
Faculty of Social Science

Faculty Publications

This is a post-print version of the following article:

Fostering Partner Dependence as Trust Insurance: The Implicit Contingencies of the Exchange Script in Close Relationships

Murray, S.L., Aloni, M., Holmes, J.G., Derrick, J.L., Stinson, D.A., Leder, S.

2009

The final publication is available at:

<https://doi.org/10.1037/a0012856>

Citation for this paper:

Murray, S.L., Aloni, M., Holmes, J.G., Derrick, J.L., Stinson, D.A., Leder, S. (2009). Fostering partner dependence as trust insurance: The implicit contingencies of the exchange script in close relationships. *Journal of Personal and Social Psychology*, 96(2), 324-348. <https://doi.org/10.1037/a0012856>



Published in final edited form as:

J Pers Soc Psychol. 2009 February ; 96(2): 324–348. doi:10.1037/a0012856.

Fostering Partner Dependence as Trust Insurance: The Implicit Contingencies of the Exchange Script in Close Relationships

Sandra L. Murray and **Maya Aloni**

University at Buffalo, The State University of New York

John G. Holmes

University of Waterloo

Jaye L. Derrick,

University at Buffalo, The State University of New York

Danu Anthony Stinson, and

University of Waterloo

Sadie Leder

University at Buffalo, The State University of New York

Abstract

A model of the trust-insurance system is proposed to examine how low and high self-esteem people cope with the interdependence dilemma posed by feeling inferior to a romantic partner. Feeling inferior automatically activates “if-then” contingencies that link inferiority to the exchange script (i.e., partner qualities are evenly traded) and exchange script anxieties to reparative efforts to secure a partner's dependence. A daily diary study of newlyweds and five experiments supported the model. Induced upward social comparisons to the partner activated exchange anxieties for low, but not high, self-esteem people. When implicitly primed, the exchange script heightened worries about being inferior and motivated behavioral efforts to increase the partner's dependence regardless of self-esteem. When consciously deliberated, the exchange script only elicited dependence-promotion for low self-esteem people.

“It's a discrimination that's widespread, but largely unspoken, causing pain and stress to the affected couples, who often find it hard to talk about, even to each other. I'm talking, of course, about marrying outside your looks. Marrying a few degrees up or down the hotness scale. Refusing to stay within your cute-gory.”

Though tongue-in-cheek, Belinda Luscombe's comments in an essay for *Time Magazine* (May 7, 2007, pg. 86) illustrate a ubiquitous principle of social life – the need to perceive a matched or equivalent exchange (Thibaut & Kelley, 1959). The implicit assumption that partners need to be “matched” in basic value is so engrained that violations of this equivalence principle prompt a search for explanation. After all, who hasn't implicitly assumed that an unattractive man paired with a beautiful woman is either rich, powerful, or both?

Address correspondence to Sandra Murray, Department of Psychology, Park Hall, University at Buffalo, The State University of New York, Buffalo, NY, 14260–4110. E-mail: smurray@buffalo.edu..

Publisher's Disclaimer: The following manuscript is the final accepted manuscript. It has not been subjected to the final copyediting, fact-checking, and proofreading required for formal publication. It is not the definitive, publisher-authenticated version. The American Psychological Association and its Council of Editors disclaim any responsibility or liabilities for errors or omissions of this manuscript version, any version derived from this manuscript by NIH, or other third parties. The published version is available at www.apa.org/journals/psp.

This paper examines how the motivation to perceive an equivalent exchange affects the dynamics of romantic relationships. We argue that two implicit and inter-connected “if-then” procedural rules solve a basic problem of interdependence: Ensuring a partner's commitment to meet one's needs (Kelley, 1979). To avoid costly rejection experiences, people rely on a dynamic and dyadic barometer that estimates their worth relative to the partner. In this metric, feeling as valuable as the partner provides the primary basis for trusting in his or her intrinsic motivation to respond to one's needs. In contrast, feeling inferior activates the exchange script (i.e., “if inferior, then exchange anxieties”). This script specifies that partners need to match in desirability to avoid being replaced by a more deserving alternative (White, 1980). Once activated, exchange anxieties then motivate reparative behavioral efforts to secure the partner's dependence (i.e., “if exchange anxieties, then promote dependence”). Through efforts as varied as finding lost keys, organizing schedules, and limiting outside friends, people make themselves indispensable to the partner. In so doing, they secure a supplementary, instrumental form of trust-insurance. In the remainder of this introduction, we detail the normative operation of the system for ensuring that one's trust in a partner's responsiveness is not misplaced. We then describe how the operation of this system may shift for people low versus high in self-esteem. We conclude by detailing our research strategy.

