985). In addition, greater partner knowledge has been found to predict greater relationship satisfaction (Simpson et al., 2012).

Research in this area has chiefly focused on satisfaction as an *outcome* of intimate relationships. That is, most researchers “assume” that satisfaction is one of the goals of romantic relationships, and thus they mainly have centered their attention on factors that are seemingly antecedents of relationship satisfaction. Very limited evidence, however, has been gathered to support satisfaction as an antecedent of other aspects of relationship perceptions. For example, we have limited knowledge as to whether satisfaction can serve as a factor in influencing couple members’ feelings, cognitions, and behaviors.

Despite the traditional emphasis on satisfaction as an outcome of relationship perceptions, it is important to examine whether satisfaction also shapes relationship perceptions because the causal link is likely to be reciprocal. That is, I propose that the link between relationship perceptions (as well as other relationship processes) and relationship satisfaction is not unidirectional. Broadening the perspective of linking

relationship factors has important implications in practical settings, such as marriage counseling in resolving relationship conflict and promoting relationship functioning. For example, if practitioners assume that relationship satisfaction is an ultimate stage couples want to achieve, then they are more likely to limit their resources in tackling relationship problems by only addressing antecedents to relationship satisfaction. However, by treating perception and satisfaction as two factors capable of influencing each other, practitioners can design interventions that target both as causal factors. For instance, reducing couples' threshold of feeling satisfied in a relationship can potentially motivate couples to be more willing to see the positive side of their partners.

The current study aims to address this gap in the research by studying satisfaction as both an *antecedent* and an *outcome* of romantic relationships. Specifically, I tested the link between partner perceptions and relationship satisfaction by looking at whether individuals' perceptions of spouse's attachment predict marital satisfaction. In addition, I investigated whether marital satisfaction shapes individuals' perceptions of their spouse's attachment over time. The present study extends an understanding of the role of satisfaction in romantic relationships by examining reciprocal links between partner perceptions and relationship satisfaction.

In line with the goal of the present study, the review of literature outlines five areas of research: 1) partner perceptions as a contributor to relationship satisfaction, 2) relationship satisfaction as a contributor to partner perceptions, and psychological theories potentially supporting this link, 3) two ways of operationalizing perception, 4) the important role of perceptions of one's partner's attachment style in relationship

functioning, 5) the importance of taking a dyadic approach in addressing couple-level questions.

The Perception→Satisfaction Link

There is a significant amount of research documenting the link between individuals' perceptions of partners' traits and relationship satisfaction (Simpson et al., 2012). Different processes have been found to contribute to the link between partner perceptions and greater relationship satisfaction (Gagne & Lydon, 2004). Some researchers have argued that accurate perceptions of partners' traits predict greater relationship quality. For example, married couples tended to be more intimate when individuals' perceptions of spouses' self-attributes confirmed spouses' self-views (Swann, De La Ronde, & Hixon, 1994). Couples' agreement on working models of attachment has been associated with both husbands and wives' better marital adjustment (Kobak & Hazan, 1991). In addition, accurate perceptions of partners' personality dimensions have been positively associated with both men's and women's relationship satisfaction (Decuyper, De Bolle, & De Fruyt, 2012).

On the other hand, some researchers have claimed that positive perceptions are an important factor in influencing relationship satisfaction. That is, when individuals perceive their partners as more positive than their partners perceive themselves, relationship quality tends to be greater. This line of research has been primarily led by Murray and her colleagues, and they have found that an idealized construction of the partner's interpersonal qualities was positively associated with both individuals' own and their partner's relationship satisfaction (Murray, Holmes, & Griffin, 1996a, 1996b). Other work also has shown that spouses' positive perceptions of their partner's conflict

resolution style have been associated with greater marital satisfaction (Segrin, Hanzal, & Domschke, 2009). Longitudinal work has suggested that greater idealization of partners' interpersonal qualities is linked to greater likelihood of relationship persistence and lower rates of relationship dissolution (Fletcher, Simpson, & Thomas, 2000a; Murray & Holmes, 1997). An "unrealistic idealization," captured by a match between individuals' perceptions of their partners' interpersonal qualities and individuals' ideal-partner images, has been shown to buffer marital satisfaction decline over time (Murray et al., 2011). In addition, other work suggests that positive expectations predict more stable marital satisfaction only when those expectations are matched by experiences in spouses' interactions. Specifically, newlywed spouses who perceived the future of their marriage in a positive light (i.e., who held positive expectations about marriage) showed more stable satisfaction when spouses engaged in more constructive behaviors during a marital discussion, but not when spouses were engaged in less constructive behaviors; instead, in the latter case, perceiving the future of their marriage more positively (which was incongruent with the reality of experiences in spouses' interactions) predicted steeper declines in satisfaction over time (McNulty & Karney, 2004)

More recent work suggests taking an integrative approach to examining the association between different perceptual processes and relationship satisfaction (Gayne & Lydon, 2004). Research indicates that accuracy and positivity bias are not mutually exclusive processes, and can coexist in contributing to relationship satisfaction (Gayne & Lydon, 2004). For example, Luo and Snider (2009) examined accuracy, similarity bias, and positivity bias across four domains of personal characteristics: personality, attachment, positive and negative affect, and emotional expressivity. They found that all

three perceptual processes were independently related to marital satisfaction. Positivity bias was related to perceivers' marital satisfaction, whereas accuracy and similarity bias were associated with both perceivers' and targets' marital satisfaction.

Researchers also tested the additive benefits of accuracy and positive bias in experimental designs (Lackebauer, Campbell, Rubin, Fletcher, & Troister, 2010). Couples involved in committed romantic relationships were randomly assigned to receive false feedback from their partners evaluating their interpersonal traits. The feedback was actually created by the researchers in order to manipulate two dimensions: perception accuracy and positivity bias. There were four experimental conditions in the study: both accurate and positively biased perception, accurate and non-biased perception, less accurate and positively biased perception, and less accurate and non-biased perception. Findings indicated that participants who received both accurate and positively biased feedback from their partners yielded most positive ratings of relationship satisfaction, followed by participants in high accuracy-non bias group and low accuracy-positive bias group. Participants who received both less accurate and less positively biased perception from their partners rated their relationship as least satisfactory. Using experimental manipulation to control for other factors, these researchers demonstrated that perception accuracy and positive bias are independent constructs, which work together and have additive benefits for relationship satisfaction.

Taken together, based on a review of the literature, the influences of individuals' perceptions of their partners' traits on relationship satisfaction have been well established. However, research in this area has predominately focused on only one possible pathway between partner perception and relationship satisfaction by assuming

that perception is the predictor variable and satisfaction is the outcome variable. This leaves many unanswered questions regarding the directionality of the effects. For example, is relationship satisfaction not only a consequence of partners' perceptions of each other, but in turn, is relationship satisfaction shaped by partners' perceptions of each other? In other words, is the link between partner perception and relationship satisfaction unidirectional or reciprocal?

The Satisfaction→Perception Link

As noted above, most research has focused on whether different perceptual processes predict relationship satisfaction. The potential influences of relationship satisfaction in shaping partners' perceptions of each other have been virtually overlooked in this research area. To date, only one study has examined the reciprocal causality between partner perception and marital satisfaction. The researchers used cross-sectional dyadic data in a structural equation model, which predicted couples' perceptions of each other from marital satisfaction (Luo, Zhang, Watson, & Snider, 2010). They found that, despite the traditional emphasis on the direction from partner perception to relationship satisfaction, individuals' marital satisfaction strongly influenced their perceptions of the partner as well. However, this study is also characterized by a few limitations. One limitation of the study is that the data were gathered at only one time point, which does not allow us to have a clear picture of how the nature of the link changes over time. A longitudinal design would potentially address this limitation by tracing couples' perceptions and relationship satisfaction at different time points. Another limitation of the study is that it did not take into account the interactive effects between husbands and wives' responses. Because couple-level interaction and mutual influence is a key feature

in examining romantic relationships, the literature would benefit by a thorough examination of the interplay between partner perceptions and marital satisfaction in all possible ways.

Even though more empirical evidence is needed to establish the potential effect of relationship satisfaction on partner perception, there are a few theories that may explain the processes underlying the plausible satisfaction → perception link. First, cognitive dissonance theory suggests that when individuals' own feelings, cognitions, and beliefs are inconsistent with each other, individuals are motivated to relieve this uncomfortable situation by modifying their own beliefs or cognitions to be consistent with their feelings (Festinger, 1957). Thus, according to the theory, when couple members are satisfied with their relationship, they should be more likely to be motivated to modify their perceptions of their partners in a positive light to be consistent with their existing feelings of satisfaction.

Second, a few cognitive biases, such as attentional bias and memory bias, can also serve as possible explanations to the satisfaction → perception link. Attentional bias is conceptualized as people's subjective tendency to focus on some information but not others due to certain stimuli (Sass et al., 2010). For example, smokers, other than non-smokers, are more likely to pay attention to smoking-related stimuli (Mogg, Bradley, Field, & De Houwer, 2003). In line with this theory, I suggest that couple members in happy relationships are more likely to focus their attention on positive aspects of their spouses. Marital satisfaction can be served as a stimulus that motivates and boosts individuals' positive evaluations of their partners. In addition, memory bias, described as inaccurate recall of previous events (Schacter, 1999), may contribute to the satisfaction

→ perception link by motivating satisfied individuals to recall only positive instances of their partners, which in turn shape their positively biased perceptions of their partners.

Both theories mentioned above suggest that when individuals are satisfied with their relationship, they are more likely to perceive their partners in a more positive light. On the other hand, even though it may be a more indirect link, it is also possible that a satisfying relationship influences not only the perceivers' perceptions, but their partner's perceptions as well. For example, satisfaction may motivate individuals to work more constructively toward relationship functioning, such as more actively providing support when partner is in need. These positive interactions in turn may improve their partner's perceptions of them. Thus, an indirect link may exist between perceiver satisfaction and partner perception through mechanisms such as behavior.

Operationalizing Accuracy: Tracking Accuracy vs. Mean-level Bias

As the review above indicates, perception accuracy and bias are seemingly two independent constructs, and can operate simultaneously and/or independently on various relationship outcomes (Gagne & Lydon, 2004). With the development of accuracy judgment research in intimate relationships, researchers have recently proposed two ways of operationalizing accuracy: tracking accuracy and mean-level bias (Fletcher & Kerr, 2010). Tracking accuracy can be conceptualized as an association or a correlation between a judgment and a reality benchmark across items of a measure, different traits, or other variables of interest (Fletcher & Kerr, 2010). Mean-level bias can be conceptualized as a mean difference across multiple items or traits between a judgment and a reality benchmark (Fletcher & Kerr, 2010).

