

When Self-Doubt Sours Sweetness: Low Self-Esteem Undermines Romantic Partners' Sacrifices

by

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Abstract

The partners of people with low self-esteem (LSEs) are just as loving and generous as the partners of people with high self-esteem (HSEs; Campbell, Simpson, Boldry, & Kashy, 2005; Murray et al., 2000). Nonetheless, LSEs persist in underestimating their partners' regard (e.g., Murray, Holmes, & Griffin, 2000). In this research, I propose a model of *attribution inversion*, which predicts that LSEs will invert the positive attributions for a partner's sacrifice that would be predicted by classic theory (Kelley, 1967), because of the risk associated with interpreting a partner's sacrifice too positively. In Study 1, LSEs worried more than HSEs about their partners' sacrifices. In Studies 2 and 3, LSEs experienced more anxiety over a large (but not small) sacrifice relative to HSEs, and attributed less caring motives to their partners. Studies 4 and 5 demonstrated my proposed mechanisms: Offering one's partner an exchange of favors (Study 5)—thereby reducing exchange concerns—or experimentally increasing LSEs' caring attributions (Study 4) eliminated LSEs' tendency to be more cautious than HSEs about their partners' sacrifices, suggesting that exchange concerns and doubts about caring drive LSEs' typical caution. Finally, Study 6 demonstrated that caution is not unique to LSEs. Under a cognitive load manipulation, HSEs were just as cautious, but were apparently able to override that automatic inclination when given sufficient time and resources. Overall, my research suggests that the discounting of a partner's sacrifices is one route by which low self-esteem is self-perpetuating even with a loving partner.

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Introduction

Intimate relationships are typically characterized by trust, commitment, closeness and even partner idealization (Ben-Ari & Lavee, 2007; Marston, Hecht, Manke, McDaniel, & Reeder, 1998; Murray, Holmes, & Griffin, 1996; Parks & Floyd, 1996; Reis & Gable, 2003; Reis & Shaver, 1988). They are usually communal in nature, with partners responding noncontingently to one another's needs rather than expecting immediate reciprocity, a norm that suggests partners care, rather than selfishly desire personal gain (Clark, Lemay, Graham, Pataki, & Finkel, 2010). Further, most couples in the Western world marry for love (Levine, Sato, Hashimoto, & Verma, 1995; Simpson, Campbell, & Berscheid, 1986). Together, these facts strongly suggest that most romantic partners truly care about one another's welfare. Nevertheless, many individuals—including those with low self-esteem—still experience uncertainty about their partners' regard (Lemay & Clark, 2008a; 2008b; Lemay, Clark, & Feeney, 2007; Murray, Holmes, & Griffin, 2000; Murray, Holmes, Griffin, Bellavia, & Rose, 2001; Murray, Holmes, MacDonald, & Ellsworth, 1998). It is not the case that the partners of these uncertain individuals treat them differently from how others are treated; they love them just as much and do just as many generous things for them (Campbell, Simpson, Boldry, & Kashy, 2005; Murray, Holmes, & Griffin, 2000). Why, then, do doubts persist?

A Model of Risk-Based Attribution Inversion

This dissertation attempts to partially answer this question by focusing on one type of generous behavior often seen in romantic relationships—the sacrifice. I define sacrifices as instances when one partner does something of benefit to the other at some personal cost. Specifically, in this set of studies, I examined the perception of sacrifices from the perspective of the recipient partner.

I propose a model to predict the attributions one makes for a partner's sacrifices in the context of a romantic relationship. According to this *attribution inversion model*, when one's partner does something nice (e.g., makes a sacrifice, gives a compliment), it presents an interdependence dilemma—a situation that involves conflicting motives (Holmes, 1991; Lydon, Jamieson, & Holmes, 1997). On the one hand, one is likely motivated to believe one's partner's sacrifice behavior signals connection and closeness, because that would be beneficial to the relationship. On the other hand, one risks the pain of future rejection if one's trust is misplaced (e.g., closeness is associated with greater distress if the relationship ends; Simpson, 1987). Crucially, in the attribution inversion framework, information signaling greater difficulty or cost of a sacrifice will make caring attributions seem riskier because the consequences of a mistake would be larger. If, however, the risk of rejection is (unconsciously) deemed acceptable, the individual will make the correspondent attribution, as predicted by classic attribution theory, that a nice behavior is indicative of positive intentions (Kelley, 1967). By contrast, if the situation or individual risk sensitivity makes the risk seem too great, one will attribute the behavior less to caring motives—not out of certainty that the partner's motives were actually non-caring, but as “insurance” against that possibility.

This model bears some similarity to error management theory (EMT; Haselton & Buss, 2000), a theory of cognitive bias which also deals with the differential weighting of alternatives as a function of risk, or potential cost. According to EMT, the relative cost of false positives (Type I errors) and false negatives (Type II errors) varies by situation, but are rarely equal. For instance, scientists typically consider Type I errors more costly in their work, whereas the makers of smoke detectors consider Type II errors more costly in theirs. The key point of EMT is that natural selection favors a decision-making system that minimizes *costly* errors, even if it

produces more errors overall. Similarly, attribution inversion theory posits that some people—those who are unsure of their partners' regard—will find the cost of making an overly positive attribution for a partner's behavior too great. Therefore, even if reducing the positivity of those attributions results in an error of judgment, it is the more acceptable error. Classic attribution theory, by contrast, is concerned purely with making accurate assumptions; it does not allow for the possibility that one assumption may be riskier than another.

Background: Inferring a Partner's Motivations

Social interaction requires a great deal of mental processing, because a partner's intentions are rarely completely transparent (Fletcher & Kerr, 2010). Thus, constant judgments are necessary to infer a partner's motivations toward the self, a pivotal goal of social life. It is difficult even to imagine a world in which one could not predict others' likely reactions to a gift, a sad story, or a slap; it would certainly be a confusing one. Motivational attributions allow for informed action, rather than guesswork, trial and error (Holmes, 2002), but where does the information used to make predictions come from? According to classic attribution theory, patterns in a person's interactions inform the attributions one makes for that person's behavior. The result is that one can infer that a behavior was shaped by internal forces, such as a disposition or attitude, or external forces, like an aspect of the situation (Heider, 1958; Jones & Davis, 1965; Kelley, 1967). For example, one is most likely to make an internal (probably romantic) attribution for Romeo's proposal to Juliet if one knows that his behavior is distinct to her (he is not proposing to all the girls), that she does not elicit the same behavior from everyone (in which case one might wonder if she were very wealthy), and that his behavior is consistent (he has acted lovingly toward her on other occasions).

Attributions in relationships. Most of the extant research on attributions in romantic relationships has focused on either tracking accuracy, the correlation between one's judgments about a partner's motivations and reality, or bias, the extent to which one is overly positive or negative.

Accuracy. To the extent that attributions are used to shape one's own behavior—should Juliet accept Romeo's proposal?—accuracy is crucial. For instance, making attributions for others' behavior can facilitate goal pursuit, in that we can draw closer to people whose goals are compatible with ours and avoid those whose goals are incompatible (Fitzsimons & Shah, 2008). If accuracy were low, this selection process would not function well. Fortunately, romantic partners demonstrate substantial accuracy in inferring one another's internal characteristics (for a review, see Fletcher & Kerr, 2010). However, it is possible to simultaneously exhibit accuracy and bias in one's judgments, as Fletcher and Kerr discuss at length. To continue the example, Juliet could recognize that Romeo may be influenced by her wealth more than her artistic ability or sewing skills, but still over- or underestimate its impact on his behavior. My dissertation research examines mean-level bias, without denying the existence of between-person accuracy in partners' attributions.

Bias. There is also an extensive literature on causes and consequences of bias in partner attributions. This research typically examines attributions for behaviors of partners whose motivations are quite ambiguous and potentially threatening to the relationship, like behavior during a conflict discussion, or while looking at attractive relationship alternatives (e.g., Pearce & Halford, 2008; Simpson, Ickes, & Blackstone, 1995). We know that distressed couples make more negative attributions for one another's behavior than do non-distressed couples, and that negative attributions are associated with a host of detrimental relationship outcomes, both short-

and long-term (Bradbury & Fincham, 1990; 1992; Fincham & Bradbury, 1987; Fincham, Harold, & Gano-Phillips, 2000; Holtzworth-Munroe & Jacobson, 1985; Waldinger & Schulz, 2006).

It is also clear that individual difference factors associated with a negative model of self—low self-esteem, anxious attachment style, neuroticism, depression—are linked to negative bias. People with those characteristics make more negative attributions (relative to people without them) for their partners' ambiguous behavior and relationship events, especially under relationship-threatening conditions (Bellavia & Murray, 2003; Collins, Ford, Guichard, & Allard, 2006, Study 1; Ford & Collins, 2010; Karney, Bradbury, Fincham, & Sullivan, 1994; Pearce & Halford, 2008; Reis, Clark, & Holmes, 2004; Sümer & Cozzarelli, 2004; Uebelacker & Whisman, 2005). These and other studies (Bradbury, Beach, Fincham, & Nelson, 1996; Fincham et al., 2000) also demonstrate the negative consequences of this sort of bias, from short-term implications for couple communication, cortisol reactivity, and derogation of one's partner, to long-term effects on marital satisfaction.

Self-protection. Some predictors of negative attribution bias may exert their influence via cognitive biases—tendencies to be generally negative or pessimistic. In many cases, however, they may stem from a self-protective motive—that is, a motive to avoid later rejection—by being defensively pessimistic (e.g., by assuming a partner's compliment was a throwaway gesture rather than a signal of sincere attraction; Marigold, Holmes, & Ross, 2007). Ironically, this behavior damages the relationship in the long term. In a relationship, maximizing satisfaction means weighing self-protection concerns against goals to promote the relationship by increasing interdependence (e.g., by trusting the partner's good intentions). Often, these forces act in opposition, so that the very actions that might strengthen the relationship put the individual at risk of rejection (e.g., trusting the partner's good intentions vis-à-vis a compliment could lead

to embarrassment later if the comment is revealed to be a joke; Murray, Holmes & Collins, 2006). Indeed, research has shown that people are very attuned to signals from their romantic partners that may indicate their partners' attitudes and feelings toward them (Holmes, 1981; Murray, Bellavia, Rose, & Griffin, 2003; Overall & Fletcher, 2010).

Self-protection as an individual difference. My model proposes that risk influences the attributions people make for sacrifices, but perceived risk is not an objective quantity, meaning an identical sacrifice will not elicit the same responses from everyone. Who is most likely to opt for a cautious, rejection-prevention strategy, and why?¹ I propose that it is people who are most concerned about being rejected. According to sociometer theory, self-esteem is a gauge that reflects perceptions of others' evaluations of the self (Leary, Tambor, Terdal, & Downs, 1995). Thus, people with high self-esteem (HSEs) generally feel well-regarded by others and, as a result, are not strongly affected by occasional instances of disapproval (Leary & Baumeister, 2000; Sommer & Baumeister, 2002). By contrast, people with low self-esteem (LSEs) are generally less certain of their value to others, and are more motivated than HSEs to avoid further decreases in their relational value, which suggests they may be among the individuals predisposed to adopt rejection-prevention strategies (Forest & Wood, 2012). Indeed, research shows that LSEs feel less well-regarded by their romantic partners than HSEs do, and that LSEs' doubts about their relational value predispose them toward caution in their interactions: They cannot afford to jeopardize their partners' regard, so they are vigilant for signs of rejection from their interaction partners (Forest & Wood, 2012; Murray, Bellavia, et al., 2003; Murray, Griffin, Rose, & Bellavia, 2003; Murray et al., 2000; Murray et al., 2005).

¹ The results of these dissertation studies dictate that I write about this dilemma from the rejection-prevention side, but this should not be interpreted as indicative that relationship-promotion is the default, with rejection-prevention requiring explanation or justification. Indeed, the weighting of the two is exactly the question.

Murray and colleagues' *risk regulation model* describes how self-esteem affects perceptions of and responses to signs of rejection in one's relationships, using a Person × Situation framework (Murray et al., 2006; Murray, Derrick, Leder, & Holmes, 2008). Self-esteem interacts with the risk characteristics of a specific situation to activate a self-protective or relationship-promotive goal. Following a relationship threat (e.g., the appearance that one's partner is unhappy with major aspects of one's character), LSEs act self-protectively, whereas HSEs respond to threat with relationship-promoting behaviors and cognitions (Murray, Rose, Bellavia, Holmes, & Kusche, 2002). Self-protective behaviors typically involve psychological withdrawal from one's partner, a reaction that often involves reduced feelings of closeness to the partner, derogating the partner, and engaging in negative behaviors (e.g., Murray et al., 2008; Murray et al., 2002; Simpson, Rholes, & Phillips, 1996). Relationship-promoting behaviors, conversely, involve drawing closer to one's partner and bolstering the relationship.

The risk regulation model is complicated by the existence of an automatic goal activation system (Murray et al., 2008). In the face of a specific relationship threat, LSEs *and* HSEs automatically activate self-protective goals, which Murray and colleagues assessed using a lexical decision task. The self-esteem difference emerges only on the deliberate performance of those goals (e.g., on self-report or behavioral measures)—once HSEs' executive control can be mustered to override their automatic responses. This finding suggests that HSEs are aware of the risk inherent in a relationship threat, but, unlike LSEs, prioritize relationship-promotion goals over self-protection goals as the best way to combat the threat.

Attributions for Positive Behaviors in Relationships

Research on attributions for a partner's ambiguous or negative behavior abounds—risk regulation studies included—but research on attributions for a partner's positive behaviors are much rarer. The latter represent the focus of this dissertation.