The Primary Form of Trust Insurance

Situations of interdependence are fundamental to romantic life. One partner's actions constrain the other partner's capacity to meet important needs and goals (Kelley, 1979). Compounding this vulnerability, partners' goals and interests typically diverge in at least some important respects (Lykken & Tellegen, 1993). Consequently, interdependence necessitates risk: People need to depend on partners who may not always be responsive to their needs and might one day decide to dissolve the relationship (Murray, Holmes, & Collins, 2006). The risks inherent in interdependence put the basic desire to connect with others in conflict with the need to protect against rejection (Murray et al., 2006; Murray, Derrick, Leder & Holmes, 2008). In soliciting Harry's support after a difficult day at work, Sally can draw closer to Harry, but in doing so, she also risks his criticism or rebuff. To choose connection over self-protection in these types of approach/avoidance conflicts, Sally must believe that Harry has reason to be responsive to her needs even in those situations where it would prove costly. Consistent with this logic, attachment and evolutionary theorists assume that securing a partner who is motivated to care for one's needs is the sine qua non of satisfying interpersonal relationships (Bowlby, 1982; Gilbert, 2005; Reis, Clark & Holmes, 2004; Tooby & Cosmides, 1996).

To anticipate Harry's responsiveness, Sally needs to trust that Harry is committed. The primary or best source of trust comes in Sally's belief that Harry wants to care for her because she is special or irreplaceable to him. The belief that Harry finds her intrinsically valuable gives Sally reason to believe that Harry is committed to meeting her needs because he finds her qualities worthy of sacrifice. Evolutionary theorists argue that specialized cognitive mechanisms evolved to help people to detect which specific others perceive them as “special” or “irreplaceable” (Tooby & Cosmides, 1996). Perceiving a partner's caring as being motivated by one's intrinsic value is so critical because securing such caring minimizes the likelihood of rejections that could threaten survival and the transmission of one's genes. Indeed, people in speed dating situations express greatest interest in others who are selectively accepting of them rather than generally accepting of others, illustrating the allure of being irreplaceable (Eastwick, Finkel, Mochon, & Ariely, 2007). In ongoing relationships, people report greater trust in their partner's commitment when they believe their partner sees them as intrinsically valuable (Rempel, Holmes & Zanna, 1985). They also report greater trust in their partner's commitment to be responsive when they believe their partner would have trouble replacing them (Murray, Leder, McClellan, Holmes, Pinkus & Harris, 2008).

To feel cherished, and essentially irreplaceable in a partner's eyes, people need to perceive two pieces of evidence (Murray & Holmes, 2008). People report greater trust in their partner's responsiveness when they witness their partner's willingness to sacrifice or to accommodate to their transgressions (Weiselquist, Rusbult & Agnew, 1999). To feel irreplaceable to Harry, Sally needs to witness Harry's willing to forego his own interests in such situations to meet her needs (Kelley, 1979). However, such objective data may not be sufficient to compel confidence because behavior is subject to the biases of perceivers (Griffin & Ross, 1991). Truly diagnostic situations may also be relatively infrequent, especially early on in relationships when interdependence is limited (Holmes, 1981). Consequently, to feel irreplaceable, Sally also needs to believe that she brings as many desirable qualities to the relationship as Harry does (Derrick & Murray, 2007; Murray, Rose, Holmes, Derrick, Podchaski, Bellavia & Griffin, 2005). Feeling equal to Harry in overall worth allows Sally to believe that Harry's head will not be turned by potential overtures of attractive others because she knows that she deserves him (Simpson, 1987). Sally's desire to perceive equality thus reflects her implicit appreciation of the power of fairness or equity norms in shaping people's options and experiences in social life (Berscheid & Walster, 1969; Feingold, 1988; Rubin, 1973; Walster, Walster & Berscheid, 1978). In fact, the real world pressure toward matching on social commodities is so powerful that imbalances in dating partners' physical attractiveness forecasts relationship dissolution (White, 1980).