Fletcher (2002) gave a good example of the two constructs, and it is adapted here for illustration purposes. Mary and John are asked to rate John's attachment anxiety. Table 1 shows Mary and John's scores on the four attachment anxiety items. The tracking accuracy between John's self perception and Mary's perception of John is 1, because John's self-ratings (3, 4, 5, and 6) and Mary's ratings of John (1, 2, 3, and 4) are perfectly positively correlated. On the other hand, the mean-level bias between John's self perception and Mary's perception of John is 2, subtracting Mary's average perception of John (2.5) from John's average self perception (4.5). That is, Mary perceives John as less anxious than John perceives himself. In other words, Mary has a positive bias of John's attachment anxiety. In sum, whereas tracking accuracy seems to get at the question of whether a person is accurate or not in a general pattern, mean-level bias seems to address the specific direction of inaccuracy or bias.

Fletcher and Kerr (2010) conducted a meta-analysis of research that examined tracking accuracy and mean-level bias in romantic relationships across different domains of judgment, such as personality, attitudes, memories, etc. They found that the effects of the two perceptions, tracking accuracy in particular, were substantial and reliable across different domains of judgment. In general, people were able to accurately track their partners and relationships across different judgment domains, and individuals tended to perceive their partners and relationships more positively, with an exception in the domain of interaction traits, in which people tended to hold negative bias (Fletcher & Kerr, 2010). In addition, Fletcher and Kerr found that there was virtually null correlation between tracking accuracy and mean-level bias, across studies that reported both

perceptions. The results of the meta-analysis further support the assumption that tracking accuracy and mean-level bias are empirically two independent processes.

The Role of Attachment Style

Since Hazan and Shaver first proposed the model of adult attachment (1987), it has been frequently studied in explaining processes in romantic relationships (Mikulincer & Shaver, 2007). Adult attachment is conceptualized as working models of feelings, beliefs, and expectations of romantic partners (Hazan & Shaver, 1987). It provides individuals with an understanding of whether their partner would be reliable and provide care in times of need (Hazan & Shaver, 1987). A relatively accurate or positive perception of partner's attachment style has important benefits for relationship quality (Simpson et al., 2012), as it provides individuals with accurate or positive understandings of partners' feelings and behaviors in the relationship.

For example, on an emotional and cognitive level, an accurate perception of partner's attachment offers individuals insights into how the partners feel and why they feel that way in various situations, which in turn allows individuals to signify emotional understanding and reassurance to their partners. On a behavioral level, an accurate understanding of partner's attachment would better facilitate the individual in seeking and providing the partner with constructive support. For example, if an individual correctly identifies his or her partner as avoidantly attached and finds the partner in a stressful situation, the individual could better alleviate the partner's stress if the individual provides instrumental support rather than emotional support (Simpson, Winterheld, Rholes, & Orina, 2007). That is, all these emotional and behavioral

interactions following an accurate perception of attachment style have potential benefits for relationship functioning.

At the same time, adult attachment is developed through one's past experience with caregivers (Ainsworth, Blehar, Waters, & Wall, 1978). A positive interaction or experience in romantic relationships may develop or shift one toward a more secure attachment style. Thus, it is likely that a satisfying relationship may modify one's attachment style, which can be reflected in their partner's perceptions. Taken together, adult attachment style is an appropriate framework to understand relationship functioning. To investigate the perception of partner's attachment style can provide us with more insights to the perception → satisfaction link in romantic relationships.

A Dyadic Approach to Understanding Romantic Relationship Functioning

One main feature of romantic relationships involves the interactions between the two individuals. On a conceptual level, couple members' responses are interdependent because one person's responses affect the other's and therefore two partners' scores on a particular variable are often correlated. Take the example of attachment processes. When an individual always overlooks his or her partner's needs and is unstable in providing care when his or her partner is emotionally distressed, it is more likely that the individual's partner would develop an insecure attachment toward the individual rather than a secure attachment. On a statistical level, conventional analytical techniques such as regression and ANOVA assume that outcome variables are statistically independent. When we use them to analyze non-independent outcomes such as couples' attachment style, the test statistic will be biased. Thus, it is crucial to approach couple studies using couple as a unit instead of individual as a unit.

However, couple research has for a long time studied each individual's responses in isolation, and it is not until recently that relationship researchers started taking a dyadic approach to examining couple-relevant questions (Kenny, Kashy, & Cook, 2006). A dyadic approach involves taking into account both couple members' responses at the group (couple)-level in the analysis (Kenny, 1996b). Researchers studying dyadic effects have mainly focused on two effects: actor effects and partner effects. Actor effects measure the extent to which an individual's own characteristics influence one's own outcome, whereas partner effects measure the extent to which a partner's characteristics influence an individual's outcome (Kenny, 1996a). Actor effects have been historically more frequently studied than partner effect (Kenny, 1996b). The present study explores both actor effects and partner effects in relationship processes.

The Present Study

As the literature indicates, there are still questions regarding the association between partner perception and relationship satisfaction that remain to be explored. Research suggests that accurate and positive perceptions of a partner's traits predict greater relationship satisfaction (Gagne & Lydon, 2004). However, few studies have examined the influences of satisfaction on different aspects of relationship perceptions. In addition, even though increasing consensus exists among romantic relationship researchers regarding the importance of taking a dyadic approach, with regard to this particular set of questions, less research has taken this approach (Kenny et al., 2006). Thus, given the gaps in the literature, the aim of the current study is to contribute by fulfilling three goals: 1) to replicate previous findings on individuals' accurate and positive perceptions of their partner' attachment style in predicting relationship

satisfaction; 2) to examine tracking accuracy and mean-level bias as relatively independent constructs with respect to relationship satisfaction; and 3) to examine the reciprocal nature of the link between partner perceptions and satisfaction by examining not only the link between perceptions to satisfaction but also the link from satisfaction to partner perceptions and how these links might change over time using cross-lagged structural equation models.

Specifically, the present study explored the nature of the link between individuals' perceptions of partner's attachment style and relationship satisfaction by addressing two sets of research questions:

The first set of hypotheses addressed the relationship between tracking accuracy and marital satisfaction. First, we expected that individuals' satisfaction and tracking accuracy of partner's anxiety and avoidance at Time 1 would positively predict individuals' own satisfaction and tracking accuracy of partner's anxiety and avoidance at Time 2, respectively (stability paths). Next, in line with past work (e.g., Luo & Snider, 2009), I predicted that one's tracking accuracy of partner's anxiety and avoidance at Time 1 would be positively associated with not only one's own satisfaction at Time 2, but also one's partner's satisfaction at Time 2. Finally, and more importantly, as satisfaction can be served as a stimulus to shape perception (Morry, 2005), a high level of satisfaction might be used by spouses as a heuristic to suggest that everything is going on well in the relationship, which makes spouses pay less attention to their partners' characteristics or change in characteristics, such as attachment. In addition, spouses may be more motivated to perceive their partner's in an inaccurate (positive) way (e.g., Luo et al., 2010). In other words, I expected that one's satisfaction level at Time 1 would both

negatively predict one's own tracking accuracy of partner's attachment and one's partner's tracking accuracy of one's attachment.

The second set of hypotheses addressed the relationship between mean-level bias and marital satisfaction. First, I expected that individuals' satisfaction and mean-level bias of partner's anxiety and avoidance at Time 1 would positively predict individuals' own satisfaction and mean-level bias of partner's anxiety and avoidance at Time 2, respectively (stability paths). Next, in line with past work (e.g., Murray et al., 1996a, 1996b), I predicted that one's mean-level bias of partner's anxiety and avoidance at Time 1 would positively predict both partners' satisfaction at Time 2. Mean-level bias in the current study was conceptualized as the mean difference between one's own perception and spouse's perception of one's attachment (see Figure 1). Thus, I expected that the more one underestimated partner's attachment anxiety or avoidance at Time 1, the more satisfied both partners would be at Time 2. On the other hand, the more one overestimated partner's attachment anxiety or avoidance at Time 1, the less satisfied both partners would be at Time 2. Last but not least, consistent with past work (i.e., Luo et al., 2010) indicating that satisfaction could be served as a motivation to perceive partners in a more positive light, I expected that one's satisfaction at Time 1 would positively predict both partners' mean-level bias at Time 2. Specifically, the more satisfied individuals were at Time 1, individuals and their partners who underestimated each other's attachment insecurity would underestimate each other's insecurity even more at Time 2. On the other hand, the more satisfied individuals were at Time 1, individuals and their partners who overestimated each other's attachment insecurity would overestimate insecurity less at Time 2.

CHAPTER 2

METHOD

Participants

The participants were part of a larger longitudinal study investigating growth in early marriage. Newlywed couples from the western Massachusetts area were recruited from marriage licenses registries in local towns. In order to be eligible for the study, couples must have been married for less than seven months, in their first marriage, and not have children at Time 1. Time 2 occurred 12 to 18 months after the couple's first laboratory visit. Couples were contacted via telephone to schedule a second laboratory visit. Each individual was compensated \$50 for participating at Time 1 and \$70 for participating at Time 2.

At Time 1, 226 couples participated, and at Time 2, 203 couples participated. Only couples who participated at both Time 1 and Time 2 were included in the current study. Thus, the final sample consisted of 203 couples. The sample size varies across different analyses due to variations in missing data for different variables. At Time 1, husbands' average age was 29.21 years ($SD = 5.28$) and wives' average age was 27.86 years ($SD = 4.85$). At Time 1, most participants had a Bachelor's degree or higher (64.4% of husbands and 83.7% of wives). The majority identified themselves as White (96% of husbands and 92% of wives).

Procedure

The in-lab procedures for Time 1 and Time 2 were the same. Participants came to the lab, one couple at a time in a 3-hour session taking place at the University of Massachusetts Amherst. At the beginning of the session, a trained experimenter provided

couples with an overview of the study. In the next three hours, couples engaged in relevant tasks, such as filling out questionnaires on the computer regarding themselves, their partners, and their relationships. Participants were instructed to complete the questionnaires independently. Participants also engaged in two videotaped interactions and provided six saliva samples throughout the lab session. Of the Time 2 couples, 20 couples completed only the online survey because they were unable to schedule a lab visit (usually because they were too busy or had moved too far away). These couples were included in the current analyses. The current study used only the self-report measures relevant to assessing perceptions of attachment and marital satisfaction.