In the context of positive partner behaviors, more specific terminology can be used than that of general attribution theory. Internal attributions can be described more precisely as *caring attributions*, in which the perceiver attributes a behavior to caring motives, such as love. One form of external attributions can be called *instrumental attributions*. An instrumental attribution assumes a behavior was motivated by self-serving desires—for instance, if Juliet believes Romeo proposed because she is rich. I am interested in person and situation factors that influence or bias the attributions people make for their romantic partners' behaviors.

Discounting and augmenting principles. According to attribution theory, before making an internal attribution for behavior, one must weigh the effect of external factors (Kelley, 1973). If external factors facilitate the behavior, one will typically *discount* the extent to which the behavior reflects internal motivations. For instance, several studies have found that people with low self-esteem are sensitive to external factors influencing a partner's compliments and will discount compliments when they believe their partners were unable to be honest or were unwilling to hurt their feelings (Gagné, Khan, Lydon, & To, 2008; Lemay & Clark, 2008a; Stroebe, Eagly, & Stroebe, 1977). By contrast, in situations wherein external factors inhibit the behavior (e.g., Romeo and Juliet's parents' disapproval of their relationship), one should *augment* the internal attribution one makes (if he proposed in spite of the barriers, he must really love her).

With respect to the focus of this dissertation, partner sacrifices, classic attribution theory predicts that a large cost, as a barrier to the sacrifice behavior, should have an augmenting effect

on the perceiver's beliefs. The perceiver should augment the caring attributions she makes about her partner: the larger the sacrifice, the greater the implied caring. If, instead, the partner is promised a benefit in exchange for his sacrifice, the benefit should be perceived as facilitative, in which case the perceiver should discount his caring, making more instrumental attributions instead.

Predictions from the attribution inversion model. According to the attribution inversion model, information about external barriers to a behavior, such as it being a larger or more difficult sacrifice, will indicate interdependence risk. For example, imagine Tamisha, whose boyfriend Earl picked her up from the airport at 4am. Tamisha assumes Earl did it because he loves her, but what if she is wrong? The risk is, first, that Earl might be angry or resentful if he expects reciprocation of his benevolent behavior but does not receive it. Second, Earl may generally feel positively toward Tamisha, but may feel less affection for her than his sacrifice suggests. It is risky for Tamisha to assume more love than is actually present, because ultimately she could be let down or rejected by Earl. In other words, making caring attributions for a partner's behavior carries with it the risk of *upsetting the partner's expectations* and *over-investing in the relationship*. The more difficult the sacrifice was for Earl, the greater the risk of assuming he was motivated by love. If Earl actually expects reciprocation, a larger sacrifice requires a larger payback, causing more resentment if Tamisha fails to reciprocate. Even if Earl does not expect reciprocation but was not motivated by love, Tamisha's unwarranted increase in affection (and the resultant disparity between the partners) is likely to be greater with a larger sacrifice. Thus, whereas classic attribution theory predicts that inhibitory factors—like size or difficulty of a sacrifice—lead to the augmentation of caring motives, I predict that for insecure people to whom self-protection is most important, the inverse will be true. If so, inhibitory

factors will actually lead to discounting—a preference for less caring, more instrumental attributions.

In the opposite scenario, in which a partner's costs are reduced—for example, if Tamisha promises Earl a benefit in exchange for his sacrifice—the benefit should be perceived as facilitating the sacrifice behavior. Classic attribution theory would predict that the perceiver should discount caring motives and make more instrumental attributions instead. Using the attribution inversion model, however, I again predict the inverse: that the promise of an exchange relieves risk-associated worries, and will thus augment one's perception of the partner's caring motives. If true, this process would counterintuitively mean that offering one's partner an instrumental benefit decreases the perception that he or she was motivated by instrumental concerns.

Overview of Current Research

Self-esteem. In this dissertation, personal insecurity is operationalized using a measure of self-esteem. I posit that being cautious when making attributions for a partner's positive behavior represents an important route to self-protection in the face of risk, a route that has not received much prior attention. Because LSEs are more concerned about rejection than HSEs, they should perceive more situations as risky, including those in which their partners behave generously toward them—situations that HSEs might often perceive as benign or even positive. A few studies to date have hinted at the association I propose, though not conclusively. For instance, one study found that insecure attachment predicted perceiving less support in a written message from one's partner (Collins and Feeney, 2004). Another study that looked more specifically at attributions found that individuals high in attachment avoidance perceived benefits from a partner as less voluntarily given (i.e., less motivated by caring; Beck and Clark, 2010). The

authors proposed that avoidants recruited this perception to defend against becoming close to a partner. Although I do not expect LSEs' broader motivations to be the same as avoidants', in that they should not want to avoid closeness generally, their attributions may be similar if they want to avoid being hurt by *unrequited* closeness. Finally, and of greatest relevance, Collins et al. (2006, Study 2) found that anxiously attached individuals in low- (but not high-) quality relationships made more relationship-threatening attributions for positive hypothetical partner behaviors. If one interprets low relationship quality as an indicator of interdependence risk—which seems a plausible leap—this study provides some support for my model of attribution inversion.

As I have discussed above, one way of being cautious in one's attributions is by making attributions for a partner's behavior that do not overemphasize caring. If one assumes one's partner is instrumentally motivated, one is less likely to over-invest emotionally in the relationship. Although the belief itself is unpleasant, the pain of it may be small compared to the pain of rejection. Thus, I argue that non-caring attributions are motivated by a desire to protect oneself from rejection. Because of their doubts about their partners' regard, I expect caution to be more evident in LSEs' behavior than in HSEs'. However, in accordance with Murray et al. (2008), I expect that HSEs as well as LSEs will automatically activate self-protective goals, but HSEs, unlike LSEs, will subsequently override those goals in favor of relationship-promoting behavior.

In the current studies, my goal was to demonstrate that a positive behavior, even one as relatively unambiguous as a partner doing something kind for the self, presents a risk, particularly for people high in personal insecurity (those with low self-esteem). I hypothesize that:

- large sacrifices are perceived as riskier than smaller ones, especially by LSEs
- when people perceive a (large) sacrifice as risky, they will exhibit caution by making less caring, more instrumental attributions, violating the correspondent attribution principle
- this tendency is driven by uncertainty about the partner's motivations, which drives an unwillingness to risk over-investment and upsetting their partners' potential exchange expectations
- HSEs unconsciously experience the same concerns as LSEs, but typically override and do not act on them. If unable to correct the impulse, they will exhibit the same cautious behavior as LSEs

Variables of interest. Across six studies, I addressed these hypotheses by examining several related variables, including:

Attributions. Foremost, I examined the attributions people made for their partners' sacrifice behaviors—specifically, the extent to which they attributed sacrifices to the partners' caring. Sacrifices that are perceived as risky should motivate individuals to self-protect. Thus, according to my attribution inversion model, LSEs (who are vigilant for risk) should more readily attribute a partner's sacrifice to his or her caring when it is small than when it is large.

Caution in making attributions. Similarly, I hypothesize that people who prioritize self-protection over relationship-promotion will be less likely than others to attribute their partners' sacrifices to caring. In two studies, participants indicated their preference for caution (vs. assuming caring motives) when making causal attributions for their partners' behavior.

Exchange beliefs. To the extent that one attributes a partner's sacrifice to less caring motives, instrumental attributions must take their place. In the case of a sacrifice, the most

plausible instrumental attribution is that the partner is using a norm of exchange rather than communality, and expects something in return (Clark & Mills, 1979). I assessed beliefs about an exchange norm directly in three studies, and manipulated promise of an exchange in one.

Anxiety. After receiving a sacrifice that raises concerns about one's value to the partner and makes one feel indebted, LSEs should experience some anxiety. Indeed, previous studies have demonstrated that insecure people feel anxious when partners or potential partners use communal norms, because such norms raise issues about the partner's regard (Bartz & Lydon, 2006; 2008). I examined affect, both self-reported and implicit, in one study.

Significance of partner's behavior. If a behavior is motivated by instrumental rather than caring concerns, it is almost by definition less significant to the growth of one's relationship. In one study I addressed this hypothesis directly by examining participants' reports of the significance of their partners' behavior. I predicted that, paradoxically, the risk associated with a larger sacrifice would motivate LSEs to see it as less significant.

Current studies. Study 1 explored whether LSEs experience more worry than HSEs about their partners' sacrifices, and whether this a) has negative consequences for their satisfaction with the sacrifice, and b) motivates them to perceive their partners as instrumentally motivated.

Classic attribution theory states that inhibitory factors, like the difficulty or unpleasantness of a task, should strengthen internal attributions—if the target performed the behavior anyway, the behavior is particularly indicative of intrinsic motivation (Kelley, 1967). In relationship-specific terms, making a larger sacrifice should provide particularly strong evidence of caring. However, I argue that for LSEs, the evidence of caring is offset by the increased risk associated with a larger sacrifice. Thus, according to my predictions, LSEs would *not*

demonstrate Kelley's augmenting principle, but instead, would self-protectively make more negative attributions for their partners' behavior (Study 2), and experience anxiety (Study 3).

Studies 4 and 5 explored the mechanism behind the predicted phenomenon. In Study 4, I experimentally manipulated perceptions of partner caring and examined whether this would eliminate self-esteem differences in caution in making attributions, such as the self-reported significance of the partner's positive behavior. If the manipulation has the predicted effect, it would suggest that general perceptions of partner caring mediate the association between self-esteem and attributions. Study 5 focused on the other risky aspect of a sacrifice—the possible inability to repay one's partner—by manipulating exchange in a hypothetical sacrifice situation. Again, my predictions differed from those of classic attribution theory, which would view promising one's partner an exchange of favors as a clear facilitative cause, thereby reducing caring internal attributions for the behavior (Kelley, 1967). Although I expected HSEs to follow the discounting pattern predicted by attribution theory, such that an exchange would sway them toward more instrumental, less caring attributions, I predicted the opposite for LSEs. According to my model, LSEs are focused on the risk inherent in the situation, rather than the causal information provided by the exchange. Thus, I predicted that an exchange would reduce their cautious tendencies and actually enable them to make more caring attributions for their partners' behavior—it would give them “psychological cover” so that they would not have to entertain their anxieties.

In Studies 1-5, I predicted that higher self-esteem would buffer individuals against the perils of seeing risk in a partner's sacrifice, allowing them to accept it gracefully. None of these studies, however, address the question of whether HSEs ever feel the need to self-protect in the face of partner sacrifice. Research on risk regulation has shown that, when confronted with

threats to their relationships, HSEs' automatic tendency is to self-protect, the same as LSEs (Murray et al., 2008). Unlike LSEs, however, with time and mental resources, HSEs will override their automatic tendency and engage in relationship-promoting behaviors instead. Using a manipulation of cognitive load, Study 6 investigated whether HSEs undergo this override process following a partner sacrifice. I predicted their automatic self-protective tendencies would be seen when they completed the study under a cognitive load manipulation, but when the load was reduced, those tendencies would be overridden.

Study 1: Thoughts and Behaviors Associated with Partner Sacrifices

In this exploratory, correlational study, I investigated the possibility that self-esteem predicts reactions to a partner's sacrifice—a generous act the partner made at some cost to him- or herself. As outlined in the introduction, I believed LSEs would feel uncertain about which thoughts and feelings—caring or otherwise—motivated their partners' sacrifices.

Foremost, I predicted that LSEs would report having worried more than HSEs about their partners' reactions to being asked for a sacrifice. For instance, LSEs might have concerns that their partners would feel resentful or angry. Second, I predicted that this worry would mediate an association between self-esteem and reduced satisfaction with the outcome—their partner's performance of the request. Finally, I predicted worry would also increase LSEs' reliance on exchange strategies when making their initial request because an exchange represents a form of “insurance” for LSEs, against the possibility that their partners are instrumentally motivated.

Method

Participants. One hundred twenty-six undergraduate psychology students who were in a romantic relationship participated online (64 female, 57 male, 5 unspecified). Mean age of the sample was 19.7 years ($SD = 2.1$). Forty-nine percent of the sample identified their ethnicity as European, 34 percent as East Asian, 5 percent as South Asian, and the rest other ethnicities. Most participants (88%) were in dating relationships, with the remainder engaged and/or cohabiting (11%), or married (1%). The average relationship length was 20.0 months ($SD = 17.9$), and average quality (a composite of satisfaction and commitment, described below) was 5.89 on a 9-point scale ($SD = 0.94$).

I excluded four male participants: two who said they had never asked for anything from their partners, and two who did not describe a scenario in which they asked for something specific from their partners. Participants received course credit as compensation for their time.

Materials and procedure. The questionnaire first assessed participants' trait self-esteem, using the 10-item Rosenberg (1965) Self-Esteem Scale ($\alpha = .92$; e.g., "I am a person of worth, at least on an equal basis with others"). Participants indicated their response using a 9-point Likert scale, anchored at 1 (*strongly disagree*), and 9 (*strongly agree*).

Participants next indicated the length and type (e.g., dating, married) of their relationship, and completed a 4-item measure of its quality, which tapped their satisfaction (e.g., "I am extremely happy with my current romantic relationship") and commitment (e.g., "I am very committed to my relationship"). The scale ranged from 1 (*strongly disagree*) to 9 (*strongly agree*). Cronbach's α was .89.

Participants were then given the following instructions for remembering a sacrifice their partners had made:

Please remember a recent time (in the last week or two) when you wanted something from your partner. This could be any number of things: for instance, wanting your partner to go somewhere with you, to do something for you, to stop doing something you don't like, to help you with something, and so on.

You can write about anything you wanted from your partner, as long as you made *some sort of attempt* (however large or small) to get it. Please do not write about something you wanted but never acted on. Below, please describe what you wanted from your partner, in as much detail as possible.

Participants then indicated how long ago the event occurred ($M = 2.2$ weeks, $SD = 5.9$ weeks).