Considerable evidence suggests that perceptions of equality in worth provide a critical platform for optimistic inferences about a partner's intrinsic motivation to be responsive. First, people structure their romantic aspirations in ways that ensure the perception of an equal match (and minimize the chance of rejection). People express more interest in pursuing partners whose physical attractiveness and general social desirability match their own (Berscheid, Dion, Walster, & Walster, 1971). Self-perceived worth even constrains people's aspirations for an ideal partner (Campbell, Simpson, Kashy & Fletcher, 2001; Murray, Holmes & Griffin, 1996). Second, in ongoing relationships, people structure their beliefs in ways that allow them to avoid threatening comparisons to significant others (Pemberton & Sedikides, 2001). Satisfied intimates react to one partner outperforming the other by perceiving such imbalances as complementary (Beach, Whitaker, Jones & Tesser, 2001). In dating and marital relationships, people see their partner's qualities only as positively as they see their own qualities (Feingold, 1988; Murray et al., 1996; Campbell et al., 2001). Third, situations that increase perceptions of equality heighten confidence in a partner's acceptance and love for people who worry most about being inferior to their partner. People with low self-esteem react to experimental feedback about new strengths in themselves or faults in their partner by anticipating greater acceptance and love (Murray et al., 2005). People high in attachment anxiety also report greater confidence in their partner's love and when they think about domains where they outperform their partner (Derrick & Murray, 2007). Finally, situations that decrease perceptions of equality dampen confidence in a partner's acceptance and love for people who worry most about being inferior. People with low self-esteem react to experimental feedback that their dating partner out-performed them on a test of intellectual abilities by anticipating rejection and disaffection (as compared to a control condition where they performed equally well). When out-performed, low self-esteem people also report feeling significantly less close to their partner (Murray & Pinkus, 2008).

Seeking Supplemental Insurance: The Trust-Insurance System

Despite people's best efforts to perceive equality, occasions where one partner feels inferior inevitably occur (Pinkus, Lockwood, Schimmack, & Fournier, 2007). Such comparisons of relative worth might center around each partner's overall worth on social commodities, such as attractiveness, intelligence, and popularity (Buss & Barnes, 1986; Rubin, 1973). However, qualities with less obvious currency, such as warmth or patience, also factor into such

equivalence calculations (Gangestad & Simpson, 2000). Such comparisons might be triggered by a specific event, such as one partner receiving a promotion when the other is demoted. They might also be triggered by circumstances, such as managing a challenging child, that reveal one partner's greater aptitude. Some people, such as those low in self-esteem, are also more susceptible to feeling inferior because they chronically doubt the worth of their own qualities (Murray et al., 2005). Regardless of the source, experiences of falling short raise a red flag – one that signals the possibility that a partner's commitment to be responsive might fade.¹

The trust insurance system functions to pre-empt the problem of non-responsiveness to need that such situations of perceived inferiority create. This system solves the interdependence problem inherent in the principle of least interest (Waller, 1938): The power to pursue one's own interests over the partner's rests with the person who benefits the least from the relationship (i.e., the supposedly superior person). The trust-insurance system minimizes power imbalances. It operates to ensure that Harry at least needs to care for Sally because he cannot afford to lose the many instrumental benefits she provides – a supplementary and instrumental form of trust-insurance that trades feeling irreplaceable or cherished for being indispensable to one's partner.

Figure 1 illustrates the operation of this supplemental insurance or back-up system. Feeling inferior to the partner activates the “alarm” rule (Paths A and B in Figure 1). This procedural rule links changes in the value of one's own qualities relative to the partner's qualities to the activation of the exchange script (Path A). The exchange script contains the implicit knowledge that partner qualities need to match in desirability for one partner to merit or deserve the other. Failing such a match, this script stipulates that a more deserving partner might be exchanged for oneself (Thibaut & Kelley, 1959; White, 1980). The activation of the exchange script engages an accounting mindset – one that motivates people to scrutinize what they bring to their relationship. Given negativity biases in judgment (Baumeister Bratslavsky, Finkenauer & Vohs, 2001), ways in which one falls short of a partner's standards are likely to surface for most everyone once this comparative accounting process begins. Once engaged, such a tallying mindset elicits greater exchange anxieties, mushrooming feelings of inferiority into generalized worries about one's deservingness and likelihood of being replaced (Path B in Figure 2).