Measures

Own attachment style. Each participant completed the 36-item Experiences in Close Relationship Scale (ECR); all items were worded to assess their attachment to their spouse (Brennan, Clark, & Shaver, 1998) at both Time 1 and Time 2. The ECR has two subscales: Attachment Anxiety and Avoidance. The Anxiety subscale (at Time 1, Cronbach's $\alpha = .88$ for husbands; Cronbach's $\alpha = .91$ for wives; at Time 2, Cronbach's $\alpha = .86$ for husbands; Cronbach's $\alpha = .91$ for wives) examines the extent to which one is anxious about being rejected or abandoned by one's partner. It includes items such as "I worry that my partner won't care about me as much as I care about him or her" and "I do not often worry about being abandoned" (reverse scored). The Avoidance subscale (at Time 1, Cronbach's $\alpha = .87$ for husbands; Cronbach's $\alpha = .80$ for wives; at Time 2, Cronbach's $\alpha = .90$ for husbands; Cronbach's $\alpha = .87$ for wives) examines the extent to which one is comfortable with closeness and relying on one's partner. Sample items include "I get uncomfortable when my partner wants to be very close" and "I feel

comfortable depending on my partner” (reverse scored). Each item was rated on a 7-point Likert scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*).

Perceived attachment style of spouse. Each participant also completed a revised version of the ECR scale at Time 1 and Time 2, which was directly analogous to the original scale we used above. However, each item was revised to ask participants to rate their perceptions of their partner’s attachment style. It includes items such as “My spouse worries a fair amount about losing me” and “My spouse is very comfortable being close to me” (reverse scored).

Tracking accuracy of attachment. Tracking accuracy was created by calculating the intraclass correlation between one’s own attachment and spouse’s perception of one’s attachment across 18 items of anxiety and avoidance, respectively (Shrout & Fleiss, 1979). Tracking accuracy can theoretically range from -1 to 1. A tracking accuracy score of zero means that there is no association between one’s own perception and spouse’s perception of one’s attachment. Greater positive tracking accuracy indicates higher agreement between individuals’ attachment anxiety or avoidance and their spouses’ perceptions of individuals’ attachment. On the other hand, greater negative tracking accuracy indicates higher disagreement between individuals’ attachment anxiety or avoidance and their spouses’ perceptions of individuals’ attachment. Figure 2 shows that the majority of participants have positive tracking accuracy of their spouses’ attachment, indicating that in general people are fairly good at judging spouses’ attachment.

Mean-level bias of attachment. Mean-level bias was created by subtracting spouse’s perception of one’s mean level attachment anxiety or avoidance score from one’s own mean level attachment anxiety or avoidance score. A score of zero means no

bias, thus one's perception of spouse's attachment is perfectly accurate. A positive score means that one underestimates the spouse's attachment anxiety or avoidance, indicating a *positive* mean-level bias. On the other hand, a negative score means that one overestimates the spouse's attachment anxiety or avoidance, indicating a *negative* mean-level bias. As Figure 3 shows, individuals' mean-level biases of spouse's attachment are fairly normally distributed around zero, suggesting that most people are quite accurate in perceiving their spouses' attachment, with some people overestimating and some people underestimating their spouses' attachment anxiety or avoidance.

Table 2 shows the inter-correlations between tracking accuracy and mean-level bias of attachment. Consistent with the findings in Fletcher and Kerr (2010), the magnitude of the correlations between tracking accuracy and mean-level bias is relatively weak (all r s < .30 with one exception), indicating that tracking accuracy and mean-level bias tap into two independent perceptual processes.

Marital satisfaction. I used two measures to assess participants' marital satisfaction at Time 1 and Time 2. The first measure was the satisfaction subscale (3 items) of the Perceived Relationship Quality Components Inventory (PRQC) (Fletcher, Simpson, & Thomas, 2000b). The three items were: "How satisfied are you with your relationship?" "How content are you with your relationship?" and "How happy are you with your relationship?" Each item was rated on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*extremely*). Past research has shown that couples generally entered marriage with high levels of marital satisfaction (Karney & Bradbury, 1995). Consistent with the findings, relationship satisfaction in the current study was very high at both Time 1 ($M = 6.46$, $SD = .62$ for husbands; $M = 6.47$, $SD = .68$ for wives) and Time 2 (M

= 6.22, $SD = .80$ for husbands; $M = 6.24$, $SD = .92$ for wives). The second measure was the marital satisfaction subscale from the Dyadic Adjustment Scale (DAS; Spanier, 1976), which has been frequently used to assess couple adjustment. The satisfaction subscale includes ten items such as “How often do you kiss your spouse?” and “Do you confide in your spouse”. The satisfaction subscale total score ranges from 0 to 50, with a higher number indicating greater satisfaction with the relationship. Similarly, I found that satisfaction measured by DAS was very high at both Time 1 ($M = 42.41$, $SD = 3.78$ for husbands; $M = 42.55$, $SD = .68$ for wives) and Time 2 ($M = 40.55$, $SD = 6.75$ for husbands; $M = 41.64$, $SD = 4.31$ for wives).

Relationship length. Relationship length was measured by asking participants this question “How long have you been in a relationship with your partner (please count from the time that you first began dating each other)?” The average relationship length at Time 1 was 60.91 months ($SD = 36.11$). I originally sought to use relationship length as a control variable, but since relationship length was not significantly correlated with any outcome variables, I did not include relationship length in my analyses.

CHAPTER 3

RESULTS

Analytic Strategy

I used Kashy & Kenny's (2000) Actor and Partner Interdependence Model (APIM) to investigate the impact of couples' perception and marital satisfaction at Time 1 on perception and marital satisfaction at T2. For couple research, APIM assumes that husbands and wives' responses are interdependent, and thus treats the couple rather than the individual as the unit of analysis. There are two effects in an actor and partner interdependence model: an actor effect and a partner effect. In the current study, an actor effect is the impact of one's perception or satisfaction at Time 1 on one's own perception or satisfaction at Time 2, respectively. A partner effect is the impact of one's perception or satisfaction at Time 1 on spouse's perception or satisfaction at Time 2, respectively.

Analyses in the current study were conducted using structural equation modeling (via LISREL Version 8.80, Jöreskog & Sörbom, 2007). Because there were two different attachment styles (anxiety vs. avoidance) and two different ways of operationalizing accuracy (tracking accuracy vs. mean-level bias), four sets of analyses were conducted: a) tracking accuracy of anxiety b) tracking accuracy of avoidance c) mean-level bias of anxiety and d) mean-level bias of avoidance.¹ Within each set, a series of models were fitted: 1) actor only model 2) partner only model and 3) actor and partner interdependence model.

In order to find the best model within each set, Chi-square comparison tests were conducted between actor only model and APIM, and between partner only model and APIM, respectively. All model fit indices for each model and model comparison tests

were reported in Table 3. As suggested by Hu and Bentler (1999), a cutoff value of $< .06$ for root mean square error of approximation (RMSEA), $> .95$ for comparative fit index (CFI), and $< .08$ for standardized root mean square residual (SRMR) would be considered as a relatively good fit between the hypothesized model and the observed data. Only the best model within each set was chosen to represent the results for the current study (model fit indices for the final models were reported in Table 4).

For each model, there were four Time 1 predictors (husband satisfaction, wife satisfaction, husband perception, and wife perception) and four Time 2 outcomes (husband satisfaction, wife satisfaction, husband perception, and wife perception). I conducted tests of univariate normality for the variables used in the current study. Even though the tests indicated that the normality assumption was not met by the satisfaction variables, all absolute values of the skewness statistics were smaller than 2, suggesting that it was not a matter of great concern. Thus, I used raw data without transformation in the analyses.

Both perception and satisfaction were treated as latent variables in the analyses. Since there was only one measure (thus one indicator) for tracking accuracy/mean-level bias of anxiety or avoidance, the factor loading was fixed to 1 for the latent variable for perceptions. There were two measures of marital satisfaction: PRQC and DAS. The three items of PRQC satisfaction subscale were collapsed into the first indicator of the latent variable for satisfaction. The ten items of DAS satisfaction subscale were further parceled into two indicators of the latent variable for satisfaction by balancing the standard deviations of the two indicators (Little, Cunningham, & Shahar, 2002). Thus, the latent

variable for satisfaction consisted of three indicators.² All indicators of satisfaction were mean-centered prior to analyses.

A sample structural model is presented in Figure 4. Solid lines represent actor effects, and dotted lines represent partner effects. In the actor only models, only solid paths were retained in the analyses, whereas dotted paths were set to zero. In the partner only models, only dotted paths were retained in the analyses, whereas solid paths were set to zero. In the actor and partner interdependence models, both solid and dotted paths were included in the analyses. The dependency between husbands and wives' outcomes was taken into account by correlating the latent constructs of husbands and wives' Time 2 satisfaction, and husbands and wives' Time 2 perception, respectively. In addition, model comparison tests suggested that model fit was significantly better when the error covariances of the same indicators of satisfaction and perception between husbands and wives at T2 were correlated than when they were not. Thus, error covariances of the indicators were retained in the models.

Tracking Accuracy of Partner's Anxiety: Actor Only Model

Table 5 shows the final estimates of the association between tracking accuracy of partner's anxiety and marital satisfaction. As hypothesized, husbands' satisfaction at Time 1, husbands' tracking accuracy of wives' anxiety at Time 1, and wives' satisfaction at Time 1 all significantly predicted their own respective satisfaction and tracking accuracy at Time 2. Unexpectedly, wives' tracking accuracy of husbands' anxiety at Time 1 did not significantly predict the same variable at Time 2.

More importantly, contrary to my hypothesis that satisfaction might serve as an "everything is good" heuristic and lead individuals to pay less attention to their partners'

change in traits, husbands' satisfaction at Time 1 significantly positively predicted their tracking accuracy of their wives' anxiety at Time 2. In other words, the more satisfied husbands were at Time 1, the more accurately they were able to track their wives' anxiety at Time 2 (see Figure 5 for the final structural model).

Tracking Accuracy of Partner's Avoidance: Actor Only Model

Table 6 shows the final estimates of the association between tracking accuracy of partner's avoidance and marital satisfaction. As expected, husbands' satisfaction at Time 1, wives' satisfaction at Time 1, and wives' tracking accuracy of husbands' avoidance at Time 1 all significantly predicted their respective satisfaction and tracking accuracy at Time 2. Unexpectedly, husbands' tracking accuracy of wives' avoidance at Time 1 did not significantly predict the same variable at Time 2.

More importantly, as hypothesized, husbands' and wives' satisfaction at Time 1 significantly negatively predicted their own respective tracking accuracy of their partner's avoidance at Time 2. In other words, the more satisfied individuals were at Time 1, the less accurately they were able to track their partner's avoidance at Time 2 (see Figure 6 for the final structural model).