They were then asked, in open-ended format, to describe their approach(es) to getting what they wanted from their partner, and why they chose to approach it that way. Their responses were coded by four undergraduate students (two female, two male), who assessed how reasonable the

participants' requests seemed using a three-item scale (ICC = .74; scale α = .89; e.g., "Given whatever context the participant provided, to what extent did whatever he or she wanted seem reasonable to you?"; for a complete list of items, see Appendix C), and the strategies used. In particular, coders indicated the participants' use of exchange strategies (ICC = .75; "To what extent did the participant indicate that they thought the partner would expect something in return?")². All ratings were made on a 7-point Likert scale anchored at 1 (*not at all true of this statement*) and 7 (*extremely true of this statement*). Coders were blind to the study's hypotheses.

After the open-ended questions, participants then responded to two closed-ended items intended to assess their exchange strategies ("To what extent did you promise to do something for your partner in return?" and "To what extent did you offer your partner some kind of favor (e.g., a treat or 'bribe')?"). Ratings were made on a 9-point Likert scale anchored at 1 (*not at all*) and 7 (*very much*). Cronbach's α was .78.

Next, participants were asked, using the same 9-point Likert scale, to report on their thoughts when they were thinking about how to influence their partners' behavior. Four of five items focused on various worries they might have (e.g., "I worried about whether my partner would do what I wanted"), and one assessed the possibility that they experienced no worry ("I didn't think too much about it at all"). Cronbach's α was .76.

I was also interested in the outcome of participants' requests for a sacrifice from their partners. Thus, I asked them to indicate the truth of the statement "My partner did exactly what I wanted," on a 9-point Likert scale anchored at 1 (*not at all true*) and 9 (*very true*), and I administered a six-item measure of satisfaction with their partner's behavior in response to their

² In both the open- and closed-ended sections of the questionnaire, strategies were additionally assessed along two axes, positive versus negative and direct versus indirect (Overall, Fletcher, Simpson, & Sibley, 2009). Analyses of direct versus indirect and positive versus negative strategies (on both sets of measures) yielded no results relevant to my hypotheses, and will not be discussed further.

request ($\alpha = .94$; e.g., “I felt happy with the response from my partner”; for a complete list of items, see Appendix D). These items were rated on a 9-point scale ranging from 1, *strongly disagree*, to 9, *strongly agree*.

Finally, participants indicated their age, gender, and ethnicity.

Results

Except where otherwise indicated, all regression analyses were univariate, with mean-centered self-esteem as the predictor. Degrees of freedom vary slightly among analyses because participants were allowed to skip individual items. I retained as many data points as possible for each analysis.³

Reasonableness. No significant self-esteem difference emerged on the coders’ ratings of the reasonableness of participants’ requests, $\beta = 0.05$, $t(114) = -0.53$, $p = .60$.

Worry. I examined the five worry items individually. Results are presented in Table 1. As the table shows, LSEs exhibited more worry across the board than HSEs, with the exception of one item: Self-esteem did not significantly predict worry about whether the partner would do what the participant wanted.

Table 1
Main Effects of Self-Esteem for Individual Worry Items in Study 1

<i>Item</i>	B	<i>t</i> (120)	<i>p</i>
I worried about whether my partner would do what I wanted.	-0.14	-1.49	.14
I was afraid my partner would react badly (e.g., get angry).	-0.35	-4.06	< .001
I worried that my partner would do what I wanted, but secretly resent it.	-0.37	-4.31	< .001
I was worried that I would ‘owe’ my partner if he or she did what I wanted.	-0.23	-2.61	.01
I didn’t think too much about it at all.	0.22	2.47	.02

³ Gender did not consistently moderate the effects found in any of the studies. Consequently, I do not discuss gender further.

Partner compliance. There was no significant effect of self-esteem on participants' reports of the extent to which their partners complied with their wishes, though the trend was for HSEs to say their partners complied more than LSEs did, $\beta = 0.14$, $t(119) = 1.55$, $p = .12$.

Outcome satisfaction. There was a main effect of self-esteem on satisfaction with the outcome of the request, such that higher self-esteem predicted more satisfaction with their partners' behavioral response, $\beta = 0.18$, $t(120) = 2.01$, $p < .05$.

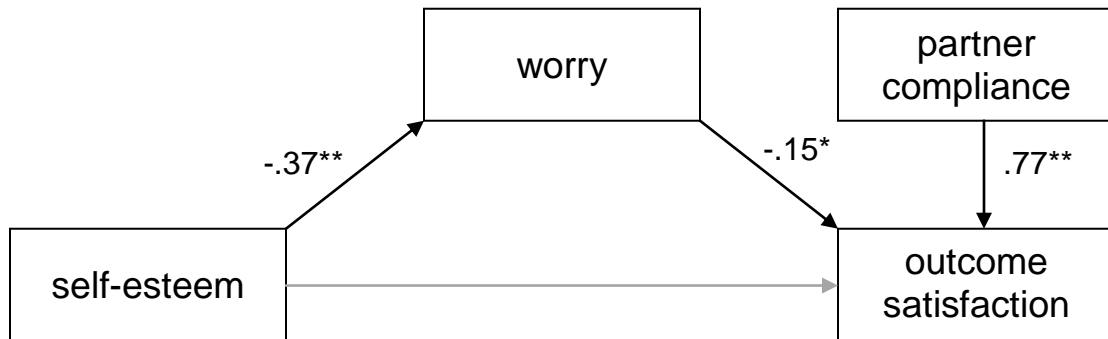
Use of exchange strategies. Scores on the two-item exchange strategy composite were negatively predicted by self-esteem, $\beta = -0.20$, $t(120) = -2.26$, $p < .03$; LSEs were more likely than HSEs to report offering an exchange to facilitate getting what they wanted. Coders' ratings of exchange strategies were not predicted by self-esteem, $\beta = 0.04$, $t(120) = 0.45$, $p = .65$, suggesting that participants did not freely recall using these strategies, but remembered them when prompted. One possible explanation is that participants did not want to admit their use of exchange strategies until they read a question that "legitimized" them.

Mediation. I tested worry as a mediator of the association between self-esteem and outcome satisfaction, and between self-esteem and use of exchange strategies. To do so, I averaged the five worry items (with the last item reverse-coded) to create a composite. For each test, I conducted a bootstrap analysis with 5000 iterations, using self-esteem as the predictor variable, and the five-item worry composite as the mediator.

Self-esteem to outcome satisfaction. In this analysis, the six-item measure of outcome satisfaction was entered as the dependent variable. The standardized indirect effect was significant, $p < .001$, with a 95% confidence interval of (0.064, 0.224), such that self-esteem negatively predicted worry, which in turn negatively predicted satisfaction with the partner's

response. This indirect effect held true even if partner compliance with the participant's request was held constant, $p < .01$ (C. I. = 0.014, 0.118).

Figure 1. Worry mediates the association between self-esteem and outcome satisfaction in Study 1, controlling for partner compliance.

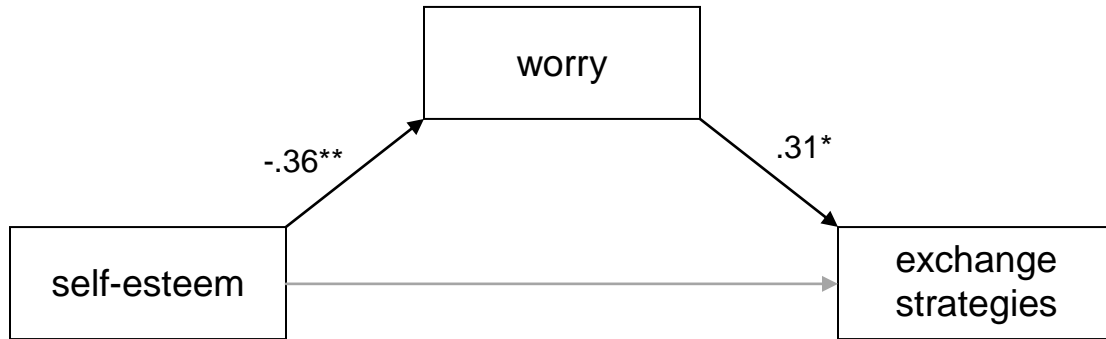


Note. Path coefficients are presented in standardized form. Non-significant paths are shown in grey and corresponding path coefficients are omitted.

* $p < .03$, ** $p < .001$

Self-esteem to use of exchange strategies. In this analysis, the two-item measure of exchange strategies from the closed-ended section of the questionnaire was entered as the dependent variable. The standardized indirect effect was significant, $p < .002$, with a 95% confidence interval of (-0.209, -0.046), such that self-esteem negatively predicted worry, which in turn positively predicted reported use of exchange strategies.

Figure 2. Worry mediates the association between self-esteem and use of exchange strategies in Study 1.



Note. Path coefficients are presented in standardized form. Non-significant paths are shown in grey and corresponding path coefficients are omitted.

* $p < .003$, ** $p < .001$

Discussion

These results suggest that there are differences in how LSEs and HSEs request and respond to their romantic partners' sacrifices. In keeping with hypotheses, LSEs reported feeling more worry than HSEs about whether their partners would react badly or resent them, and whether they would owe their partners. This finding aligns with my assertion that receiving a sacrifice can be perceived as a risk. HSEs, conversely, reported less of a tendency to think about their partners' reactions before asking. Interestingly, the self-esteem difference in worry about *whether* their partners would do what they wanted was non-significant, suggesting that getting what they wanted was less important to LSEs than staying in their partners' good graces. In addition, LSEs' worries were associated with a tendency to be less satisfied with the outcomes of their requests, and to use offers of exchange to achieve their goals.

Because this study was correlational, I must acknowledge the possibility of a third-variable or reverse-causality explanation for the findings of mediation. It is also possible that LSEs possess a general tendency toward negativity that makes them more prone to worry and be

unsatisfied with their partners' behavior. Although I find it unlikely that such a tendency could also account for their greater use of exchange strategies, later studies use experimental manipulation to better rule out this alternative, as well as problems associated with interpretation of the mediation analysis.

A more significant limitation of this study is its reliance on solicited sacrifices—requests participants made of their partners. It could certainly be the case that asking for a sacrifice entails a greater risk—and thus, greater worry and more behaviors designed to reduce it—than simply accepting one offered spontaneously because a non-caring interpretation is more likely. For instance, one's partner may have complied because she felt coerced, or perceived the request as a favor, not because she cared about the self. On the basis of this study alone, it is not possible to say whether spontaneous sacrifices would elicit the same concerns for LSEs, however, Studies 2 through 6 employ unsolicited sacrifices.

Study 2: Effects of Sacrifice Size on Attributions

Study 1 provides initial evidence of the role of self-esteem in the interpretation of a partner's sacrifices. However, its design was correlational, so it remains possible that the sacrifices experienced or remembered differed in some way as a function of self-esteem. In Study 2, I held the broad details of the sacrifice constant, while manipulating its size. I accomplished this by having all participants imagine the same sacrifice, typical of those recalled in Study 1.

In this experiment, I additionally tested the idea that LSEs would have a lower threshold than HSEs for what constitutes a risky sacrifice. Classic attribution theory would predict that the size of a sacrifice is straightforwardly diagnostic of the strength of the partner's caring (Kelley, 1967). By contrast, my model of attribution inversion states that the size or difficulty of a sacrifice increases its risk, to which LSEs are more vigilant than HSEs. Thus, I hypothesized that participants' level of self-esteem would predict responses to a large versus small sacrifice—specifically, that LSEs would be less willing than HSEs to attribute a large sacrifice to caring motives, but no difference would emerge for a small sacrifice.

Method

Participants. Ninety-two undergraduate students participated in the student center at the University of Waterloo (50 female, 40 male, and 2 unspecified). Mean age of the sample was 21.1 years ($SD = 4.5$). Fifty-seven percent of the sample identified their ethnicity as European, 14 percent as East Asian, 11 percent as South Asian, and the rest other ethnicities. Participants were recruited when they approached a table in the student center, with a sign advertising for participants in romantic relationships. Most participants (83%) were in dating relationships, but a

few were engaged or cohabiting (11%), or married (3%). The remainder specified their relationship type as ‘other.’ The average relationship length was 27.6 months ($SD = 40.2$).

I excluded three participants from the original sample: one male whose answers exhibited a response set, and one male and one female who skipped large sections of the questionnaire. This left us with a final sample of 89.

Materials and procedure. When participants signed up for the study, they were given the questionnaire packet, which they were able to complete at their leisure in the student center. They received a chocolate bar when they returned the packet.

Participants first completed the measures of trait self-esteem and relationship quality ($M = 6.99$, $SD = 1.66$) used in Study 1, then read one of two hypothetical scenarios; condition was assigned randomly. In the *small sacrifice condition*, participants read:

Imagine that it is a Friday evening and you and your partner have decided to spend it together. The two of you decide to go out for dinner, but it soon becomes apparent that you don’t agree on where to go. You want to try a new place, somewhere you haven’t eaten before, but your partner doesn’t feel like taking the risk of it not being good and would rather go somewhere familiar. In the course of the discussion, things become a little heated, as both of you profess not to ‘really care’ where you go, but neither wants to give in. You’re both trying to keep it polite, to avoid ruining your evening together. After a few minutes of this, your partner says, “I’m hungry, so why don’t we just go to the one you want.” The two of you head out to your chosen restaurant.

In the *large sacrifice condition*, the first paragraph was replaced with the following:

Imagine that it is a Friday evening and you and your partner have decided to spend it together. The two of you decide to go out for dinner, but it soon becomes apparent that you don’t agree on where to go. You want to try a new place recommended by a friend of yours. It’s somewhere you haven’t eaten before and *it costs quite a bit more than two of you usually spend, with food a little outside your partner’s preferences*. Several people have told you that it’s a really fun place and you want to go there, but your partner doesn’t feel like taking the risk of it not being worth the price and would rather go somewhere familiar. [emphasis added]

After reading the scenario, participants were asked to imagine it as vividly as they could, and describe it in a few lines. This was to ensure their involvement in the scenario, to make it as real as possible.