The activation of exchange anxieties triggers the “repair” rule (Path C in Figure 2). This compensatory rule functions to secure a partner's responsiveness by prompting behaviors meant to increase a partner's dependence on the relationship. By increasing one's instrumental value to the partner, such behaviors make staying in the relationship more worthwhile to the partner. In this way, this system helps ensure that trust in a partner is not misplaced because it gives a less-than-intrinsically motivated partner at least instrumental reasons to be responsive to one's needs in costly circumstances. Imagine that Sally, like the author of the Time article, assumes that her husband Harry falls outside her “cute-gory”. Feeling diminished by Harry's greater physical appeal, she is unlikely to believe that Harry finds her irreplaceable in this regard because he could readily find a more attractive partner (given the abundance of such fish in the sea). Consequently, she needs to find supplementary ways to make herself feel indispensable to Harry.

As one means of making herself indispensable, she might try to specialize their roles in ways that increase Harry's dependence on her. For instance, she might strive to be highly proficient

¹We are not arguing that people can never benefit from upward social comparisons to the partner. After all, Sally might take delight in the fact that Harry is more gregarious than she because it facilitates her social interactions with strangers (Aron, Aron, Tudor & Nelson, 1991). Nonetheless, the existing evidence suggests that people are only likely to benefit from such single dimension upward social comparisons when they are secure in the relationship (Gabriel, Carvalho, Dean, Tippin, & Renaud, 2005; Gabriel, Carvalho, Jaremka, & Tippin, in press; Lockwood, Dolderman, Sadler & Gerchak, 2004). Even in those circumstances, however, such upward comparisons are likely to be tinged with some level of apprehension to the degree that Sally believes Harry values gregariousness in others.

in those domains, such as cooking or financial management, where Harry is weaker. She might also take responsibility for instrumental or practical matters, managing Harry's schedule or coordinating his relationships with his family, making herself indispensable in his daily life. She might further secure Harry's responsiveness and commitment by making sure that all of Harry's friends come to like her, thereby narrowing his independent social network. Through such behavioral reactions, Sally can ensure that Harry needs to be responsive to her needs, even when he may not want to, because he cannot afford to lose her.²

The hypothesis that people may sometimes need additional reason to believe that their partner is committed and motivated to respond to their needs resonates with evolutionary, cross-cultural, and interdependence analyses. Evolutionary theorists argue that imbalances in mate value can be compensated by increased mating effort (Kirsner, Gigeredo, & Jacobs, 2003). In interdependent cultures, people need to believe that a partner's family also values their qualities (MacDonald & Jessica, 2006). Interdependence analyses similarly emphasize the importance of structural constraints on commitment (Levinger, 1976; Rusbult & Van Lange, 2003). A person's commitment to the relationship is not only governed by the intrinsic factors that draw them to it. Instead, it is also constrained by instrumental or extrinsic factors, such as need satisfaction (Drigotas & Rusbult, 1992), the absence of alternatives (Rusbult, Martz & Agnew, 1998), or religious and family prohibitions (Levinger, 1976) that make ending the relationship difficult. The Efficient and Flexible Operation of the System

To provide an effective solution to the problem of managing a partner's dependence, the trust-insurance system needs to be both efficient and flexible (Murray, Derrick, Leder & Holmes, in press). To be efficient, it should operate without awareness, intention or control because ongoing and complex problems require automatic and effortless solutions (Bargh, 2007; Bargh & Ferguson, 2000; Dijksterhuis & Nordgren, 2006). To be flexible, it should accommodate to the circumstance imposed by people's chronic expectations of partner responsiveness (Murray et al., 2006). This latter assumption is captured by Path D in Figure 1.

The "efficiency" criterion stipulates that the "alarm" and "repair" rules are implicit to the procedural rules that comprise people's general working models (Baldwin, 1992; Holmes & Murray, 2007; Murray et al., 2008; Tooby & Cosmides, 1996). If these rules are implicit to people's relationship representations, they should automatically regulate behavior in situations that limit conscious behavioral control (Dijksterhuis, Chartrand & Aarts, 2007). In such situations, the implicit activation of the exchange script should elicit anxieties about being inferior and being replaced by a better alternative and prompt dependence-promotion regardless of people's considered or declarative beliefs (Baldwin, 1992). The "flexibility" criterion stipulates that people can over-ride automatically-activated goals when the circumstance warrants (Aarts, Custers & Holland, 2007; Macrae & Johnston, 1998). If the alarm and repair rules can be flexibly applied, their influence may shift as a function of people's conscious capacity to correct and their chronic belief about the strength of their partner's intrinsic motivation to be responsive (Murray et al., 2008; Murray & Holmes, 2008). Consistent with this logic, models of attitudes, impression formation, and stereotyping assume that automatically-activated associations control behavior unless people have the motivation, opportunity, and capacity to over-ride them (Fiske & Neuberg, 1990; Olson & Fazio, in press).