Mean-level Bias of Partner's Anxiety: APIM

Table 7 shows the final estimates of the association between mean-level bias of partner's anxiety and marital satisfaction. As expected, both husbands and wives' satisfaction at Time 1, and husbands and wives' mean-level biases at Time 1 all significantly predicted their respective satisfaction and mean-level bias at Time 2.

More importantly, consistent with my hypothesis, husbands' mean-level bias of wives' anxiety at Time 1 positively predicted wives' satisfaction at Time 2. In other

words, the more husbands underestimated their wives' anxiety at Time 1 (i.e., when he viewed her as less anxious than she perceived herself), the more satisfied their wives were at Time 2. On the other hand, the more husbands overestimated their wives' anxiety at Time 1 (i.e., when he viewed her as more anxious than she perceived herself), the less satisfied their wives were at Time 2 (see Figure 7 for the final structural model).

Mean-level Bias of Partner's Avoidance: APIM

Table 8 shows the final estimates of the association between mean-level bias of partner's avoidance and marital satisfaction. As expected, both husbands and wives' satisfaction at Time 1, and husbands and wives' mean-level biases at Time 1 all significantly predicted their respective satisfaction and mean-level bias at Time 2.

More importantly, as expected, husbands and wives' satisfaction at Time 1 both positively predicted their own respective mean-level bias of their partner's avoidance at Time 2. In other words, for under-estimators, the more satisfied individuals were at Time 1, the more individuals underestimated their partner's avoidance at Time 2. On the other hand, for over-estimators, the more satisfied individuals were at Time 1, the less individuals overestimated their partner's avoidance at Time 2.

The partner effects for the association between satisfaction at Time 1 and mean-level bias at Time 2 were contrary to my hypotheses. Husbands and wives' satisfaction at Time 1 negatively predicted their partner's mean-level bias of their avoidance at Time 2. In other words, for under-estimators, the more satisfied individuals were at Time 1, the less their partners underestimated their avoidance at Time 2. On the other hand, for over-estimators, the more satisfied individuals were at Time 1, the more their partners overestimated their avoidance at Time 2.

Finally, contrary to my hypothesis, individuals' mean-level bias of partner's avoidance at Time 1 negatively predicted individuals' satisfaction at Time 2. In other words, the more individuals underestimated their partner's avoidance at Time 1, the less satisfied they were at Time 2. On the other hand, the more individuals overestimated their partner's avoidance at Time 1, the more satisfied they were at Time 2 (see Figure 8 for the final structural model).

CHAPTER 4

DISCUSSION

Romantic partners' perceptions of each other's characteristics have been associated with relationship satisfaction (for reviews, see Gagne & Lydon, 2004; Simpson et al., 2012). However, little research has examined the directionality of the association between partner perception and relationship satisfaction. The current study is the first to investigate the reciprocal influences between partner perception and marital satisfaction in a longitudinal setting. My findings strengthen and extend knowledge of this field in a number of ways. First, I demonstrate that not only that individuals' perceptions of partner's attachment can lead to downstream marital satisfaction, but also that marital satisfaction can modify and shape individuals' perception of their partner's attachment in the long run. Next, I find that tracking accuracy and mean-level bias are relatively independent perceptual processes, and their relationships with marital satisfaction are quite different. Furthermore, both actor and partner effects are present in the relationship, but the former seems to be more prevalent than the latter in the associations between perceptions and marital satisfaction. Lastly, it seems that the perception of attachment avoidance rather than anxiety is more likely to predict satisfaction and to be predicted by satisfaction. Among my findings, there are also some noteworthy results that are contrary to my hypotheses and past findings. Next, I categorize and highlight the important points in the following sections below.

The Bi-directionality of Partner Perception and Marital Satisfaction

The first goal of the study was to replicate previous findings in predicting relationship satisfaction from accurate or positive perceptions of partner's traits. The

current study is consistent with some past findings but not with others. Consistent with past research (Fletcher et al., 2000a; McNulty & Karney, 2004; Murray et al., 1996a, 1996b; Murray & Holmes, 1997; Murray et al., 2011; Segrin et al., 2009), husbands' greater positive illusions and less negative perceptions of wives' attachment anxiety predicted wives' greater marital satisfaction one year later. On the other hand, contrary to past research, individuals' greater positive illusions and less negative perceptions of partner's attachment avoidance predicted individuals' decreased marital satisfaction over time (potential explanations for discrepancy in results for anxiety and avoidance are discussed in length in the next section).

Another main goal of the current study was to find evidence supporting the hypothesis that partner perception and marital satisfaction mutually influence each other over time. These findings partially support the hypotheses. More specifically, the bi-directionality of the link is partly dependent on the type of perceptual processes in question. When tracking accuracy is involved, satisfaction significantly predicted perceptions, but perceptions did not predict satisfaction. That is, satisfaction shapes how accurately people track their partner's attachment in the long run, not the other way around.

On the other hand, when mean-level bias is involved, the bi-directionality of partner perception and marital satisfaction is dependent upon which attachment style is the perceptual target. When judging attachment anxiety, individuals' perceptions of their partner heavily influence their partner's marital satisfaction one year later, whereas the perception of attachment avoidance and marital satisfaction influence each other over time.

Taken together, it seems like marital satisfaction plays a more important role in shaping perception in the long run, rather than the other way around. However, as noted in the introduction, while most research has been devoted to examining the perception → satisfaction link in romantic relationships, very little research has investigated how satisfaction can shape perception. Given that most research was correlational in nature (e.g., Decuyper et al., 2012; Kobak & Hazan, 1991; Luo & Snider, 2009; Murray et al., 1996a, 1996b; Segrin et al., 2009; Swann et al., 1994), which does not establish a causal link from perception to satisfaction, and that satisfaction has been predominantly treated as an outcome of romantic relationships, the findings in the present study highlight the importance of investigating satisfaction as a factor that may potentially shape downstream relationship functioning.

Finally, the relatively independent effects of tracking accuracy and mean-level bias do not necessarily mean that we need to examine the two perceptual processes in complete isolation. On the contrary, the findings in the present study suggest that the two sets of results complement each other. For example, whereas the association between satisfaction at Time 1 and tracking accuracy of partner's avoidance at Time 2 indicates that more satisfied individuals tend to be less accurate in tracking their partner's avoidance later on, the significantly positive association between one's satisfaction and one's mean-level bias of partner's avoidance further specifies the direction of this inaccuracy. In sum, I recommend that researchers in the future should still include both tracking accuracy and mean-level bias in their research, as comparing and contrasting the two can make interpretations more meaningful.

The Differences between Perception of Anxiety and Avoidance

In line with past research (Luo et al., 2010), the findings in the present study suggest that the perception of avoidance rather than anxiety seemed to be more closely related to satisfaction. In addition, the relationship between satisfaction and perception of anxiety and avoidance yielded seemingly contradictory results. Specifically, greater satisfaction led to greater tracking accuracy of anxiety, but lower tracking accuracy of avoidance later on. One possible explanation would be concerning the different consequences of attachment anxiety and avoidance in a romantic relationship. Granted that anxiety and avoidance both can indicate difficulties in relationships, the implications of having an anxious partner versus an avoidant partner may be very different for their spouses, given their partners' anxious or avoidant behaviors. An anxious partner is fearful of being rejected or abandoned (Hazan & Shaver, 1987), and thus an example of potential behavioral manifestations of attachment anxiety would be that individuals persistently and excessively ask their partners whether their partners love them. Even though these kinds of behavior may be annoying up to a certain frequency, it also may suggest to the partners that their spouses care about the relationship. On the other hand, an avoidant individual is very uncomfortable with closeness and disclosure (Hazan & Shaver, 1987). The emotional distance that avoidant partners keep from their spouses may be decoded by their spouses as not caring enough about the relationship. Consequently, greater satisfaction may serve as a relationship-protective mechanism for avoidant individuals' spouses. The spouses may be motivated to be less accurate in tracking their partners' avoidance, reducing the opportunity to find out the discouraging situation that their partners care about the relationship less than they think. In other words, not caring about

a person or a relationship may be perceived as more detrimental in a way to the feelings of one's partner than caring too much.

Furthermore, the relationship between mean-level bias and marital satisfaction was also different for anxiety and avoidance. Consistent with past research (e.g., Fletcher et al., 2000a; McNulty & Karney, 2004; Murray et al., 1996a, 1996b; Murray & Holmes, 1997; Murray et al., 2011; Segrin et al., 2009), greater positive illusions and less negative perceptions of partners' anxiety led to partners' greater satisfaction later on. However, the results for attachment avoidance were just the opposite. Individuals' greater positive illusions and less negative perceptions of partners' avoidance led to individuals' decreased satisfaction later on. A potential explanation is still related to the particular poignancy avoidance leaves on one's partner and the relationship. It is possible that those individuals' positive illusions of their partners' attachment avoidance were not validated and greatly diminished by their partners' avoidant and unresponsive behaviors, which led to individuals' decreased satisfaction later on. This explanation is consistent with research that found that spouses who held positive expectations about their marriage experienced relatively stable satisfaction only when spouses engaged in constructive behaviors (McNulty & Karney, 2004). On the other hand, when spouses' positive expectations were not validated by constructive behaviors, their marital satisfaction suffered from steep decline over time (McNulty & Karney, 2004). In sum, past research tends to show consistent results between perception of anxiety and avoidance (i.e., Luo et al., 2010), whereas the present study suggests the opposite. More research is needed to investigate the reason why perception of anxiety and avoidance may operate differently.

Finally, the heavy documentation of positive illusions and the absence of negative perceptions of partners' traits in the literature raises the question of whether romantic partners ever perceive their partners in a more negative way than their partners perceive themselves. However, the distribution of the mean-level biases in the present study (Figure 3) clearly suggests that there are almost equal numbers of romantic partners who hold negative perceptions of their spouses than romantic partners who hold positive illusions of their spouses. While the spotlight is focused on positive illusion, my research also suggests that more effort is need to investigate the antecedents and outcomes of negative perceptions between romantic partners.