Next, participants responded to four items assessing the positivity of the attributions they made for their partner's hypothetical sacrifice ($\alpha = .39^4$; e.g., "My partner's behavior shows that he or she really cares for me"; "My partner probably agreed in order to avoid an argument" – reverse-scored; for a complete list of items, see Appendix E). More positive scores indicate a willingness to make caring attributions for a partner's behavior. Conversely, less positive scores indicate greater emphasis on instrumental attributions. Responses to all of these items were made on a 9-point Likert scale anchored at 1 (*strongly disagree*) and 9 (*strongly agree*).

Lastly, participants indicated their age, gender, and ethnicity.

Results

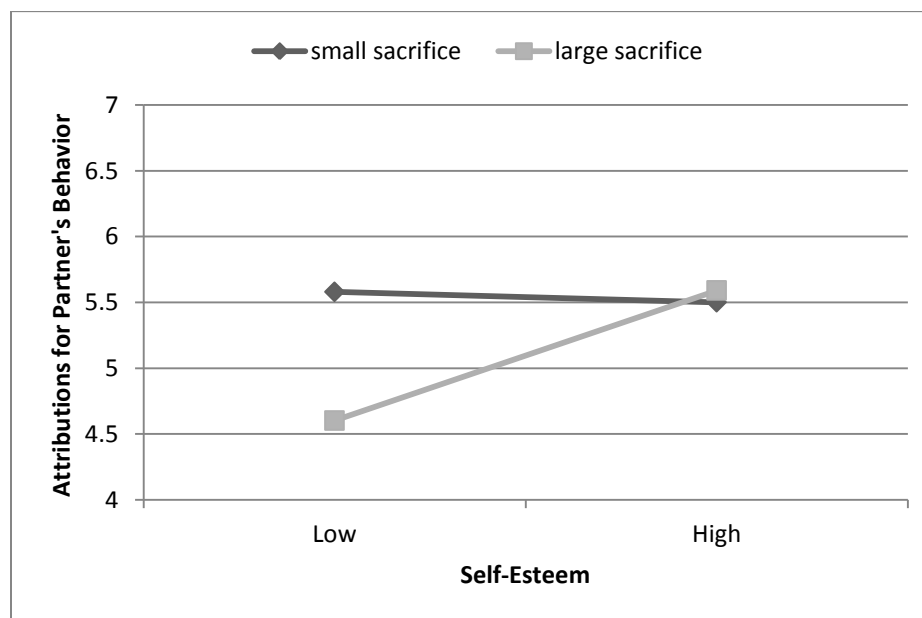
I conducted a regression analysis with weighted effect-coded condition and mean-centered self-esteem entered on Block 1, and the Condition \times Self-Esteem interaction entered on Block 2. The interaction was marginally significant, $\beta = 0.26$, $t(85) = 1.92$, $p < .06^5$. As predicted, in the large sacrifice condition, having lower self-esteem was associated with making less caring attributions for the partner's sacrifice, $\beta = 0.38$, $t(85) = 2.27$, $p < .03$, but in the small sacrifice condition, no self-esteem effect emerged, $\beta = -0.03$, $t(85) = -0.23$, $p = .82$. Counter to attribution theory's augmentation principle, but in line with my model, individuals with low self-

⁴ In Study 2, the scale reliability for the attributions measure was low. In later studies, I added more items, including items specific to the context of each study, and with the exception of Study 5, the low value does not replicate. However, low reliability attenuates the chance of finding an association; it does not lead to false associations (e.g., Sechrest, 1984).

⁵ In this analysis and those of Studies 3-6, it is important to consider that the predicted interaction is of one mean differing from three, which ANOVA does not test (Bobko, 1986). Thus, an occasional failure to achieve significance on the omnibus test is not surprising, and the reader should look to the planned simple effects tests as a better indication of significance.

esteem (assessed at one standard deviation below the mean) made *less* caring attributions for their partners' behavior in the large sacrifice condition than in the small sacrifice condition, $\beta = -0.38$, $t(85) = -2.52$, $p < .02$, whereas individuals with high self-esteem (assessed at one standard deviation above the mean) made equally caring attributions in both conditions, $\beta = 0.04$, $t(85) = 0.24$, $p = .81$.

Figure 3. Attributions as a function of Condition \times Self-Esteem in Study 2.



Note. Higher numbers indicate more caring attributions for a partner's behavior. Self-esteem is treated as a continuous variable. Low and high self-esteem correspond to ± 1 SD from the mean, respectively.

Discussion

These results support my hypothesis that LSEs have a lower threshold than HSEs for perceiving sacrifices as risky. LSEs, but not HSEs, attributed their partners' large sacrifices to less caring motives than their small sacrifices. I interpret this tendency as self-protective, in that

interpreting a sacrifice as less motivated by caring reduces the risk of being hurt later by the pain of rejection.

The findings of this study are limited by the imaginations of its participants because of its reliance on a hypothetical scenario. Perhaps participants are unable to accurately imagine their responses to the sacrifice described, although I find it unlikely that this could produce the interaction I observed. Nonetheless, in Study 3 I examined sacrifices that participants experienced as real. In addition, the design of Study 3 returns to the mechanism described in Study 1—participants' worry or anxiety about their partners' reactions—in the context of a real sacrifice and anxiety reaction.

Study 3: Effects of Self-Esteem and Sacrifice Size on Anxiety

In this study, my goal was to replicate Study 2 using a real, rather than imagined, sacrifice. To this end, I created a situation in the lab in which participants were led to believe their partners had made a sacrifice of their time on the participant's behalf. I examined participants' attributions for that sacrifice, as well as two indicators of affect: explicit affect items, and a measure of physical symptoms of anxiety which, although also self-reported, provided a relatively nonconscious measure of worry. The inclusion of the latter allows me to form conclusions about participants' anxiety with greater confidence than I could with self-report affect items alone, because self-report is susceptible to demand characteristics and social desirability concerns.

I hypothesized that the attributions measure would replicate Study 2, such that self-esteem would positively predict caring attributions for the large, but not the small, partner sacrifice. To the extent that a sacrifice is interpreted as risky, it should also entail a degree of anxiety (Bartz & Lydon, 2008). Thus, I predicted that self-esteem would negatively predict anxiety on both the explicit and nonconscious measures following a partner's large, but not small, sacrifice. The affect measure also included items assessing positive emotions, for which I had no specific predictions.

Method

Participants. Seventy-nine undergraduate psychology students participated in the lab (44 female, 34 male, 1 unspecified). Mean age of the sample was 19.9 years ($SD = 2.7$). Fifty-six percent of the sample identified their ethnicity as European, 22 percent as East Asian, 10 percent as South Asian, and the rest other ethnicities. Participants signed up for the study online, and were eligible to participate only if they were in a romantic relationship and their partners were

willing to complete a brief online survey. Most participants (81%) were in dating relationships; the rest were engaged and/or cohabiting (15%), or married (4%). The mean relationship length was 19.3 months ($SD = 17.4$). This sample was, on average, younger and in shorter relationships than the other student samples in this dissertation because participants were recruited primarily from the introductory psychology course. This study included deception, and more experienced students might have been more suspicious.

In spite of these precautions, I had to exclude five participants (3 female, 2 male) who were suspicious about their partner's involvement in the study. This left a final sample of 74.

Materials and procedure. Before their arrival, participants were randomly assigned to the large sacrifice or small sacrifice condition. All study measures, except where otherwise indicated, were filled out on the computer. Participants first completed measures of trait self-esteem and relationship quality ($M = 7.21$, $SD = 1.38$).

Participants then encountered a questionnaire entitled 'Frequency of Behaviors,' with items assessing mundane behaviors undertaken with their partners (e.g., "How often do you and your partner order take-out?"; "How often do you and your partner check the weather together?"; for the complete questionnaire, see Appendix F). In the large sacrifice condition, this questionnaire was lengthy, with 200 items. It appeared that this questionnaire had to be completed by the participant like any other. However, after answering only the first 20 questions, a pop-up message appeared, asking the participant to stop and get the research assistant. The assistant then explained (falsely) that the partner, rather than completing just his or her own questionnaire, opted to complete the entire 200-item questionnaire so the participant would not have to. The assistant expressed amazement, because although "all partners have the option, none have ever done it before." The research assistant then explained that there was a 'special

questionnaire' for this situation, and took about 30 seconds pretending to search for the paper questionnaire to give the participant. Dependent measures directly related to the partner's sacrifice were on this paper questionnaire, to allay suspicion about why the questions were being asked. These included a manipulation check—to ensure participants understood what the research assistant told them about their partners' participation—and the attributions measure. The latter included three items from Study 2 (all but the item “My partner probably agreed because he or she didn't care as much about going to a familiar restaurant as I thought”, which does not make sense in this context), plus 2 additional items with the stem “My partner probably agreed because he or she...”: “values me highly,” and “was bored,” a new context-specific item to replace the restaurant item. Cronbach's α for the five-item scale was .63.

In the small sacrifice condition, the 'Frequency of Behaviors' questionnaire was only 20 items long. Participants were afterward given the same paper questionnaire, and were cued to fill it out with regard to their partner's participation in the study (the partner having completed the brief online questionnaire).

The remainder of the measures were administered via computer. Participants completed a six-item self-report measure of affect following the sacrifice. Three items assessed anxiety ($\alpha = .73$; *uneasy, anxious, guilty*) and three assessed positive emotions ($\alpha = .78$; *happy, grateful, loving*). For the complete scale, see Appendix G. They also completed a measure of physical indicators of anxiety, which I intended as a relatively nonconscious indicator of their affective reaction to the sacrifice situation. It was disguised as a measure of general health with this description:

Sometimes we are also interested in daily variations in physical health. Please indicate how you feel physically *right now* for each of the following items, using the scale provided. Take a moment to pay attention to the internal sensations of your body. You may feel several of these sensations, or none at all.

To further the appearance of its being a general health measure, the first and third items were unrelated to anxiety: *runny nose* and *cough*. The anxiety items included *shaky or jittery*, *feeling flushed*, *rapid heart rate*, and *upset stomach* ($\alpha = .68$). Participants responded to these items using a 9-point scale ranging from 1 (*not at all like this*) to 9 (*extremely like this*).

To support the deception—that the partner had sacrificed his or her time to complete the long, tedious questionnaire for the participant—each participant’s partner was actually sent an online questionnaire, at least three days before the participant’s scheduled session. This included the single-item self-esteem measure (“I have high self-esteem”; Robins, Hendin, & Trzesniewski, 2001), and six items from the Experiences in Close Relationships – Revised Inventory (Fraley, Waller, & Brennan, 2000), eight items assessing satisfaction, commitment, felt security, and closeness, a 10-item version of the ‘Frequency of Behaviors’ questionnaires (e.g., “How often do you and your partner do laundry together?”), an item assessing how often the partner made sacrifices for the participant, and vice-versa, and a demographic questionnaire. By sending this questionnaire, I hoped to maintain the plausibility of the cover story even if participants ignored the request not to ask their partners about the questionnaire. For their help, participants’ partners received a chance to win a \$20 mall gift card. Once the in-lab participant’s session was over, partners also received a feedback letter detailing the study’s deception and purpose.

Results

Regression analyses were conducted with weighted effect-coded condition and mean-centered self-esteem entered on Block 1, and the Condition \times Self-Esteem interaction entered on Block 2.

Attributions. Contrary to the predicted interaction, only a marginal main effect of self-esteem emerged, $\beta = 0.21$, $t(67) = 1.75$, $p < .08$, such that LSEs were less likely than HSEs to attribute their partners' behavior to caring motives.

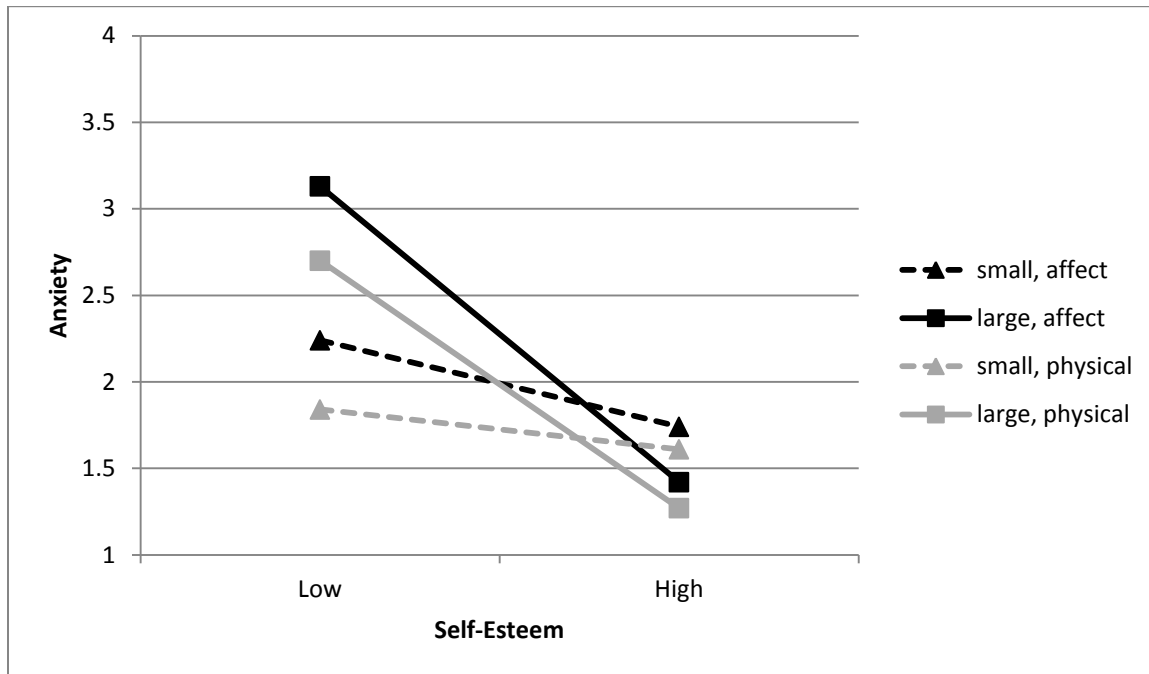
Self-reported affect. A main effect of self-esteem emerged on the anxiety subscale, $\beta = -0.36$, $t(70) = -3.22$, $p < .002$, but was qualified by, as predicted, a Condition \times Self-Esteem interaction, $\beta = -0.20$, $t(70) = -1.81$, $p < .08$ (see Figure 4). In the large sacrifice condition, LSEs reported more anxiety than HSEs, $\beta = -0.59$, $t(70) = -3.17$, $p < .003$, whereas there was no difference in the small sacrifice condition, $\beta = -0.17$, $t(70) = -1.25$, $p = .21$. LSEs' anxiety was also marginally higher in the large sacrifice condition than in the small sacrifice condition, $\beta = 0.29$, $t(70) = 1.89$, $p < .07$, whereas HSEs reported equally low anxiety in both conditions, $\beta = -0.10$, $t(70) = -0.65$, $p = .52$.