²We are not trying to argue that dependence-promotion is the only response to felt inferiority. We are simply arguing that it is an important response, one that might be part of a broader constellation of behaviors. For instance, people might respond to feeling inferior by trying to change one's own qualities in a way that lives up to the standards the partner sets (Overall, Fletcher, & Simpson, 2006). We are also not trying to argue that people only engage in dependence-promoting behaviors when they feel inferior. Other motivations, including communal concerns, may also motivate such behaviors (Clark & Grote, 1998).

Recent empirical research on risk regulation processes strongly supports the utility of distinguishing between the efficient and flexible operation of relationship regulatory systems (Cavallo, Fitzsimons & Holmes, 2007; Murray et al., 2008). The risk regulation system solves the problem of behavioral indecision (approach vs. avoidance) inherent to situations of interdependence (Murray, Holmes & Collins, 2006). The procedural rules implicit to this system automatically link external risk and vulnerability to the goal of approaching the partner. Illustrating this dynamic, people are quicker to identify connectedness words in a lexical decision task when primed with a time when a significant other seriously disappointed them (Murray et al., 2008, Experiment 1). This automatic effect emerges regardless of self-esteem. However, in situations that lend themselves to conscious behavioral control, and thus, the opportunity to correct, only high self-esteem people act on such heightened needs for connection (Murray et al., 2008, Experiment 2). When interpersonal risk is primed, high self-esteem people report greater willingness to enter situations of interdependence in their relationship (e.g., seeking a partner's support, giving a partner decision-making power). Low self-esteem people over-ride such impulses (Murray et al., 2008). Nonetheless, when deprived of the executive strength needed to correct, they too pursue connectedness goals in response to risk. When executive strength is depleted, low self-esteem people respond to interpersonal risk by seeking out risky connections to their dating partner (Murray et al., 2008, Experiments 5 and 6). This automatic or uncorrected effect emerged using cognitive busyness (Gilbert, 1989) and self-regulatory depletion (Muraven & Baumeister, 2000) to impair executive strength.

When conscious deliberations of the exchange script afford greater potential for correction, how might self-esteem affect the likelihood of the alarm and repair rules being overridden or suppressed? People gauge their partner's regard for them by assessing the worth of their own qualities (Murray, Holmes & Griffin, 2000; Murray, Holmes, MacDonald & Ellsworth, 1998). Because people with high self-esteem possess more positive and certain beliefs about themselves than people with low self-esteem (Campbell, 1990), they correctly assume that their partner sees many special traits worth valuing in them. In contrast, people with low self-esteem incorrectly assume that their partner sees few valuable qualities in them (Murray et al., 2000).

Feeling confident their partner finds intrinsic value in them should largely inoculate high self-esteem people against feeling inferior in the face of upward social comparisons (Murray et al., 1998; Murray et al., 2005). If circumstances provoked explicit deliberations about exchange, feeling so valued should provide high self-esteem people with sufficient reason to trust in a partner's commitment. Indeed, they should actually suppress the exchange script to protect the important belief that their partner's responsiveness is intrinsically motivated (Rempel et al., 1985). Consistent with this logic, people with high self-esteem can override the automatic inclination to internalize rejection experiences (Leary & Baumeister, 2000). For people low in self-esteem, the trust-insurance system should not be so easily suppressed. Unsure of their value to their partner, low self-esteem people should chronically scrutinize their relationship for evidence concerning their degree of match. Moreover, when the exchange script becomes salient, the alarm and repair rules should still control behavior.

Research Strategy and Hypotheses

The current research examines the efficient and flexible operation of the trust-insurance system. The model stipulates that feeling inferior to the partner activates the exchange script and ensuing exchange anxieties and that such anxieties in turn activate the repair rule. The model further stipulates that the likelihood of these procedural rules being expressed depends on people's capacity (i.e., conscious insight into the exchange script) and motivation (e.g., chronic self-esteem). To provide convergent support for our hypotheses, we examined the operation

of this system in a naturalistic daily diary study of newlywed couples and five experiments involving people in exclusive dating relationships.³

We begin by documenting the power of the trust-insurance system in regulating daily behavior in newlywed couples. This sample provides an especially conservative test of the hypothesis that feeling inferior activates dependence-promoting behaviors: Getting married decreases the very anxieties about a partner's responsiveness that propel the operation of this system (Davila, Karney & Bradbury, 1999). Nonetheless, we believed that the problem of ensuring a partner's commitment to be responsive is sufficiently fundamental that the alarm and repair rules would even be operative here. We expected one day's feelings of inferiority to trigger the next day's instrumental acts of sacrifice, such as looking for something the partner had lost, doing a chore that was the partner's responsibility, or running an errand for the partner (Clark & Grote, 1998). We also expected such insurance-seeking to be effective: We expected partners to report heightened commitment on days after they were the object of dependence-promoting treatment.