Actor Effects vs. Partner Effects

As expected, both actor effects and partner effects are present in the current study. However, according to the findings, actor effects seem to be more prevalent than partner effects, and the existence of the two effects is dependent on other factors, such as the type of perceptual processes. For tracking accuracy, the chi-square model comparison tests suggested that actor only models were significantly better than either partner only models or APIMs. Thus, the actor effect was the only operating mechanism between tracking accuracy and marital satisfaction. Specifically, husbands' greater satisfaction at Time 1 predicted their greater accuracy in tracking wives' anxiety and lower accuracy in tracking wives' avoidance at Time 2. Wives' greater satisfaction at Time 1 predicted their lower accuracy in tracking husbands' avoidance at Time 2. On the other hand, both actor effects and partner effects are present for mean-level bias. More specifically, when actor effects are concerned, individuals' greater satisfaction at Time 1 predicted individuals' greater positive illusions and less negative perceptions of partner's avoidance at Time 2, whereas

individuals' greater positive illusions and less negative perceptions of partner's avoidance at Time 1 predicted individuals' lower satisfaction at Time 2. When partner effects are concerned, husbands' greater positive illusions and less negative perceptions of wives' anxiety at Time 1 predicted wives' greater satisfaction at Time 2. In addition, individuals' greater satisfaction at Time 1 predicted their partners' reduced positive illusions and increased negative perceptions of their avoidance at Time 2.

The greater prevalence of actor effects than partner effects in the current study makes conceptual sense, as the link between one's own perception and one's own satisfaction takes a more direct route. On the other hand, partner effects may be more indirect and may go through potential mechanisms underlying the association between perception of attachment and marital satisfaction. For example, a high level of satisfaction may have two immediate consequences. On a positive side, greater satisfaction may motivate individuals to be more responsive toward their partners, which make their partners to perceive them as more secure. On a less positive side, greater satisfaction may also give a (sometimes misleading) signal to the individuals that "all is well" in a relationship, which potentially distracts individuals' attention and renders their positive behavior less efficient. This delay may then be readily picked up by their partners, who consequently modify their perceptions of the individuals as more avoidant. My findings seem to support the latter theory, as evidenced by the negative association between individuals' satisfaction and their partners' positive illusions of their avoidance later on. However, evidence from one study is far from conclusive, and more research is needed to further clarify the partner effects between satisfaction and perception. Potential

mediators, such as behaviors that might intervene between satisfaction and perception, may be able to help clarify this issue.

The (In)stability of Perceptions Over Time

As expected, individuals' mean-level bias of partner's anxiety and avoidance highly predicted their mean-level bias at a later time. However, couples' tracking accuracy proved to be less stable over time. Specifically, while husbands' tracking accuracy of wives' anxiety and wives' tracking accuracy of husbands' avoidance still remained relatively stable over time, wives' tracking accuracy of husbands' anxiety and husbands' tracking accuracy of wives' avoidance were not related at two time points. Further exploration suggests that wives' tracking accuracy of husbands' anxiety was not significantly correlated at two time points, whereas husbands' tracking accuracy of wives' avoidance was significantly correlated at two time points, but the association became marginal in the final model. One possibility is that husbands' anxiety and wives' avoidance underwent change during this one year, whereas their partner's perception of their attachment patterns remained relatively unchanged. Another possibility is that husbands' anxiety and wives' avoidance remained relatively stable during this year, whereas their partner's perception of their attachment patterns underwent great change. And yet a third possibility is that both husbands' anxiety and wives' avoidance and their partner's perceptions of their attachment patterns experienced change, but rather in an unpredictable and random manner.

The interesting results of the instability of tracking accuracy point to some potential gap in this research area. Although romantic partners' perceptions of their spouses' characteristics have been consistently linked to other relationship functioning,

whether the perception itself changes over time has been largely overlooked in research. The findings in the present study suggest that partner perception may undergo considerable change throughout relationship stage. The instability of tracking accuracy potentially limits the interpretations of past findings. A study that found a significant relationship between tracking accuracy and relationship satisfaction in dating couples may not be extended to situations in marriage, as tracking accuracy itself may change completely. In sum, I recommend that more research should be devoted to examining the stability of partner perception over time.

Limitations and Future Directions

The present study is also characterized by a few limitations. Even though the study incorporates a longitudinal design which allows us to follow the mutual influences between partner perception and relationship satisfaction overtime, the nature of the study does not allow us to test causality directly because we did not control for all of the relevant factors that might have an impact on the link and we were not able to determine the exact timing for causality to occur. In order to directly test the causality of this link, future work is encouraged to use experimental manipulation, which controls for all other variables except for the one we want to test (perception or satisfaction, depending on the research question).

Another weakness of the present study is that the cross-lagged models analyzed in the study only consist of two time points. A typical cross-lagged model needs three time points in order to establish a complete picture of the directionality of two variables. Fortunately, the third wave of data collection for this longitudinal project of newlywed

couples is approaching completion as of this writing. The author is in the process of re-analyzing the cross-lagged models using three time points.

Furthermore, the present study focuses on the first 2-3 years of marriage. It is very likely that the interactive dynamic between partner perception and marital satisfaction may change across different stages of marriage. That is, partner perception may be an important factor in early marriage because couple members are still making adjustment to each other during this transitional period. As the marriage matures, couple members may think that they have a thorough knowledge about their partner, and factors other than partner perception, such as commitment, may be more importantly linked to marital satisfaction.

In addition, the present study only examines the perception of attachment style in influencing and being influenced by marital satisfaction. Future work is encouraged to enrich previous findings by examining the link between perception and satisfaction across different domains of perception, such as personality, emotions, and behavior.

Lastly, the sample of the current study is quite homogeneous, consisting of only newlywed heterosexual couples in their first marriage who are predominately white. A thorough understanding of romantic relationship requires future research to extend findings across diverse samples with different ethnicity and sexual orientation.

Conclusion

The present research demonstrates that perceptions of partner's attachment style and marital satisfaction mutually influence each other over time. Furthermore, the findings suggest that the relationship between partner perception and marital satisfaction can be not only intrapersonal (actor effects), but interpersonal (partner effects) as well.

The present study underscores the value of examining tracking accuracy and mean-level bias as two independent perceptual processes. The findings also emphasize the importance of investigating the differential effects of anxiety and avoidance. In sum, the present study contributes to the partner perception literature by unfolding the relationship between perception and satisfaction in a longitudinal setting using cross-lagged design.

APPENDIX A

FOOTNOTES

1 The reported results in the paper did not control for tracking accuracy or mean-level bias of one attachment style while using perception of the other attachment style as a predictor. We also conducted the same analyses controlling for perception of the other attachment style in the final models. The result patterns remained exactly the same. However, two significant paths reported in the paper became nonsignificant after controlling for perception of anxiety: 1) wives' T1 satisfaction → wives' T2 tracking accuracy of husbands' avoidance and 2) wives' T1 mean-level bias of husbands' avoidance → wives T2 satisfaction.

2 In the preliminary analyses, different ways of constructing the latent variable for satisfaction were attempted. Specifically, there were two measures of marital satisfaction: PRQC and DAS. The latent variable for satisfaction has been constructed using 1) PRQC only 2) DAS only 3) PRQC and DAS together 4) the satisfaction subscales of PRQC and DAS, DAS indicators were parceled by item order 5) the satisfaction subscales of PRQC and DAS, DAS indicators were parceled by variance balance (Little et al., 2002). Since paths significance yielded rather similar results across different approaches of constructing the latent variable for satisfaction, approach 5) was chosen to represent the analyses and results due to its conceptual and statistical soundness. However, the model comparison tests yielded by the first four approaches were also reported in Appendix A, from Table A1 through Table A4, respectively.

APPENDIX B

TABLES

Table 1. An Example of Tracking Accuracy and Mean-level Bias.

	Anxiety 1	Anxiety 2	Anxiety 3	Anxiety 4	<i>M</i>
John	3	4	5	6	4.5
Mary	1	2	3	4	2.5
Mary's tracking accuracy of John's anxiety = $r_{John.Mary} = 1$					
Mary's mean-level bias of John's anxiety = $M_{John} - M_{Mary} = 4.5 - 2.5 = 2$					

Table 2. Inter-correlations for Tracking Accuracy and Mean Level Bias.

	1	2	3	4	5	6	7	8
TRACKING ACCURACY								
Husbands								
1. Avoidance	--	.038	.061	.079	-.295**	-.318**	.189**	.230**
2. Anxiety	.159*	--	-.036	.120	-.035	-.177*	.095	.115
Wives								
3. Avoidance	.173*	-.018	--	-.057	.114	.011	-.153*	-.054
4. Anxiety	.033	.207**	.080	--	-.157*	-.151*	.086	.078
MEAN-LEVEL BIAS								
Husbands								
5. Avoidance	-.282**	-.088	.011	.138	--	.315**	-.487**	-.405**
6. Anxiety	-.160*	-.229**	-.095	-.075	.392**	--	-.369**	-.475**
Wives								
7. Avoidance	.099	.188**	.007	-.021	-.477**	-.386**	--	.408**
8. Anxiety	.220**	.227**	.094	-.031	-.515**	-.512**	.400**	--

Note. Time 1 correlations are above and Time 2 correlations are below the diagonal; bolded data represent correlations between tracking accuracy and mean level bias.

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

Table 3. Model Comparisons for Cross-lagged Models.

Set	Model	Model statistics					Model comparisons	
		χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	<i>SRMS</i>	$\Delta\chi^2$	<i>p</i>
Tracking accuracy of partner's anxiety <i>N</i> = 195	APIM	260.64	81	.10	.93	.05		
	Actor compared with APIM	267.14	89	.10	.93	.05	6.50	P > .05
	Partner compared with APIM	365.61	89	.12	.89	.08	104.97	P < .05
Tracking accuracy of partner's avoidance <i>N</i> = 190	APIM	268.47	81	.11	.93	.06		
	Actor compared with APIM	277.57	89	.10	.93	.06	9.10	P > .05
	Partner compared with APIM	360.57	89	.12	.90	.08	92.10	P < .05
Mean level bias of partner's anxiety <i>N</i> = 195	APIM	301.69	81	.11	.93	.05		
	Actor compared with APIM	322.80	89	.11	.92	.06	21.11	P < .05
	Partner compared with APIM	558.63	89	.15	.84	.11	256.94	P < .05
Mean level bias of partner's avoidance <i>N</i> = 195	APIM	275.85	81	.11	.94	.05		
	Actor compared with APIM	337.88	89	.12	.92	.08	62.03	P < .05
	Partner compared with APIM	463.43	89	.14	.88	.10	187.58	P < .05

Note. The model comparison columns report the chi-square test (*df* = 8) for the nested comparison of the actor only models and APIM, the partner only models and APIM, respectively, within each set of analyses. *RMSEA* = root mean square error of approximation; *CFI* = comparative fit index; *SRMS* = standardized root mean square residual.