On the positive emotions subscale, main effects emerged for condition, $\beta = 0.21$, $t(70) = 1.93$, $p < .06$, and self-esteem, $\beta = 0.27$, $t(70) = 2.46$, $p < .02$, but no interaction. On average, people felt more positive following a large (vs. small) sacrifice, and HSEs felt more positive than LSEs.

Physical anxiety symptoms. In this regression analysis, I controlled for the two non-anxiety-related symptoms, runny nose and cough, to eliminate variance resulting from typical illness (as opposed to anxiety). The Condition \times Self-Esteem interaction, $\beta = -0.28$, $t(68) = -2.36$, $p < .03$, was significant (see Figure 4). In the large sacrifice condition, self-esteem negatively and strongly predicted anxiety symptoms, $\beta = -0.68$, $t(68) = -3.49$, $p < .001$, whereas in the small sacrifice condition, there was no self-esteem difference, $\beta = -0.11$, $t(68) = -0.81$, $p = .42$. HSEs were equally asymptomatic regardless of sacrifice size, $\beta = -0.14$, $t(68) = -0.88$, $p = .38$, but

LSEs reported more anxiety symptoms in the large than the small sacrifice condition, $\beta = 0.40$, $t(68) = 2.48, p < .02$.

Figure 4. Affective and physical anxiety as a function of Condition \times Self-Esteem in Study 3.



Note. Small = small sacrifice; large = large sacrifice; affect = self-report affect scale; physical = physical symptoms of anxiety. Self-esteem is treated as a continuous variable. Low and high self-esteem correspond to ± 1 SD from the mean, respectively.

Discussion

The results of Study 3 produced mixed support for my hypotheses. The two measures of anxiety showed the interaction predicted by my model: LSEs, but not HSEs, reported increased anxiety, and increased anxiety symptomology, following a partner's large sacrifice as compared to a smaller one. These findings support my model of attribution inversion: To the extent that person and situation factors combine to create the perception of a sacrifice as risky, an individual should experience greater anxiety.

Based on previous research, the finding from the positive emotions subscale that HSEs reported more positive emotions than LSEs is typical (e.g., Watson, Suls, & Haig, 2002), but the near-significant condition difference is interesting. Irrespective of self-esteem—and the associated anxiety—participants reported more positive emotions following a large (vs. small) sacrifice, suggesting that they are able to enjoy the sensation of receiving something from a partner even while entertaining the doubts that it inspires. This finding calls to mind work showing that people feel happier about receiving positive (vs. negative) feedback, even as they simultaneously discount that feedback and feel uncertain if it does not match their self-concept (Swann et al., 1987; Stinson et al., 2010). Similarly, my results suggest a disconnect between enjoyment of a positive experience and concern about its legitimacy.

Participants' attributions in this study did not replicate Study 2, in which a small sacrifice elicited more caring attributions from LSEs than a large sacrifice—on par with HSEs' attributions. In Study 3, LSEs' attributions were more negative than HSEs' regardless of sacrifice size. The sacrifice in this study was, of course, very different from the restaurant scenario in Study 2, so it is difficult to know exactly what caused this difference, but it would appear that the psychological difference in the size of the two sacrifices was not as large as in Study 2.

Study 4: Mediation by Concern over Partner's Motivations

In Study 4, I examined my hypothesis that a partner's sacrifice is perceived as risky by LSEs because of their doubts about their partners' motivations: Was the sacrifice motivated by caring, or not? If these doubts are responsible for the findings of the previous studies, reducing them should cause LSEs to respond more positively, like HSEs, to a partner's sacrifice. In this study, I subtly manipulated the framing of a real sacrifice, cuing participants in the *caring framing condition* to view the sacrifice as a sign of caring without triggering concern over their relational value. I did so using a procedure adapted from Marigold et al. (2007): The participant first recalls a sacrifice her partner made for her, then a subtle wording manipulation asks her to describe the sacrifice further, using terms that suggest the sacrifice must have been motivated by caring—without making the “suggested attribution” salient. I predicted that framing the sacrifice in this way would reduce uncertainty about partners' caring motives. Although I examined the extent to which participants attributed their partners' behavior to caring, such a finding would not be a completely convincing test of the mechanism, because the manipulation is so similar to the dependent variable. Thus, in this study I also examined the corresponding prediction made by attribution inversion theory, that LSEs make more instrumental attributions than HSEs. I predicted that this difference would emerge in the control condition, but that LSEs and HSEs would not differ in the extent of their instrumental attributions in the caring framing condition.

Finally, for the first time, I also directly examined LSEs' tendency to discount a partner's sacrifice (again, in the absence of the manipulation) as a form of self-protection. To that end, I included items asking participants how significant and meaningful the event was to their relationship. I predicted that a self-esteem difference would emerge in the control condition such

that LSEs would discount more than HSEs, but that the difference would disappear in the caring framing condition.

Method

Participants. Sixty undergraduate psychology students participated online (39 female, 18 male, 1 unspecified). Mean age of the sample was 22.0 years ($SD = 5.4$). Seventy-six percent of the sample identified their ethnicity as European, 9 percent as South Asian, and the rest other ethnicities⁶. Participants signed up for the study online, and were only eligible to participate if they were in a romantic relationship. As in the other studies, the majority of participants (79%) were in dating relationships, some were engaged or cohabiting (9%), or married (12%). The average relationship length was 34.7 months ($SD = 63.3$).

I excluded two participants (1 female, 1 male) who did not complete the study in one uninterrupted sitting, leaving a final sample of 58.

Participants received course credit as compensation for their time.

Materials and procedure. Participants first completed the standard measures of trait self-esteem and relationship quality ($M = 6.09$, $SD = 1.06$), as described in previous studies. They indicated their response to all items using a 7-point Likert scale, anchored at 1 (*strongly disagree*) and 7 (*strongly agree*).

Next, participants completed a manipulation that was adapted from Marigold et al.'s (2007) research on compliment framing for the current context. They were randomly assigned to the caring framing or control condition. All participants were first asked to “think of a time when

⁶ There were an additional 21 participants who identified themselves as Asian when asked for their ethnicity. I decided to eliminate the Asian participants from my analyses after discovering that they had significantly lower self-esteem. I was concerned that the mean differences did not reflect more negative self-views, but rather a different interpretation of the items on the scales (Heine, Lehman, Markus, & Kitayama, 1999). Results were weaker, but in the same direction, if Asians were included in the analyses.

your romantic partner did something nice for you. For example, helped you with homework, brought you a present, put your preferences ahead of his or her own, etc. When you have thought of such an occurrence, please write a few cue words that will identify that memory to you (e.g., ‘went to the movie I wanted to see’).”

On the next page, participants in the caring framing condition were asked to “Explain why your partner cared for you so much. Describe what it meant to you and its significance for your relationship.” Participants in the control condition were simply asked to “Describe the event in the space below.” All participants indicated how long ago the event occurred ($M = 3.2$ months; $SD = 6.7$ months). These descriptions were coded by three undergraduate psychology students (2 female, 1 male) who were blind to the study’s purpose and hypotheses, and the participant’s condition. The coders completed two items indicating the ‘size’ of the sacrifice ($r = .64$; “To what extent did the partner’s behavior seem very caring/loving to you?” and “To what extent do you think the partner’s behavior required a major sacrifice (of time, money, etc.)?”; ICC = .73).

The remaining questions assessed participants’ thoughts and feelings about the event they described. First were 2 items assessing the significance participants attributed to the nice thing their partners did for them (“How meaningful was this event to you?” and “How significant was this event for your relationship?”). These were rated on a 7-point scale anchored at 1 (*not at all*) and 7 (*extremely*). Cronbach’s α for the composite was .73.

An open-ended measure following the manipulation functioned as a manipulation check. It asked participants to “list the reasons you believe your partner did something nice for you. List as many reasons as you think there were—you don’t have to use all the lines.” They were given 6 lines on which to record their thoughts. The reasons were coded by the same three coders, but participants’ event descriptions and reasons were coded at separate times and could not be linked

by coders. For each participant, coders indicated “To what extent does the participant make positive attributions for the partner’s behavior?” (ICC = .74). They made these ratings on a scale anchored at 1 (*not at all*) and 7 (*very much*).

Next, participants completed a two-item measure of exchange beliefs, intended to assess participants’ beliefs that their partners were instrumentally motivated (“I expect that when my partner does something nice for me he or she will expect a favor from me in return” and “My partner doing something nice for me makes me feel that I owe him or her”). Cronbach’s α for the composite was .76.

Participants then completed the attributions scale, which consisted of the five items from Study 3, with the exception that the context-specific item (“...was bored”) was substituted for a more general item that lent itself better to the open-ended nature of the sacrifice: “...just wanted to do something nice for me.” Cronbach’s α for the scale was .58. Ratings were made on a 7-point scale anchored at 1 (*strongly disagree*), and 7 (*strongly agree*).

Lastly, participants indicated their age, gender, and ethnicity.

Results

All regression analyses were conducted with weighted effect-coded condition and mean-centered self-esteem entered on Block 1, and the Condition \times Self-Esteem interaction entered on Block 2.

Event descriptions. The size of the sacrifices, as rated by coders, did not differ as a function of self-esteem ($\beta = 0.19, p = .39$), condition ($\beta = -0.12, p = .39$), or their interaction ($\beta = -0.11, p = .61$).

Manipulation check. Coders’ ratings of attributions yielded a main effect of condition only. Reasons listed for their partners’ behavior by people in the caring framing condition were

more positive than those listed by people in the control condition, $\beta = 0.44$, $t(54) = 3.59$, $p < .001$.

The number of reasons listed by participants was not predicted by condition ($\beta = -0.20$, $p = .13$), self-esteem ($\beta = 0.15$, $p = .27$), or their interaction ($\beta = -0.01$, $p = .97$).

Significance. The Condition \times Self-Esteem interaction, $\beta = -0.44$, $t(54) = -2.11$, $p < .04$, was significant. Table 2 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. In the control condition, self-esteem positively predicted reported significance of the event, $\beta = 0.43$, $t(54) = 2.07$, $p < .05$, whereas in the caring framing condition, there was no self-esteem difference, $\beta = -0.13$, $t(54) = -0.80$, $p = .43$. HSEs said the event was equally significant regardless of condition, $\beta = -0.22$, $t(54) = -1.18$, $p = .25$, but LSEs said it was marginally more significant in the caring framing condition than in the control condition, $\beta = 0.35$, $t(54) = 1.83$, $p < .08$.

Caring attributions. There was a main effect of self-esteem, $\beta = 0.36$, $t(54) = 2.87$, $p = .006$, and a Condition \times Self-Esteem interaction, $\beta = -0.38$, $t(54) = -1.94$, $p < .06$, on the positivity of participants' attributions. Table 2 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. In the control condition, LSEs were significantly less likely than HSEs to attribute their partners' behavior to caring motives, $\beta = 0.66$, $t(54) = 3.35$, $p = .001$. However, in the caring framing condition LSEs' attributions were as caring as HSEs', $\beta = 0.17$, $t(54) = 1.08$, $p = .28$, and significantly more caring than LSEs in the control condition, $\beta = 0.36$, $t(54) = 1.98$, $p = .05$. There was no effect of condition for HSEs, $\beta = -0.13$, $t(54) = -0.77$, $p = .45$.

Exchange beliefs. There was a marginal main effect of self-esteem, $\beta = -0.24$, $t(54) = -1.79$, $p < .08$, and a marginal Condition \times Self-Esteem interaction, $\beta = 0.36$, $t(54) = 1.76$, $p < .09$,

on instrumental attributions. Table 2 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. In the control condition, LSEs had significantly stronger exchange beliefs than did HSEs, $\beta = -0.52$, $t(54) = -2.51$, $p < .02$. However, in the caring framing condition, LSEs' exchange beliefs were as weak as HSEs', $\beta = -0.05$, $t(54) = -0.32$, $p = .75$, which were marginally weaker than those of LSEs in the control condition, $\beta = -0.35$, $t(54) = -1.83$, $p < .08$. There was no effect of condition for HSEs, $\beta = 0.12$, $t(54) = 0.66$, $p = .51$.