Experiment 1 examined how being in a position of inferiority to the partner affects the activation and suppression of the exchange script. We manipulated both the motivation to engage in social comparison and the salience of the partner's most positive or negative qualities. We then measured the tendency to construe a partner's sacrifices in exchange terms (i.e., the activation of exchange norms) and the willingness to respond communally to the partner's needs (i.e., the contradiction of exchange norms). When motivated to engage in social comparison, we expected low self-esteem people to perceive stronger exchange norms when they focused on their partner's positive than negative qualities. We expected high self-esteem people instead to suppress the exchange script by increasing the strength of their communal goals in this situation.

We then describe four experiments designed to distinguish the efficient and flexible operation of the trust insurance system. In Experiments 2 and 3, we implicitly primed the exchange script by asking participants to evaluate how appealing others would find personal ads that conveyed even-trade expectations or by superimposing pictures of U.S. coins on a computer screen. In Experiments 4 and 5, we explicitly primed the exchange script by having participants select partner equal matches within a dating service simulation or by sorting matched and mismatched couples into stable and unstable marriages. In all four experiments, we then measured the activation of exchange anxieties (i.e., worries about being inferior and being replaced) and behavioral intentions and efforts to increase a partner's dependence (i.e., the desire to specialize roles in the relationship in ways that fostered the partner's dependence, taking disproportionate responsibility for the partner's mundane life tasks, insinuating oneself into the partner's social network, and imposing barriers to leaving the relationship on the partner).

We expected the implicit primes to induce relatively more automatic processing than the explicit ones because the implicit primes do not directly focus people's conscious thoughts or attention on the exchange script. When viewing images of U.S. coins or judging how attractive others would find personal ads (i.e., the implicit primes), people encounter, but do not actually enact or practise, the exchange script. Their attention is actively engaged in another task. Social cognitive scholars characterize such primes as inducing post-conscious automatic processes. This type of automatic process is elicited by the conscious processing of a stimulus, such as a scrambled sentence task, that activates a knowledge structure that colors subsequent processing without people's intention, awareness or control (Bargh, 1994; Chen et al., 2007, p. 136). However, when match-making potential suitors or divining marital fates on the basis of

³The operation of this system should be most evident in relationships where there is bilateral dependence – that is, adult close relationships where each partner needs to rely on the other to maintain the relationship. The applicability of the model to friendships and parent and adult child relationships remains an important question for future research.

equality, people actively consider and enact the exchange script. Attention is engaged in the script itself.

Because the implicit activation of the exchange script limits the opportunity or capacity for behavioral control or correction (Olsen & Fazio, in press), we expected implicit reminders of the exchange script to increase anxieties about being inferior and replaced by a better alternative regardless of self-esteem. We expected people to counter such worries by behaving in ways that solicited partner-dependence, seeking supplementary trust-insurance. Explicitly contemplating the exchange script affords people who are motivated to suppress this script the opportunity to do so. When consciously deliberating exchange, we expected high self-esteem people to see themselves as less inferior and replaceable and less in need of the insurance provided by the partner's dependence. However, we expected low self-esteem people to respond to such conscious deliberations by increasing their partner's dependence because they do not believe they possess qualities that could otherwise ensure their partner's commitment.

4

Summary

This paper presents the first empirical test of a novel theoretical model of trust-insurance. First, it demonstrates that the alarm and repair rules are implicit procedural features of people's relationship representations. In this way, this paper illustrates the normative power of the exchange script – an oft-discussed, but little studied, feature of interdependent life (Berscheid & Regan, 2005). Second, it demonstrates that low and high self-esteem people both seek supplementary behavioral means of securing their partner's commitment on those occasions when exchange anxieties are activated implicitly. Third, it demonstrates how the calibration of this system shifts as a function of people's self-esteem when the exchange script is consciously deliberated. Finally, this paper is one of the first to demonstrate how low self-esteem people might protect their relationships in the face of persistent rejection anxieties.