Table 4. Model Fit Indices for the Final Cross-lagged Models

Set	Model	Model statistics				
		χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	<i>SRMS</i>
Tracking accuracy of partner's anxiety <i>N</i> = 195	Actor only	271.25	92	.10	.93	.06
Tracking accuracy of partner's avoidance <i>N</i> = 190	Actor only	279.13	91	.10	.93	.06
Mean level bias of partner's anxiety <i>N</i> = 195	APIM	321.38	92	.11	.92	.07
Mean level bias of partner's avoidance <i>N</i> = 195	APIM	302.89	87	.11	.93	.06

Note. *RMSEA* = root mean square error of approximation; *CFI* = comparative fit index;

SRMS = standardized root mean square residual.

Table 5. Final Estimation of the Relationship between Tracking Accuracy of Partner's Anxiety and Marital Satisfaction: Actor Only Model.

Effects	Estimate	<i>SE</i>
Stability paths		
T1 Husband Satisfaction → T2 Husband Satisfaction	1.092***	.152
T1 Husband Perception → T2 Husband Perception	.300***	.062
T1 Wife Satisfaction → T2 Wife Satisfaction	1.120***	.144
T1 Wife Perception → T2 Wife Perception	.082	.070
Satisfaction → Perception		
Actor effects T1 Husband Satisfaction → T2 Husband Perception	.089*	.035

Note. Results shown are unstandardized maximum likelihood estimates.

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

Table 6. Final Estimation of the Relationship between Tracking Accuracy of Partner's Avoidance and Marital Satisfaction:

Actor Only Model.

Effects		Estimate	SE
Stability paths			
	T1 Husband Satisfaction → T2 Husband Satisfaction	1.067***	.151
	T1 Husband Perception → T2 Husband Perception	.164	.084
	T1 Wife Satisfaction → T2 Wife Satisfaction	1.081***	.143
	T1 Wife Perception → T2 Wife Perception	.148*	.072
Satisfaction → Perception			
Actor effects			
	T1 Husband Satisfaction → T2 Husband Perception	-.124**	.044
	T1 Wife Satisfaction → T2 Wife Perception	-.070*	.035

Note. Results shown are unstandardized maximum likelihood estimates.

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

Table 7. Final Estimation of the Relationship between Mean Level Bias of Partner's Anxiety and Marital Satisfaction: Actor and Partner Interdependence Model.

Effects	Estimate	<i>SE</i>
Stability paths		
T1 Husband Satisfaction → T2 Husband Satisfaction	1.104***	.155
T1 Husband Perception → T2 Husband Perception	.642***	.055
T1 Wife Satisfaction → T2 Wife Satisfaction	1.103***	.137
T1 Wife Perception → T2 Wife Perception	.630***	.054
Perception → Satisfaction		
Partner effects		
T1 Husband Perception → T2 Wife Satisfaction	.087*	.037

Note. Results shown are unstandardized maximum likelihood estimates.

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

Table 8. Final Estimation of the Relationship between Mean Level Bias of Partner's Avoidance and Marital Satisfaction: Actor and Partner Interdependence Model.

Effects		Estimate	SE
Stability paths			
	T1 Husband Satisfaction → T2 Husband Satisfaction	1.189***	.157
	T1 Husband Perception → T2 Husband Perception	.273***	.082
	T1 Wife Satisfaction → T2 Wife Satisfaction	1.228***	.152
	T1 Wife Perception → T2 Wife Perception	.460***	.085
Satisfaction → Perception			
Actor effects			
	T1 Husband Satisfaction → T2 Husband Perception	1.237***	.262
	T1 Wife Satisfaction → T2 Wife Perception	.638**	.237
Partner effects			
	T1 Husband Satisfaction → T2 Wife Perception	-.706**	.252
	T1 Wife Satisfaction → T2 Husband Perception	-1.076***	.211
Perception → Satisfaction			
Actor effects			
	T1 Husband Perception → T2 Husband Satisfaction	-.151**	.052
	T1 Wife Perception → T2 Wife Satisfaction	-.123*	.062

Note. Results shown are unstandardized maximum likelihood estimates.

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

Table 9. Model Comparisons for Cross-lagged Models Using PRQC.

Set	Model	Model statistics					Model comparisons	
		χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	<i>SRMS</i>	$\Delta\chi^2$	<i>p</i>
Tracking accuracy of partner's anxiety <i>N</i> = 194	APIM	359.47	81	.13	.88	.06		
	Actor compared with APIM	362.92	89	.12	.88	.06	3.45	P > .05
	Partner compared with APIM	551.88	89	.15	.79	.17	192.41	P < .05
Tracking accuracy of partner's avoidance <i>N</i> = 190	APIM	372.25	81	.13	.87	.07		
	Actor compared with APIM	377.74	89	.12	.87	.07	5.49	P > .05
	Partner compared with APIM	561.96	89	.15	.79	.18	189.71	P < .05
Mean level bias of partner's anxiety <i>N</i> = 195	APIM	404.02	81	.13	.88	.06		
	Actor compared with APIM	414.20	89	.13	.88	.07	10.18	P > .05
	Partner compared with APIM	744.33	89	.17	.75	.18	340.31	P < .05
Mean level bias of partner's avoidance <i>N</i> = 195	APIM	415.55	81	.14	.88	.07		
	Actor compared with APIM	448.57	89	.14	.87	.09	33.02	P < .05
	Partner compared with APIM	666.84	89	.17	.79	.16	251.29	P < .05

Note. The 18-item PRQC scale was parceled into 3 indicators by item order. The model comparison columns report the chi-square test (*df* = 8) for the nested comparison of the actor only models and APIM, the partner only models and APIM, respectively, within each set of analyses. *RMSEA* = root mean square error of approximation; *CFI* = comparative fit index; *SRMS* = standardized root mean square residual.

Table 10. Model Comparisons for Cross-lagged Models using DAS.

Set	Model	Model statistics					Model comparisons	
		χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	<i>SRMS</i>	$\Delta\chi^2$	<i>p</i>
Tracking accuracy of partner's anxiety <i>N</i> = 188	APIM	595.36	146	.13	.83	.08		
	Actor compared with APIM	603.54	154	.12	.83	.08	8.18	P > .05
	Partner compared with APIM	714.58	154	.14	.79	.10	119.22	P < .05
Tracking accuracy of partner's avoidance <i>N</i> = 183	APIM	575.28	146	.12	.86	.08		
	Actor compared with APIM	591.87	154	.12	.85	.08	16.59	P < .05
	Partner compared with APIM	687.35	154	.13	.82	.09	112.07	P < .05
Mean level bias of partner's anxiety <i>N</i> = 188	APIM	608.34	146	.12	.85	.08		
	Actor compared with APIM	649.74	154	.13	.84	.09	41.41	P < .05
	Partner compared with APIM	889.22	154	.15	.77	.12	280.88	P < .05
Mean level bias of partner's avoidance <i>N</i> = 183	APIM	588.80	146	.12	.86	.08		
	Actor compared with APIM	687.16	154	.13	.83	.09	98.36	P < .05
	Partner compared with APIM	785.18	154	.14	.80	.11	196.38	P < .05

Note. The 32-item DAS scale was parceled into 4 indicators by subscales. The model comparison columns report the chi-square test (*df* = 8) for the nested comparison of the actor only models and APIM, the partner only models and APIM, respectively, within each set of analyses. *RMSEA* = root mean square error of approximation; *CFI* = comparative fit index; *SRMS* = standardized root mean square residual.

Table 11. Model Comparisons for Cross-lagged Models Using PRQC and DAS.

Set	Model	Model statistics					Model comparisons	
		χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	<i>SRMS</i>	$\Delta\chi^2$	<i>p</i>
Tracking accuracy of partner's anxiety <i>N</i> = 193	APIM	461.81	138	.10	.93	.06		
	Actor compared with APIM	467.55	146	.10	.93	.06	5.74	P > .05
	Partner compared with APIM	584.20	146	.11	.91	.08	122.39	P < .05
Tracking accuracy of partner's avoidance <i>N</i> = 188	APIM	476.87	138	.10	.93	.06		
	Actor compared with APIM	491.94	146	.10	.93	.06	15.07	P > .05
	Partner compared with APIM	589.49	146	.11	.91	.08	97.55	P < .05
Mean level bias of partner's anxiety <i>N</i> = 188	APIM	608.34	146	.12	.85	.08		
	Actor compared with APIM	649.74	154	.13	.84	.09	41.41	P < .05
	Partner compared with APIM	889.22	154	.15	.77	.12	280.88	P < .05
Mean level bias of partner's avoidance <i>N</i> = 183	APIM	588.80	146	.12	.86	.08		
	Actor compared with APIM	687.16	154	.13	.83	.09	98.36	P < .05
	Partner compared with APIM	785.18	154	.14	.80	.11	196.38	P < .05

Note. The 18-item PRQC scale was parceled into 2 indicators by item order; and the 32 DAS scale was parceled into 2 indicators by item order. The model comparison columns report the chi-square test (*df* = 8) for the nested comparison of the actor only models and APIM, the partner only models and APIM, respectively, within each set of analyses. *RMSEA* = root mean square error of approximation; *CFI* = comparative fit index; *SRMS* = standardized root mean square residual.

Table 12. Model Comparisons for Cross-lagged Models Using the Satisfaction Subscales of PRQC and DAS.

Set	Model	Model statistics					Model comparisons	
		χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	<i>SRMS</i>	$\Delta\chi^2$	<i>p</i>
Tracking accuracy of partner's anxiety <i>N</i> = 195	APIM	223.97	81	.09	.95	.05		
	Actor compared with APIM	229.40	89	.09	.95	.05	5.43	P > .05
	Partner compared with APIM	326.92	89	.11	.91	.08	102.95	P < .05
Tracking accuracy of partner's avoidance <i>N</i> = 190	APIM	212.06	81	.09	.95	.05		
	Actor compared with APIM	220.93	89	.08	.95	.06	8.87	P > .05
	Partner compared with APIM	307.55	89	.11	.92	.08	95.49	P < .05
Mean level bias of partner's anxiety <i>N</i> = 195	APIM	243.78	81	.10	.95	.05		
	Actor compared with APIM	260.82	89	.09	.94	.06	17.04	P < .05
	Partner compared with APIM	497.79	89	.14	.86	.11	254.01	P < .05
Mean level bias of partner's avoidance <i>N</i> = 195	APIM	221.10	81	.09	.95	.05		
	Actor compared with APIM	282.59	89	.10	.94	.07	61.49	P < .05
	Partner compared with APIM	408.96	89	.13	.90	.10	187.86	P < .05

Note. The 3-item PRQC satisfaction subscale was averaged to become 1 indicator; the 10-item DAS satisfaction subscale was parceled into 2 indicators by item order. The model comparison columns report the chi-square test (*df* = 8) for the nested comparison of the actor only models and APIM, the partner only models and APIM, respectively, within each set of analyses. *RMSEA* = root mean square error of approximation; *CFI* = comparative fit index; *SRMS* = standardized root mean square residual.