Table 2
Predicted Scores for the Condition \times Self-Esteem Interaction in Study 4

Dependent measures	Low self-esteem		High self-esteem	
	Control	Caring framing	Control	Caring framing
Significance	5.00	5.87	6.07	5.54
Attributions	5.39	5.86	6.26	6.08
Exchange beliefs	3.68	2.70	2.22	2.55

Note. Low and high self-esteem refer to participants one standard deviation below and above the mean, respectively.

Discussion

The results of Study 4 support the tenet of the attribution inversion model that LSEs are threatened by their partners' large sacrifices because of doubts about their partners' caring for them. In the control condition, thinking about a partner's sacrifice replicated the previous tendency for LSEs to make attributions less based in caring than HSEs. At the same time, LSEs made more instrumental attributions, exhibiting a belief that their partners were likely motivated by a desire for exchange. In addition, LSEs said the sacrifice was less significant than HSEs did. However, when a simple wording manipulation subtly led participants toward more caring attributions for their partners' sacrifices, the self-esteem differences on all variables disappeared.

These results suggest that the reframing enabled LSEs to put aside their insecurities and perceive their partners' sacrifices the way HSEs do.

Study 5: Exchange Concerns as a Source of Anxiety

Studies 1 and 4, with their measures of exchange beliefs, provided evidence that LSEs are more likely than HSEs to be concerned that their partners want something in return for the sacrifices they have made—in other words, to make instrumental attributions. If exchange concerns are a source of LSEs' anxiety and self-protective strategies, those strategies should be unnecessary if the LSE explicitly promises an exchange to the partner, as some did in Study 1. The promise provides psychological cover, sheltering the LSE from the uncertainty of having to guess at the partner's motivations and expectations: The question of motivations and expectations does not even need to be answered because the promise of exchange covers the instrumental contingency. That is, the LSE need not worry about whether or how to return the partner's sacrifice because, like an economic exchange, the exchange of sacrifices was arranged and agreed to by both partners beforehand.

The discounting principle of classic attribution theory would predict that the promise of exchange *facilitates* the partner's sacrifice behavior, meaning one should attribute the sacrifice to the obvious instrumental motivator (Kelley, 1967). In attribution inversion terms, however, the promise of exchange reduces the *risk* associated with assuming one's partner had caring motives. Thus, in Study 5, I directly tested the prediction that HSEs would act in accordance with classic attribution theory, but that LSEs would follow the attribution inversion model. I experimentally tested this possibility by manipulating the use of an exchange strategy in a hypothetical context. I predicted that, in the absence of exchange, I would replicate the findings of the previous studies for the caring and instrumental attributions participants made: LSEs would attribute their partners' behaviors less to caring and more to instrumental motives than HSEs. When they imagined themselves having promised their partners an exchange, however, I predicted a

divergence. I expected that HSEs would use this additional information to conclude that the partner's motivations were more instrumental and less caring—in other words, they would follow the discounting logic of attribution theory (Kelley, 1967). By contrast, I hypothesized that LSEs, who would see the exchange as a signal of decreased risk, would *not* perceive their partners as any more motivated by instrumental concerns than in the no-exchange condition, and would attribute *more* of their partners' behavior to caring.

Again, these counterintuitive predictions arose from the attribution inversion model, which states that the perception of risk makes people cautious in the attributions they are willing to make—and promising one's partner an exchange reduces that risk. In this study I also assessed caution directly with a new scale. I predicted that, in the no-exchange condition, LSEs would report more caution than HSEs, but that in the exchange condition, LSEs' caution would disappear.

Method

Participants. One hundred twelve American adults (64 female, 36 male, 2 unspecified) participated online via Mechanical Turk, a survey research company. Each individual chose to participate in the study on the basis of a brief description on the Mechanical Turk “dashboard,” an interface that allows people to see for which studies and jobs they are eligible. Mean age of the sample was 31.0 years ($SD = 9.5$). Sixty-eight percent of the sample identified their ethnic background as European, 8 percent as African, 6 percent as East Asian, 6 percent as Latino/Latina, and the rest other ethnicities. Participants were in romantic relationships, of which the mean length was 6.5 years ($SD = 6.6$ years). Thirty-five percent of participants were in dating relationships, 22 percent were engaged or cohabiting, and 43 percent were married.

I excluded 10 participants, five of whom exhibited a response set, four of whom failed to follow instructions, and one whose self-esteem score fell more than three standard deviations below the mean. Participants received 40 cents as compensation for their time.

Materials and procedure. Participants first completed the measures of trait self-esteem and relationship quality ($M = 5.58$, $SD = 1.53$). They were then randomly assigned to visualize themselves in one of two hypothetical scenarios. Participants in the no-exchange condition received the “choosing a restaurant” scenario from the large sacrifice condition in Study 2. Participants in the exchange condition received a version of the scenario modified to include their offering their partner an exchange. In the latter version, the final paragraph was replaced with the following:

After a few minutes of this, you think of a possible solution. You tell your partner, “If you go to the restaurant I want today, tomorrow I’ll take your packages to the post office for you.” It was a chore your partner hadn’t been looking forward to, so your partner agrees. The two of you head out to your chosen restaurant.

Next, they were asked to imagine the scenario and describe it in their own words, as in Study 2. They then completed the attributions measure, including the four items from Study 2, plus “...values me highly” and a new item, “...was hungry.” Cronbach’s α for the scale was .41. Exchange beliefs were measured on the same page, with a single item integrated with the attributions scale (“...wanted something in exchange”). Participants then completed a new, five-item scale intended to examine participants’ caution about attributing their partners’ behavior to caring (e.g., “I am careful not to make assumptions about my partner’s nice behavior”; “I’m not sure whether my partner acted out of love or for some other reason”; for a complete list of items, see Appendix H). The latter set of ratings was made on a 7-point Likert scale anchored at 1 (*strongly disagree*) and 7 (*strongly agree*).

Lastly, participants indicated their age, gender, and ethnicity.

Results

All regression analyses were conducted with weighted effect-coded condition and mean-centered self-esteem entered on Block 1, and the Condition \times Self-Esteem interaction entered on Block 2.

Caution. The Condition \times Self-Esteem interaction was significant, $\beta = 0.37$, $t(97) = 2.77$, $p = .007$. Table 3 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. As hypothesized, in the no-exchange condition, self-esteem negatively predicted caution, $\beta = -0.36$, $t(97) = -2.62$, $p < .02$. In the exchange condition, no self-esteem effect emerged, $\beta = 0.18$, $t(97) = 1.31$, $p = .19$. HSEs' preferences for caution did not differ between the exchange and no-exchange conditions, $\beta = 0.20$, $t(97) = 1.45$, $p = .15$, whereas LSEs reported greater caution in the no-exchange (vs. exchange) condition, $\beta = -0.35$, $t(97) = -2.44$, $p < .02$.

Exchange beliefs. The Condition \times Self-Esteem interaction was significant, $\beta = 0.49$, $t(96) = 3.89$, $p < .001$. Table 3 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. In the no-exchange condition, the usual self-esteem difference emerged, such that LSEs held stronger exchange beliefs than HSEs, $\beta = -0.26$, $t(96) = -2.04$, $p < .05$. In the exchange condition, the self-esteem effect reversed, as predicted, $\beta = 0.45$, $t(96) = 3.43$, $p < .001$. LSEs' exchange beliefs did not differ between the exchange and no-exchange conditions, $\beta = -0.06$, $t(96) = -0.49$, $p = .63$, whereas HSEs reported significantly stronger exchange beliefs in the exchange condition relative to the no-exchange condition, $\beta = 0.64$, $t(96) = 5.19$, $p < .001$.

Caring attributions. The Condition \times Self-Esteem interaction did not quite attain significance, $\beta = -0.21$, $t(96) = -1.58$, $p < .12$, but the simple effects followed the predicted

pattern. Table 3 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. In the no-exchange condition, the familiar self-esteem difference emerged, such that LSEs were less likely than HSEs to attribute their partners' sacrifice behavior to caring, $\beta = 0.31$, $t(96) = 2.29$, $p < .03$. In the exchange condition, there was no effect of self-esteem, $\beta = 0.001$, $t(96) = 0.007$, $p = .99$. HSEs' attributions did not differ between the exchange and no-exchange conditions, $\beta = 0.04$, $t(96) = 0.31$, $p = .76$, whereas LSEs were significantly more likely to attribute their partners' sacrifices to caring motives in the exchange condition than in the no-exchange condition, $\beta = 0.35$, $t(96) = 2.48$, $p < .02$.

Table 3
Predicted Scores for the Condition \times Self-Esteem Interaction in Study 5

Dependent measures	Low self-esteem		High self-esteem	
	No exchange	Exchange	No exchange	Exchange
Caution	4.37	3.74	3.72	4.08
Exchange beliefs	3.48	3.25	2.59	4.82
Attributions*	3.80	4.34	4.28	4.34

Note. Low and high self-esteem refer to participants one standard deviation below and above the mean, respectively.

*This interaction is not significant, $p = .12$.

Discussion

In this study, the usual pattern of self-protective strategies in LSEs relative to HSEs was eliminated when they offered their partner an exchange rather than simply accepting a sacrifice. Specifically, the results showed that offering an exchange made LSEs less cautious about the attributions they made, more likely to make caring attributions, and even, counterintuitively, less likely to perceive their partners as instrumentally motivated. These findings support my contention that LSEs' tendency to self-protect in the face of a partner sacrifice is caused by

worry about the consequences of incorrectly assuming caring rather than instrumental motivations: By offering an exchange to the partner up front, there is no possibility that a debt has been incurred, nor does one have to consider one's value to the partner. The results of this study suggest that the exchange of favors eases LSEs' minds, providing them with psychological cover from which they can interpret their partners' actions in a more positive light. The results further suggest, as did the positive emotion findings from Study 3, that LSEs would *like* to believe their partners care, but that that desire loses out to their need for caution—until something happens that enables them to throw caution to the wind.

Study 6: HSEs' Automatic and Controlled Reactions to a Partner's Sacrifices

Studies 1-5 provide a wealth of information about LSEs' concerns, and strategies for alleviating those concerns. Important to my model, however, is the idea that LSEs and HSEs are not fundamentally different in the way they interpret their partners' sacrifices. Instead, having low self-esteem makes one more vigilant to signs of risk. Research by Sandra Murray and her colleagues demonstrates that possessing high self-esteem does not preclude a person from interpreting situations that threaten the relationship as risky, but enables one to override one's instinct to self-protect and instead promote the relationship (Murray et al., 2008). If the same process is occurring here with respect to partners' sacrifices, it would mean that HSEs perceive risk and automatically activate a self-protective goal just as LSEs do, but that HSEs override that goal when they have the opportunity to do so. Studies 1 to 5 provided such opportunities.

In Study 6, I manipulated cognitive load with the prediction that, given the opportunity (i.e., sufficient cognitive resources) to do so, HSEs would override their automatic tendency to self-protect, whereas LSEs would simply follow their first, self-protective impulse. According to this theory, however, HSEs under cognitive load should be unable to correct their automatic reactions. If so, HSEs under load should be just as cautious as LSEs, making attributions for their partners' sacrifices that infer less caring and more instrumental motives. In this study, I manipulated load by having participants in the *high load condition* memorize and rehearse a nine-digit number, and participants in the *low load condition* memorize and rehearse a three-digit number. Their performance was assessed by having them repeat the number at three time points throughout the study.

Method

Participants. One hundred twenty-seven undergraduate psychology students participated in the lab (78 female, 48 male, 1 unspecified). Mean age of the sample was 20.6 years ($SD = 3.9$). Forty-five percent of the sample identified their ethnicity as European, 32 percent as East Asian, 8 percent as South Asian, and the rest other ethnicities. Participants signed up for the study online, and were eligible to participate only if they were in a romantic relationship. Again, the majority of participants (82%) were in dating relationships, with the remainder engaged and/or cohabiting (16%), or married (2%). The average relationship length was 23.3 months ($SD = 35.2$).

I excluded three participants (all female) who indicated they did not understand the instructions and completed the scenario incorrectly, and one female participant whose computer had technical problems. I also excluded participants from the original sample whose performance on the number recall task was particularly poor, using the assumption that some errors were likely because of the task's difficulty, but that a particularly high error rate could indicate a lack of attention (and therefore, a lack of cognitive load). A priori, I decided that people with any errors in the three-digit number, or more than two errors in the nine-digit number would be excluded. Individual errors (wrong digit, extra digit, digit missing, or digit transposition) were counted only once, the first time they appeared. Thus, an error that occurred consistently across recall occasions would not be counted multiple times. I excluded an additional 19 participants using this procedure, all from the high load condition⁷. Eleven participants with one or two errors were retained.

Participants received course credit as compensation for their time.

⁷ I ran all subsequent analyses with these 19 participants included as well. Results were weaker, but still in the predicted direction.

Materials and procedure. Participants completed this study in the lab, up to three at a time. They sat at separate computers, facing away from one another, so they could not see one another's screens. They were individually randomly assigned to the low or high load condition. Before beginning, the experimenter requested that they not use any sort of aid (e.g., pen and paper, cell phone) to help them with the memory task.

Participants first completed the usual measures of trait self-esteem and relationship quality ($M = 7.60$, $SD = 1.53$). They were then given the instructions for the 'memory task,' the load manipulation:

On the next screen, you will be given a numeric 'password' to memorize. Your goal is to learn this password, and remember it for the remainder of the experiment. You will be asked to report the number several times during the study.

Please do not write down or record this password in any way. This would defeat the purpose of the study. Just do your best to remember it on your own.

Participants in the low load condition were asked to remember a three-digit number (e.g., 604).