The Daily Diary Study: Even Newlyweds Need Insurance

Does feeling inferior to a partner automatically elicit behavioral efforts to increase the partner's dependence? And do such efforts ensure that trust is not misplaced by strengthening the partner's commitment? We posed these questions in a daily diary study of newlyweds. We examined whether Sally's inferiority anxiety on Monday predicted her self-sacrificing behavior on Tuesday – mundane behaviors, such as looking for Harry's keys, that make her indispensable. To provide preliminary, albeit indirect, evidence that such a normative effect is automatic in nature, we estimated this association controlling for Sally's inferiority anxiety on Tuesday. The effect of Monday's inferiority thus captures the effect of inferiority concerns that do not surface in Sally's explicit reports on Tuesday. Because awareness is thought to be critical for conscious control in most circumstances, social cognition scholars typically utilize the lack of such insight as a precondition for establishing automaticity (Bargh, Chen & Burrows, 1995; Chen, Fitzsimons & Andersen, 2007). We expected these uncontrolled inferiority anxieties to trigger dependence-promotion regardless of self-esteem. We also expected Sally's dependence-promoting behaviors on Tuesday to diminish Harry's doubts about his commitment on Wednesday.

Method

Participants—Two hundred twenty-two couples married between two and six months participated in an ongoing 7-phase longitudinal study of marriage. Couples were recruited from

⁴Although the model stipulates that the alarm and repair rules are activated automatically even for high self-esteem people, correcting these rules may still become automatic over time (Murray et al., 2008, Experiment 7). We return to this point in the General Discussion.

local City Clerk's offices when applying for marriage licenses. Seven couples were excluded because the PDA recorded fewer than 10 diary days (3 couples) or because they failed to follow instructions (4 couples). These couples were all in their first marriages and they had no children. Their mean age was 27.1 years. The sample was fairly well-educated (24% had high school diplomas, 50% had college/university degrees, and 25% had graduate/professional degrees) and middle to upper class (14% had combined income less than \$40,000, 69% had combined income between \$40,000 and \$100,000, and 17% had a combined income greater than \$100,000). Each couple received \$125 payment for completing this initial phase of data collection.

Procedure—The research assistant seated each member of the couple at a separate computer station and then asked each person to complete the background measures (via Media Lab). The research assistant then introduced the procedures for completing the daily diary on a Dell Axim PDA. Participants were told to begin their diaries the following day, to complete the diaries before going to bed, that their responses were anonymous and confidential, and that they should not discuss their diaries with one another. (The PDA was programmed such that participants were unable to complete the diary until the evening hours.) Both members of the couple then reviewed the questions in the electronic diary to ensure that they understood all of the items. The couple then set up a follow-up appointment for at least 2 weeks after the orientation session. Each member of the couple left the laboratory with a PDA and a reminder sheet that summarized the procedures. They returned to the lab after 14 days of data collection to complete a questionnaire that assessed their experiences in completing the PDAs. The research assistant then described the broad purposes of the study, paid, and thanked each couple.

Background Measures—The electronic background questionnaire asked participants for demographic information (i.e., gender, age, ethnicity, highest level of education attained, annual salary). It also contained the Rosenberg (1965) self-esteem scale and partner- and relationship-evaluation measures.

The Electronic Diary Record—The electronic diary program indexed the events and emotional experiences of the day. Each day, participants indicated whether each of 91 events had occurred. (The event appeared on the PDA screen and participants used the stylus to select yes/no). General categories of events included interactions with the spouse, success or failure at work, and managing household/family responsibilities. They also rated their feelings on 42 scales. (The feeling question appeared on the screen and participants used the stylus to select a scale point indicating the strength of their experience of that emotion). Emotion categories included items tapping self-evaluations, felt inferiority, perceptions of the partner's regard, perceptions of the partner, and evaluations of the relationship. We detail only those questions relevant to the current paper.

Inferiority anxiety: This 5-item scale ($\alpha = .79$) tapped anxiety about being inferior to the partner and not meeting the partner's standards (i.e., "I'm not good enough for my partner"; "My partner is a better person than I am; My partner is more fun to be around than I am"; "I don't do enough for my partner"; "My partner does more for me than I do for him/her"). Participants responded to these items on 7-point scales (0 = not at all, 6 = especially).

Doubts about the marriage: This single item measure from Downey, Freitas, Michaelis, & Khouri, (1998) tapped the tendency to question one's marital commitment (i.e., "Today I had some doubts about my partner or my marriage). Participants responded to this question on a 7-point scale (1 = not true, 7 = very true).