APPENDIX C

FIGURES

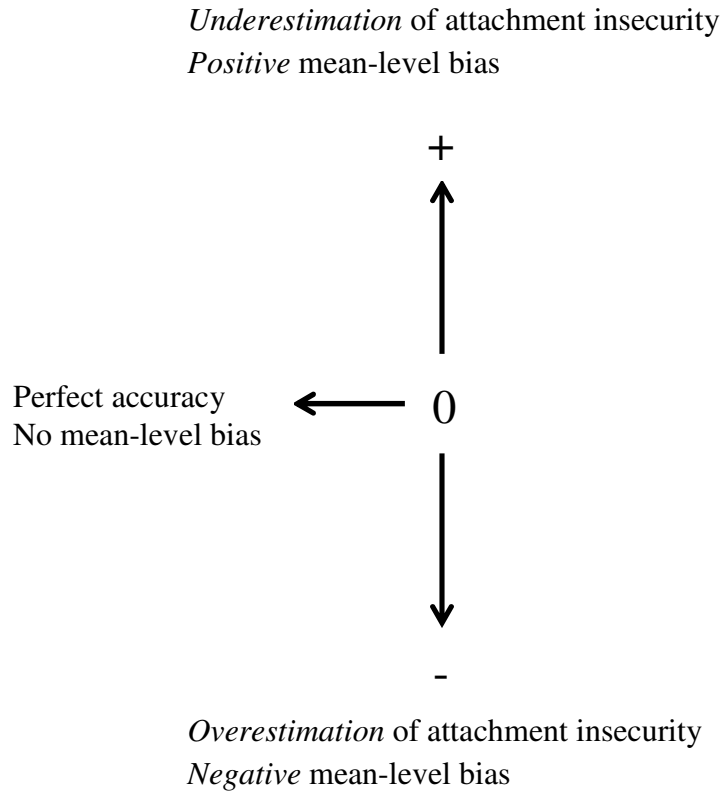


Figure 1. A visual representation of conceptualizing mean-level bias.

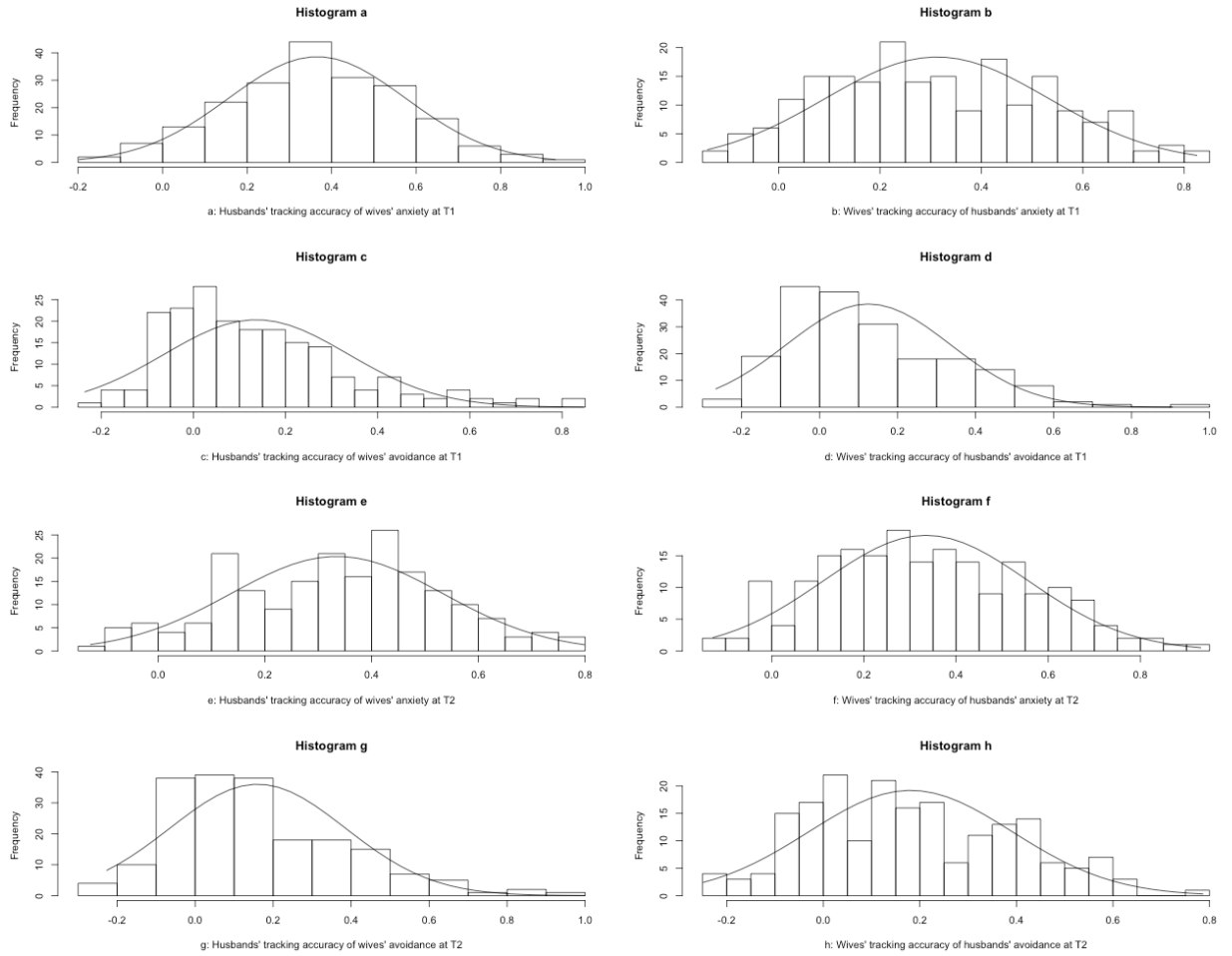


Figure 2. Histograms of husbands and wives' tracking accuracy of attachment anxiety and avoidance at Time 1 and Time 2.

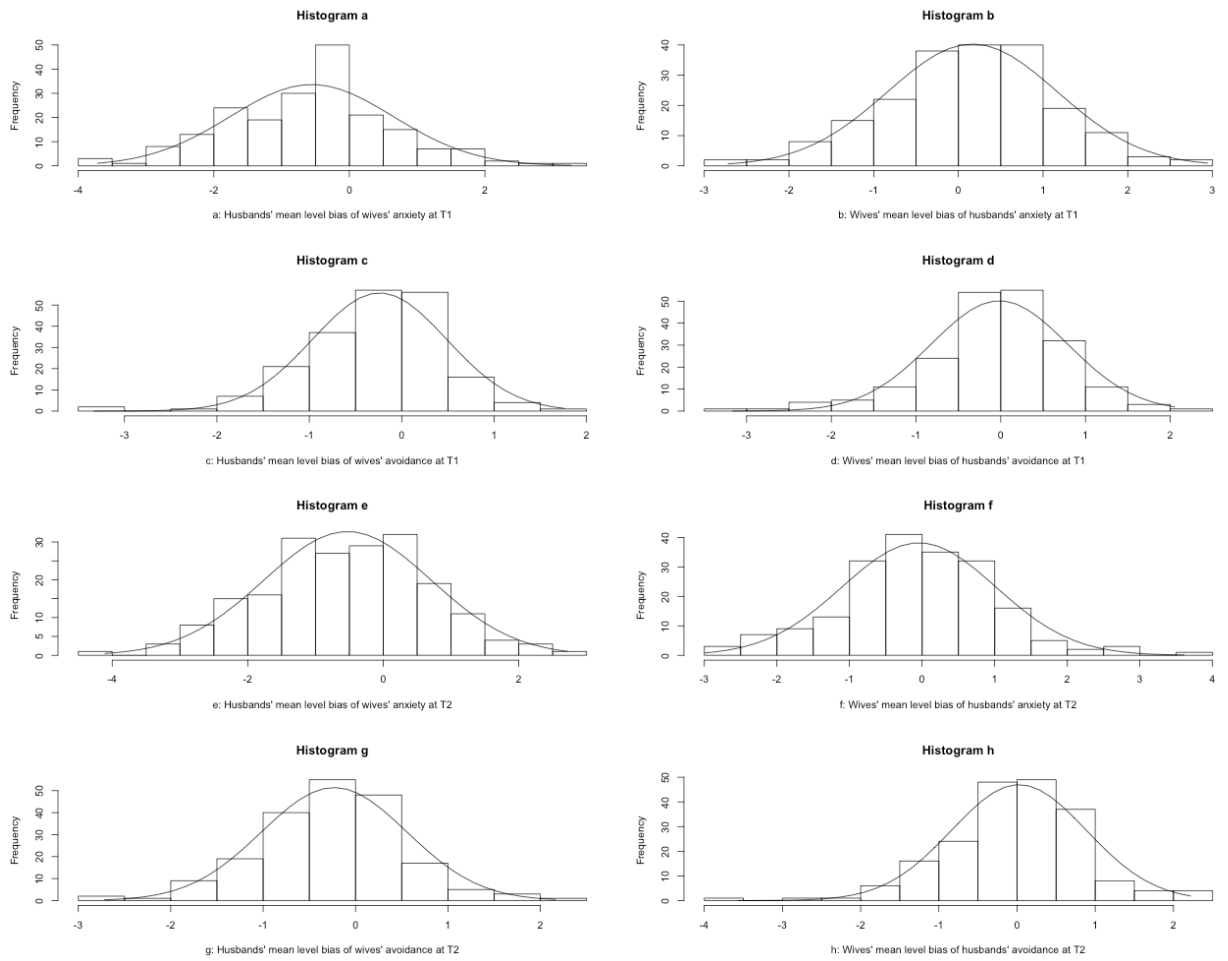


Figure 3. Histograms of husbands and wives' mean level biases of attachment anxiety and avoidance at Time 1 and Time 2.