Participants in the high load condition were asked to remember a nine-digit number (e.g.,

381926427). All then read a hypothetical scenario about a partner sacrifice: the large sacrifice

scenario from Study 2. They were asked to imagine the scenario and describe it in their own

words. They then completed the attributions measure used in Study 5 ($\alpha = .68$). Next, I included

the five-item caution scale introduced in Study 5. Participants rated the items on a 9-point Likert

scale anchored at 1 (*strongly disagree*) and 9 (*strongly agree*). Participants then completed a

single item assessing instrumental attributions—specifically, exchange beliefs. They indicated

their agreement with the statement "I expect that when my partner does something nice for me,

like going to the restaurant I chose, he or she will expect a favor from me in return." Finally,

participants indicated their age, gender, and ethnicity.

During the study, participants were asked to report the numeric ‘password’ they had memorized on three occasions, to ensure they were under load throughout the experiment.

Results

All regression analyses were conducted with weighted effect-coded condition and mean-centered self-esteem entered on Block 1, and the Condition \times Self-Esteem interaction entered on Block 2.

Caring attributions. The interaction was significant, $\beta = -0.26$, $t(100) = -2.02$, $p < .05$. Table 4 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. Under low load, the self-esteem difference replicated previous studies, such that having lower self-esteem was associated with less attribution of the partner’s sacrifice to caring motives, $\beta = 0.30$, $t(100) = 2.31$, $p < .03$. Under high load, however, no self-esteem effect emerged, $\beta = -0.10$, $t(100) = -0.66$, $p = .51$. Attributions under high versus low load did not differ for LSEs, $\beta = 0.07$, $t(100) = 0.53$, $p = .60$, whereas HSEs under high (vs. low) load were less likely to attribute their partners’ sacrifices to caring motives, $\beta = -0.32$, $t(100) = -2.32$, $p < .03$.

Instrumental attributions. The Condition \times Self-Esteem interaction was significant, $\beta = 0.26$, $t(100) = 2.00$, $p < .05$. Table 4 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. Under low load, the trend was such that having lower self-esteem predicted a belief that one’s partner expected an exchange of favors, $\beta = -0.21$, $t(100) = -1.62$, $p < .11$. Under high load, no self-esteem effect emerged, $\beta = 0.18$, $t(100) = 1.24$, $p = .22$. LSEs’ exchange beliefs did not differ between the low and high load conditions, $\beta = -0.09$, $t(100) = -0.62$, $p = .54$, whereas HSEs

reported significantly stronger exchange beliefs under high (vs. low) load, $\beta = 0.31$, $t(100) = 2.20$, $p < .04$.

Caution. The interaction was marginally significant, $\beta = 0.23$, $t(100) = 1.79$, $p < .08$.

Table 4 contains the predicted scores for this measure for participants one standard deviation above and below the mean in self-esteem in each condition. Under low load, having lower self-esteem predicted a preference for caution, $\beta = -0.39$, $t(100) = -3.07$, $p = .003$. Under high load, no self-esteem effect emerged, $\beta = -0.04$, $t(100) = -0.29$, $p = .77$. LSEs' preferences for caution did not differ between the low and high load conditions, $\beta = -0.13$, $t(100) = -0.95$, $p = .35$. HSEs' preferences trended toward more caution under high (vs. low) load, $\beta = 0.22$, $t(100) = 1.59$, $p < .12$.

Table 4
Predicted Scores for the Condition \times Self-Esteem Interaction in Study 6

Dependent measures	Low self-esteem		High self-esteem	
	Low load	High load	Low load	High load
Attributions	5.20	5.30	5.87	5.10
Exchange beliefs	4.59	4.25	3.76	4.99
Caution	4.90	4.61	4.01	4.51

Note. Low and high self-esteem refer to participants one standard deviation below and above the mean, respectively.

Discussion

The results of Study 6's low load condition replicated the self-esteem difference found in previous studies. Comparing the results of the two conditions clearly demonstrates the two-stage process HSEs usually undergo when confronted with a relationship risk: An automatic self-protective reaction emerged when they were under load, but must typically be overridden by the relationship-promoting response observed in the low load condition, when HSEs possessed

sufficient cognitive resources. As in Murray et al.'s (2008) research, the results suggest that LSEs do not override their automatic tendency to self-protect, in that the participants exhibited the same self-protective behaviors under low and high load.

General Discussion

With six studies using a variety of methodologies and manipulations, I have examined one route by which LSEs inadvertently sabotage the positive aspects of their relationships. I proposed a model of attribution inversion that predicts that, when a partner's positive behavior is perceived as risky, information that would typically increase internal, caring attributions instead increases instrumental attributions because of worry about assuming "too much" caring. Study 1 supported the latter part of this prediction, demonstrating that LSEs experienced more worry than HSEs when they wanted a partner to do something for them. Studies 2 and 3 showed that sacrifice size matters. Self-esteem did not predict reactions to small sacrifices, but LSEs felt more anxious than HSEs about large sacrifices and were less willing than HSEs to attribute their partners' large sacrifices to caring motives. Study 4 provided further evidence for the mechanism—that LSEs are uncertain of their partners' caring—by demonstrating that when caring was subtly primed, LSEs made attributions as positive as HSEs' attributions. Study 5 also addressed mechanism, by manipulating (in a hypothetical scenario) participants' promise of exchange. HSEs made more instrumental, less caring attributions when this instrumental cause (the exchange) was present, but LSEs made more caring attributions for their partners' behavior, suggesting that concern over repaying the partner partially accounts for their typical pattern of less caring attributions. Study 6 demonstrated that this phenomenon is not isolated to LSEs. When placed under cognitive load, HSEs reacted just as cautiously to their partners' sacrifices as LSEs did, indicating that HSEs also perceive partner sacrifices as posing a risk. However, when not under load, HSEs made their typical more caring attributions for their partners' sacrifices, suggesting that their relationship-promoting behavior is the result of a controlled process.

Limitations

This research is limited in a few ways. First, I have examined this phenomenon using only North American samples. Much research has shown that self-esteem does not function the same way in East Asian cultures, and that having low self-esteem may not be a similar detriment (Heine et al., 1999; Miller, Wang, Sandel, & Cho, 2002). Indeed, in Study 4, I had to exclude the ethnically East Asian portion of the sample because their self-esteem was significantly lower than the remainder of the sample, and the manipulation had a weaker effect on them. In addition, in cultures that place a greater value on interdependence and communality—like East Asian cultures—accepting a sacrifice may not be perceived as a risk. Instead, doing things for others may be a common way to maintain interpersonal harmony. Thus, my findings may not generalize outside the North American, or Western, context.

A second limitation is the reliance of these studies on self-report measures. It is possible that participants were unable or unwilling to accurately introspect and instead engaged in socially desirable responding or responded to demand characteristics. Unfortunately, given the ‘in-the-head’ nature of attributions, it is difficult to study that central aspect of my model in any other way. However, I find it unlikely that participants were engaging in such behaviors, because of the sophistication required to produce the interactions observed in these studies. For instance, although it is plausible that self-esteem might influence one’s self-presentation or responsiveness to demand characteristics, would it do so when responding to large sacrifices but not small sacrifices (Study 2), or large sacrifices preceded by manipulations of partner caring (Study 4) or exchange (Study 5)? The findings of these studies are readily predicted by attribution inversion theory, and not so readily by problems of impression management or demand. Nonetheless, more indirect measures of the emotions and motivations that influence those attributions could be beneficial. The physical anxiety measure from Study 3 represents a step in that direction.

Although it too relied on participants' self-reports, it assessed anxiety indirectly, making it unlikely that participants realized its purpose. In the future, for example, I would like to use a reaction-time measure to indirectly assess participants' caution in making attributions for their partners' positive behaviors. Longer reaction times to those questions could indicate the uncertainty and caution I posit LSEs feel in the face of risk.

Another limitation of these studies is in the use of hypothetical scenarios and participants' memories of past sacrifices, as opposed to current, real sacrifices. This reliance means that participants are forced to construct (or reconstruct) their responses, instead of simply reacting to a situation. It is therefore possible that they would respond in a categorically different way to a real partner sacrifice. I attempted to minimize this possibility by using a variety of methods and demonstrating the convergence of findings among studies: Two studies asked participants to remember a sacrifice, three used a scenario visualization technique, and one used an on-line sacrifice experienced as real by participants (Study 3). The possibility of people reacting in a categorically different way (vs. reacting the same way but to a different degree) to real sacrifices is reduced by the convergent findings of these different studies, particularly Study 3. If anything, my theory would predict stronger effects for real-world sacrifices. However, it would be ideal to move toward more examination of real sacrifice behavior. Real, on-line sacrifices are difficult to study experimentally, but it would be useful, for instance, for future research to include a longitudinal diary study of the sacrifices partners make for one another on a daily basis. Now that the attribution inversion model has received support in the lab, validating it in the everyday lives of romantic partners is the next concern.

Implications

Implications for theories of attributions. In the current studies, I predicted and found that people who are insecure in their relationships—operationalized as those with low self-esteem (c.f. Murray et al., 2006)—made attributions for their partners’ sacrifice behaviors that were the opposite of those that would be predicted by classic theories of attribution (Kelley, 1967). For the most part, people are concerned with, and best served by, accuracy in their judgments, as Kelley’s theory implicitly assumed. To the extent that accuracy is the only motive in a given situation (e.g., if self-involvement is low) classic attributions as well as the principles of discounting and augmenting likely apply. Attribution inversion theory proposes, however, that other motives sometimes take precedence. In particular, when the self may be affected by the outcome of the attribution, the risk of “getting it wrong” becomes salient. For people with low self-esteem, for whom the self-protection motive is strong, many partner sacrifices are perceived as presenting a risk to the self. In such a situation, these studies suggest, people appear to discount caring causes for sacrifices perceived as large or difficult, and augment caring causes for sacrifices perceived as small or easy. These attributions are the inverse of the attributions suggested by Kelley’s classic theory.

There is something else that is odd about these results, specifically with respect to Study 6. Perhaps the best-known theory of attributions today is the fundamental attribution error (also known as correspondence bias): People tend to over-value internal, dispositional causes for another person’s behavior relative to external, situational causes (Jones & Harris, 1967). Further, Gilbert and colleagues demonstrated that dispositional attributions are more automatic than situational attributions: Participants who made judgments under *no* cognitive load discounted dispositional causes for a woman’s anxiety when they knew there was a situational reason for it, but participants who made judgments while under load did not (Gilbert, Pelham, & Krull, 1988).

These findings suggest that making situational attributions was more effortful for participants, requiring time and resources. Caring attributions are dispositional and instrumental attributions are relatively situational, yet the results of Study 6 showed that the instrumental attributions were more automatic. Why do my results differ? Again, there may be something fundamentally different about making judgments in which the self has a stake, like those that occur in the context of a romantic relationship. I suggest that under such circumstances, the risk associated with judgment becomes salient and accuracy takes a back seat to self- or relationship-relevant motives.

Implications for the relationships literature. This research also has important implications for the ever-expanding literature on Person \times Situation effects within close relationships. Negatively biased attributions have been linked to cognitions and behaviors that are detrimental to the long-term health of relationships (Bradbury & Fincham, 1990). However, previous experimental work typically focused on situations that are ambiguously or overtly threatening to the individual—situations in which a self-protective response seems objectively justified (e.g., Murray et al., 2002; Pearce & Halford, 2008). It is only recently that research has begun to examine the everyday positive aspects of relationships and address the question of how insecurity and negative self-image persist in spite of the positive elements (e.g., Lemay & Clark, 2008a; Marigold et al., 2007). The research presented here demonstrates how the value of one positive relationship element—the sacrifice—is undermined by LSEs' chronic desire to self-protect. In future research on self-esteem (or other forms of insecurity), it will be important to consider the wider range of situations that evoke LSEs' self-protective tendencies. The need is especially great if the field hopes to identify means of combating the often destructive consequences of those tendencies (c.f. Marigold et al., 2007).

Future Directions

Consequences of undermining sacrifices. In future research it will be important to examine the consequences—everyday and longer-term—of discounting a partner’s caring motivation. First, for LSEs, I suspect that discounting represents one route via which they inadvertently maintain their unwarranted perceptions that their partners do not value them. The attribution inversion model demonstrates that, the more positive a partner’s behavior is, the less it is internalized by LSEs. Thus, the very behaviors that should be most convincing of a partner’s regard are those most downplayed and undermined by LSEs. Second, I believe that LSEs’ discounting may have a negative impact on their partners as well, especially in the long term. If LSEs minimize their partners’ sacrifices, I expect that they would express less gratitude or positive affect to their partners, behavior to which their partners might well take exception. Studies 1 and 5 also suggested that LSEs were more positive about their partners’ sacrifices when they offered them a favor in reciprocation. Such an arrangement is strikingly similar to the pattern of direct reciprocation used in exchange relationships (Clark & Mills, 1979). If LSEs’ partners perceive their offers of exchange in the same way, it is likely to be harmful to the relationship, because greater use of exchange norms in a romantic relationship has been linked to lower relationship satisfaction, especially for people high in attachment anxiety, a close relative of low self-esteem (Clark et al., 2010; Holmes & Cameron, 2005). To one’s partner, an overreliance on exchange strategies may be interpreted as indicative of less commitment or interest in the relationship. In the future, I would like to examine LSEs’ partners’ perspective to test this hypothesis.

By contrast, I do not believe that LSEs perceive their actions in light of an exchange norm, regardless of how it might appear to an outside observer or (I speculate) their partners. The

results of the current studies cannot address this claim, but LSEs, like HSEs, value communal norms in relationships, though they may be less successful in implementing them (Bartz & Lydon, 2008; Clark et al., 2010). I conjecture that LSEs see themselves as communally motivated, and offer their partners an exchange in a specific situation as an “insurance policy” against the possibility that their partners are *not* communally motivated. I suspect it is easy to believe that repaying a partner’s sacrifice in kind would be perceived positively, and that LSEs would not realize its potential implications—that their partners might perceive them as following an exchange norm. In describing the differences between communal and exchange relationships, Clark and Mills (1993) point out that “the giving and receiving of benefits is ubiquitous in communal relationships ... an exchange occurs when the parties involved understand that one benefit is given *in return* for another benefit” (p. 687, emphasis added). Strictly speaking, the latter half of this definition precludes the possibility of one partner interpreting a benefit as exchange-motivated while the other sees it as communal, but what if one partner perceives that the other often gives a benefit immediately after receiving one? With only a slight change to the definition such that it is perceptions, not true understanding, that matter, it is possible to see how a LSE’s partner could believe he or she desired an exchange relationship—even if that was not the LSE’s intention.