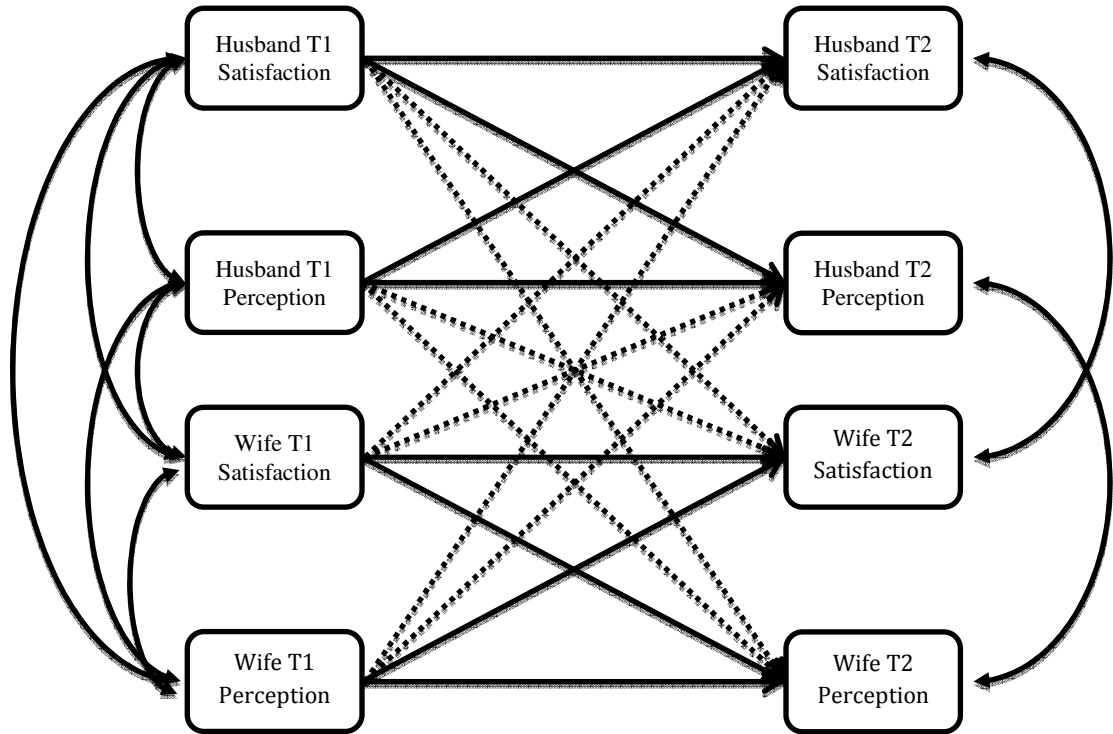


Figure 4. A sample structural cross-lagged model of the relationships between husbands and wives' Time 1 and Time 2 satisfactions and perceptions. All variables presented in the figure are latent variables. To reduce clutter, indicators, error terms, and error covariances have been excluded in the figure. However, all terms were estimated in the analyses.

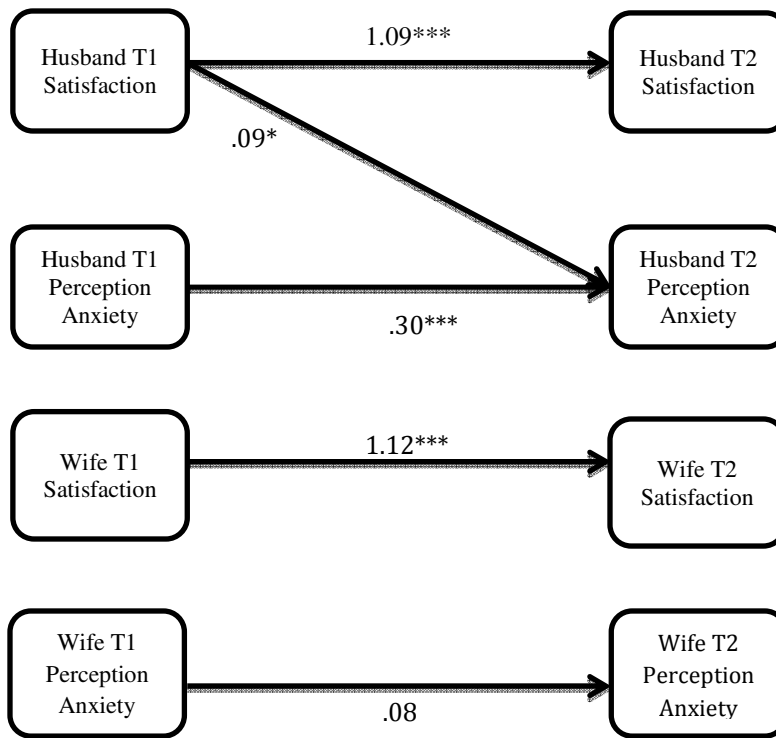


Figure 5. Unstandardized path coefficients between satisfaction and individuals' tracking accuracy of partners' anxiety: Actor only model.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

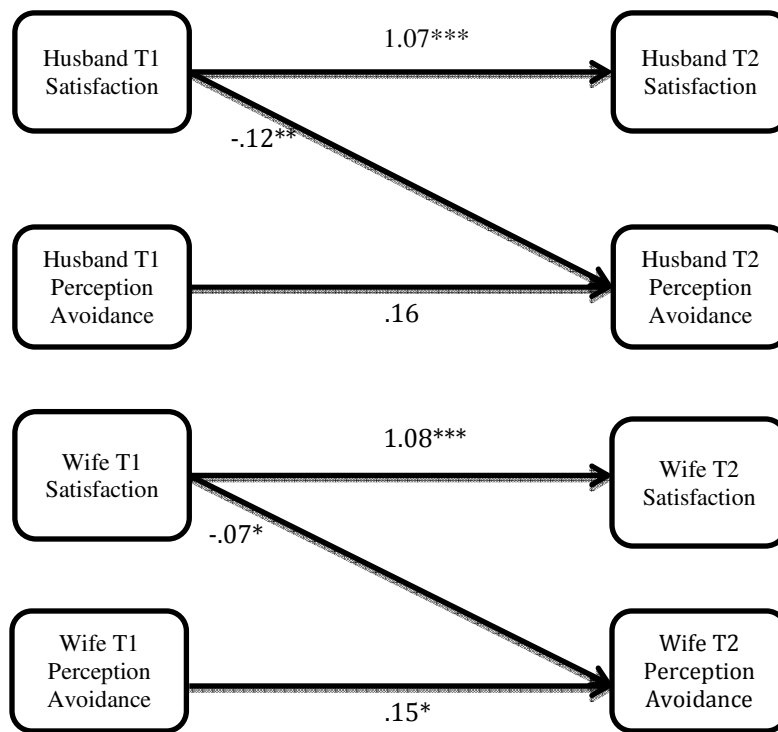


Figure 6. Unstandardized path coefficients between satisfaction and individuals' tracking accuracy of partners' avoidance: Actor only model.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

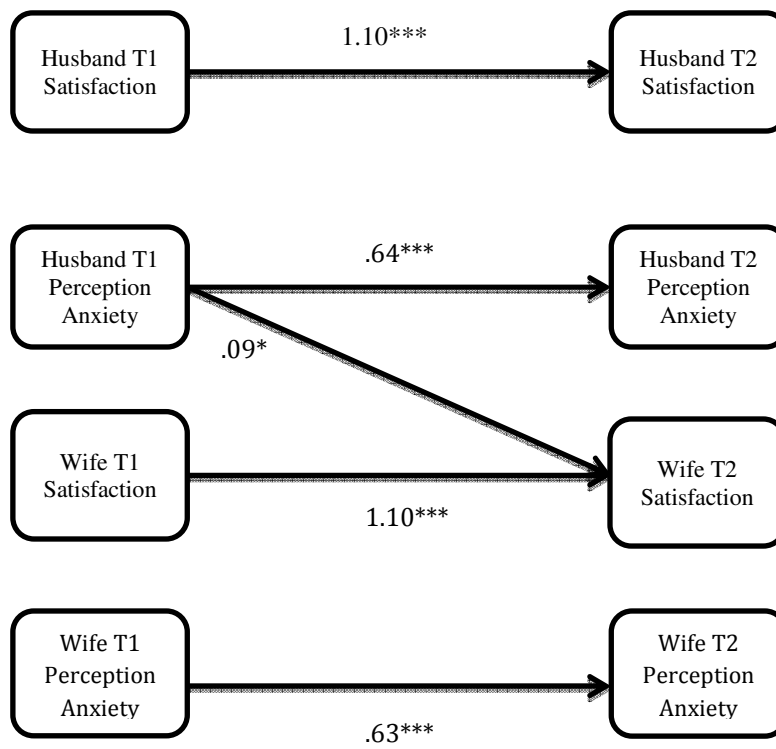


Figure 7. Unstandardized path coefficients between satisfaction and individuals' mean level bias of partners' anxiety: Actor and partner interdependence model.
p* < .05. *p* < .01. ****p* < .001.

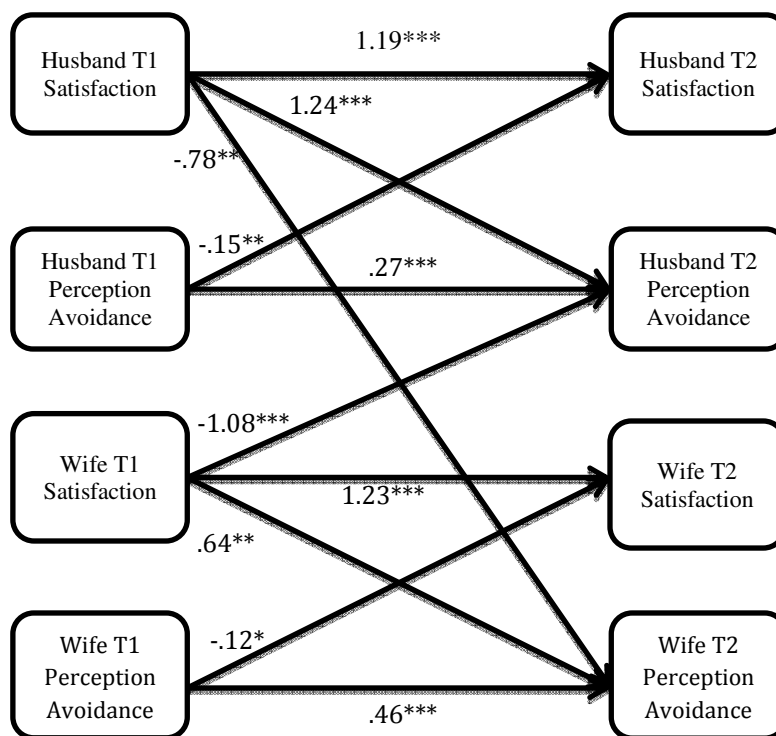


Figure 8. Unstandardized path coefficients between satisfaction and individuals' mean level bias of partners' avoidance: Actor and partner interdependence model.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

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