Breaking the LSE-undermining cycle. By discounting their partners’ caring in making attributions for their sacrifices, LSEs perpetuate their feeling of low relational value and low self-esteem. Are there any sacrifices that are encoded by LSEs as indicative of their value to their partners? As Studies 2 and 3 showed, LSEs do not appear to perceive smaller sacrifices as risky. LSEs were less anxious about smaller sacrifices than they were for the larger ones, and attributed them more to their partners’ caring. It may be, therefore, that small, everyday sacrifices (e.g.,

waiting five minutes for one's partner at the bus stop) are perceived as safe enough, even by LSEs, to slip past their self-protective armor. Over time, such instances may build up to create a more positive perception of their partners' regard, which may in turn make LSEs less risk-sensitive. In other words, it would be a self-perpetuating virtuous cycle. I also suspect that sacrifices at the other end of the scale (e.g., buying one's partner an engagement ring) would be so unambiguously positive that everyone would be able to interpret them as caring. Although it might take a long time, between low-level, everyday sacrifices and big, once-in-a-lifetime sacrifices, I expect that a LSE whose partner sticks with him or her will eventually feel more positively regarded. If true, this development could partially explain the growing consensus in the literature that, on average, self-esteem increases gradually in adulthood (Robins & Trzesniewski, 2005). Future research might examine partner-focused interventions aimed at increasing the number of small but impactful sacrifices made by partners of LSEs.

Conclusion

My dissertation research represents an important first step in discovering how low self-esteem is self-maintaining and harmful to relationships. It also contributes in important ways to the breadth and depth of knowledge on behavioral attributions. At the broadest level, however, this research usefully highlights the complexity of ascertaining another person's motivations—something human beings take for granted every day.

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Appendix A: Rosenberg (1965) Self-Esteem Scale used in Studies 1-6

Self Perceptions

Please rate your agreement with each of the following statements, using the scale provided.

1	2	3	4	5	6	7	8	9
strongly disagree		disagree		neither agree nor disagree		agree		strongly agree

1. I feel that I am a person of worth, at least on an equal basis with others.
2. I feel that I have a number of good qualities.
3. All in all I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole I am satisfied with myself.
8. I wish that I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.

Appendix B: Relationship Quality Scale used in Studies 1-6

About My Relationship

Please indicate your agreement with the following questions, using the scale below:

1	2	3	4	5	6	7	8	9
strongly disagree		somewhat disagree		neither agree nor disagree		somewhat agree		strongly agree

1. I am extremely happy with my current romantic relationship.
2. I am perfectly satisfied in my current romantic relationship.
3. I am very committed to my relationship.
4. I want our relationship to last forever.

Appendix C: Coders' Reasonableness Scale in Study 1

1	2	3	4	5	6	7
Not at all true of this statement			Moderately true of this statement			Extremely true of this statement

1. Given whatever context the participant provided, to what extent did whatever he or she wanted seem reasonable to you?
2. Given whatever context the participant provided, to what extent did whatever he or she wanted seem like something the partner shouldn't mind doing?
3. Given whatever context the participant provided, to what extent do you think this request would require a major sacrifice by the partner?

Appendix D: Participants' Questionnaire in Study 1

I would now like to ask you some more specific questions about what you did to influence your partner's behaviour.

On the occasion you wrote about on the previous page, to what extent did you do each of the following to get what you wanted? (You may have done any, none, or all of these things in combination.)

1	2	3	4	5	6	7	8	9
Not at all		Somewhat		Moderately		Quite a bit		Very much

To what extent did you...

1. Directly ask your partner to do what you wanted?
2. Explain to your partner why you wanted it?
3. Hope your partner would pick up on your wishes without your having to say anything?
4. Hint at or imply what you wanted instead of asking directly?
5. Try to make your partner feel guilty?
6. Put yourself down or emphasize how things will be bad for you if your partner doesn't do what you want?
7. Promise to do something for your partner in return?*
8. Try to put your partner in a good mood before asking?
9. Express anger or frustration at your partner?
10. Imply negative consequences for your partner if he or she didn't do what you wanted?
11. Offer your partner some kind of favour (e.g., a treat or 'bribe')?*

*Only items marked with an asterisk are included in the analyses reported.

What were you thinking about when you were thinking about how to influence your partner's behaviour? Please indicate to what extent each of the following was true of you, using the scale provided.

1	2	3	4	5	6	7	8	9
Not at all true		Somewhat true		Moderately true		Quite true		Very true

1. I worried about whether my partner would do what I wanted.
2. I was afraid my partner would react badly (e.g., get angry).
3. I worried that my partner would do what I wanted, but would secretly resent it.
4. I was worried that I would 'owe' my partner if he or she did what I wanted.
5. I didn't think too much about it at all.

1. How true or untrue is the following statement: My partner did exactly what I wanted.

1	2	3	4	5	6	7	8	9
Not at all true		Somewhat true		Moderately true		Quite true		Very true

2. How do you feel about how **your partner** behaved? Answer using the scale provided.

1	2	3	4	5	6	7	8	9
Strongly disagree		disagree		Neither agree nor disagree		agree		Strongly agree

- a) I felt happy with the response from my partner.
- b) I felt satisfied by my partner's behaviour.
- c) My partner's response annoyed me.
- d) I was grateful to my partner for his or her response.
- e) I found my partner's behaviour frustrating.
- f) My partner's behaviour made me feel bitter.

Appendix E: Attributions Scale in Studies 2-6

Relationship Dynamics

Please indicate your agreement with each of the following statements, using the scale below.

1	2	3	4	5	6	7	8	9
strongly disagree		somewhat disagree		neither agree nor disagree		somewhat agree		strongly agree

Imagine again that you've just been through the scenario described and your partner has finally agreed to go to your preferred restaurant. How would you feel about each of the following, afterward?

1. My partner's behaviour shows that he or she really cares about me.
2. My partner probably did it because he or she was bored.*
3. I see my partner's behaviour as evidence that he or she puts my preferences ahead of his or her own.
4. My partner probably only agreed because he or she didn't care as much about going to a familiar restaurant as I thought.*
5. My partner probably agreed in order to avoid an argument.
6. My partner's behaviour shows that he or she values me highly.*
7. My partner probably agreed because he or she wanted to do something nice for me.*
8. My partner probably agreed because he or she was hungry.*

*not included in all studies

Appendix F: 'Frequency Questionnaire' Manipulation in Study 3

Frequency of Behaviours

The following questionnaire is about the frequency of various behaviours that may or may not occur in your relationship with your romantic partner. Please carefully consider each one and indicate how often it takes place in your relationship, using the scale provided.

You may find this questionnaire repetitive or tedious at times, but please do your best to answer all the questions independently, and as accurately as possible.

Please make sure to click EACH Submit button as you finish a section--do not skip ahead.

1	2	3	4	5	6	7
Less than every 6 months or never	Every 3 to 6 months	Every month or two	Every week or two	A few times a week	Daily	More than once a day

Do laundry together?

Go out together for more than four hours?

Go out together for less than one hour?

Order take-out?

Wear clothing of a similar colour?

Talk about food?

Talk about sports?

Talk about the weather?

Talk about housework?

Talk about personal hygiene?

Talk about current events?

Talk about math?

Talk about science?

Talk about art?

Talk about poetry?

Talk about language?

Talk about computers?

Talk about your day?

Walk together?

Take the bus together?*

*people in the *small sacrifice condition* saw only these items before continuing to the next page

Please submit your answers from Section 1 before continuing.

[‘SUBMIT SECTION 1’ BUTTON]*

*pressing this button caused an alert to pop up, saying “Please fetch the experimenter.”

1	2	3	4	5	6	7
Less than every 6 months or never	Every 3 to 6 months	Every month or two	Every week or two	A few times a week	Daily	More than once a day

Drive together?

Bike together?

Talk on the phone?

Text each other?

Email each other?

Instant message each other?

Eat together?

Work/study together?

Do chores together?

Watch TV together?

Work out together?

Visit family together?

Go out for a meal together?

Talk about school?

Talk about politics?

Talk about philosophy?

Talk about work?

Talk about people?

People watch together?

Cloud watch together?

Stargaze together?

Sunbathe together?

Check the weather together?

Listen to the radio together?

Listen to music together?
Go to the library together?
Do research together?
Surf the Internet together?
Do crossword puzzles together?
Read together?
Meditate together?
Sit in silence together?
Nap together?
Get dressed together?
Brush your teeth together?
Do the dishes together?
Cook together?
Buy groceries together?
Babysit together?
Repair things together?
Do your income tax together?
Fill out forms (e.g., OSAP) together?
Pay bills together?
Stand in line together?
Go to class together (e.g. sit in on one another's lectures)?
Attend meetings together?
Volunteer together?
Do crafts together?
Move heavy appliances together?
Play cards together?
Re-arrange furniture?
Look up Youtube videos together?
Browse Facebook together?
Do crosswords together?
Drink coffee or tea together?
Go to doctor's appointments together?
Go to hairdressers together?
Visit home together?
Go to the post office together?
Take pictures together?
Sing together?
Bake together?
Browse comic book stores together?
Go to the bank together?

Go to a bookstore together?
 Look at phone plans together?
 Share a magazine subscription?
 Go fishing together?
 Hang out in the SLC together?
 Travel together?
 Sort socks together?
 Go skating together?
 Shop for tools together?
 Share music files?
 Talk about the future?
 Talk about money?
 Talk about TV shows?
 Talk about movies?
 Talk about culture?
 Play sports together?

[‘SUBMIT SECTION 2’ BUTTON]

1	2	3	4	5	6	7
Less than every 6 months or never	Every 3 to 6 months	Every month or two	Every week or two	A few times a week	Daily	More than once a day

Cross the street together?
 Wait for the bus together?
 Make the bed together?
 Edit one another’s papers?
 Go camping together?
 Go hiking together?
 Go skiing together?
 Go swimming together?
 Wrap presents together?
 Decorate for a holiday together?
 Watch live sports together?
 Do financial planning together?
 Put the dishes away together?
 Talk about computers together?

Visit friends together?
Drink alcohol together?
Participate in research studies together?
Order the same food at a restaurant?
Order the same drink at a restaurant?
Talk about your family backgrounds?
Talk about your past histories?
Talk about your siblings or parents?
Pick out clothes for one another?
Choose food for one another?
Plan surprises for one another?
Take pictures together?
Go dancing together?
Go to the library together?
Go to the park together?
Go to the bank together?
Window shop together?
Try on clothes together?
Try on shoes together?
Give one another advice?
Comment on one another's hair?
Comment on one another's clothing?
Go to bookstores together?
Go to a restaurant together?
Order in food together?
Share a single meal or entree?
Go to the hair salon together?
Go to museums together?
Go to art galleries together?
Go to arcades together?
Go to a coffee shop together?
Hang out with friends together?
Talk about your future?
Talk about pet peeves?
Talk about your hopes?
Talk about your friends?
Talk about your relationship?
Talk about finances?
Talk about intimacy?
Talk about children?

Talk about cats?
Talk about dogs?
Talk about other pets?
Wear one another's clothing?
Compliment one another?
Travel together?
Organize your stuff together?
Help one another move?
Sit on a couch together?
Sit on the floor together?
Stand in line together?
Sit at a table together?
Share a taxi?
Argue?
Disagree?
Talk about your high school experiences?
Talk about your elementary school experiences?
Jointly host a party?
Take a class together? (e.g., pottery, karate)
Play video games together?
Play board games together?
Play cards together?
Go to a spa together?
Raise money for a cause together?
Buy gifts for each other?
Sleep in the same bed?
Take a nap together?
Joke around together?
Watch YouTube together?
Get sick at the same time?
Get in a bad mood at the same time?
Get in a silly mood at the same time?
Get angry at each other?
Swear around each other?
Walk in the rain together?
Play in the snow together?
Ask each other for help?
Compete at something?
Make bets with each other?
Dare each other to do things?

Sing karaoke together?
Get dressed up together?
Roll coins together?
Eat junk food together?

Please do not click 'Submit All' until you have finished all three sections. Make sure to submit Sections 1 and 2 individually.

['SUBMIT ALL' BUTTON]

Appendix G: Affect Scale in Study 3

How You Feel Right Now

Please indicate how you feel emotionally right now for each of the following items, using the scale provided.

1	2	3	4	5	6	7	8	9
not at all like this		a little bit like this		moderately like this		quite a bit like this		extremely like this

1. anxious
2. happy
3. loving
4. grateful
5. uneasy
6. guilty

Appendix H: Caution Scale in Studies 5-6

My Partner's Behaviour

Please indicate your agreement with each of the following statements, using the scale below.

1	2	3	4	5	6	7	8	9
strongly disagree		somewhat disagree		neither agree nor disagree		somewhat agree		strongly agree

1. I am cautious in interpreting my partner's behaviour as positive, in case I am wrong.
2. I prefer to take for granted that my partner's nice behaviours are driven by caring for me, rather than some other motive.
3. I assume my partner did something nice for me because it's also beneficial to him or her somehow.
4. I'm not sure whether my partner acted out of love or for some other reason.
5. I am careful not to make assumptions about my partner's nice behaviour.