Dependence-promoting behavior: This 8-item scale, adapted from Clark and Grote's (1998) index of communal behavior, tapped the occurrence of self-sacrificing acts that might make one partner more needed or indispensable to the other (e.g., "I searched for something my partner had lost"; "I went out of my way to run an errand for my partner"; "I repaired something my partner had damaged or broken"; "I packed a snack/lunch for my partner to take to work or school"; "I did a chore that is normally my partner's responsibility;" "I picked up after my partner"). Participants indicated whether each event occurred (1 = yes, 0 = no).

Results

Did these newlyweds compensate for one day's felt inferiority by enacting more dependence-promoting behavior the next day? Did such dependence-promoting behavior in turn strengthen their partner's commitment? Because daily diary data obtained from couples has a nested or non-independent structure, we utilized the multivariate feature of the multi-level modeling program MLwiN to test these hypotheses (Goldstein, Rasbash, Plewis, Draper, Browne, Yang, Woodhouse & Healy, 1998). We modeled our data as a three-level nested structure with within-person across-day effects making up the lowest level (e.g., the felt inferiority-behavior association), any between-person effects (e.g., self-esteem) making up the second level, and a variable representing gender within couple making up the highest level.⁵ This approach simultaneously estimates two regression equations, one for women, and one for men, controlling for the interdependence between measures taken on two people within a dyad. This multivariate approach also allows straightforward tests of gender differences.

If Inferior, then Promote Dependence—In the analyses that follow, we examined whether Sally's anxiety about being inferior predicted her dependence-promoting behavior on subsequent days. We expected to find a significant and positive lagged within-person effect of felt inferiority on subsequent dependence-promotion. The equations we utilized to test this hypothesis follow:

$$Y_{Wt} = B_{0W} + B_{1W} Y_{t-1} + B_{2W} I_{t-1} + B_{3W} I_t + B_{4W} Z + v_{0W} + u_{Wt} \quad (1)$$

$$Y_{Mt} = B_{0M} + B_{1M} Y_{t-1} + B_{2M} I_{t-1} + B_{3M} I_t + B_{4M} Z + v_{0M} + u_{Mt} \quad (2)$$

Equation 1 represents the effects for women (W); equation 2, the effects for men (M). We predicted today's level of dependence-promoting behavior (Y) from an average level term (B_0 , an intercept that varies across people and is a "random coefficient"), dependence-promoting behavior on the prior day (the coefficient B_1 , a "fixed effect" that captures the average within-person stability slope across people), inferiority anxiety on the prior day (B_2 , another fixed effect), today's inferiority anxiety (B_3 , another fixed effect), the between-person moderator, chronic self-esteem (B_4), an error term (v_0) that reflects the deviation of each person's average from the overall average, and an error term (u) that reflects each person's daily deviation from his or her own mean on Y. In these equations, all of the within-person daily level predictors were centered around each person's mean for that variable. Significant effects for daily level variables reflect the effects of being high versus low relative to one's own mean. We centered the between-person variable, self-esteem, around the sample means for women

⁵This approach is essentially identical to the data structure used in the classic studies by Barnett and colleagues (e.g., Barnett, Marshall, Raudenbush, & Brennan, 1993; Barnett, Raudenbush, Brennan, Pleck & Marshall, 1995; Raudenbush, Brennan, & Barnett, 1995), except that it exchanges the use of multiple dummy variables to indicate gender for the use of a multivariate command that controls how effects are estimated simultaneously for men or women within a couple.

and men. Effects of self-esteem reflect the effect of being high versus low relative to the sample mean.

After obtaining estimates for this preliminary model, we tested for gender differences in the size of the coefficients. We did this by comparing the deviance of a model that constrained corresponding coefficients to be equal for men and women (e.g., B_2 , the cross-day effect of felt inferiority on behavior) to the deviance of a model that allowed these coefficients to vary for men and women. As this model test revealed only one significant gender difference, we pooled all of the coefficients but one across gender. Table 2 contains the coefficients.

As expected, concerns about being inferior to the partner did indeed elicit dependence-promoting behavior on subsequent days. The pooled within-person lagged effect of felt inferiority was significant and positive. This suggests that unacknowledged (i.e., uncontrolled) felt inferiority anxieties are sufficient to trigger dependence-promoting behavior the next day.⁶ (The cross-day effect linking felt-inferiority to dependence-promoting behavior was also significant in a model that omitted today's inferiority.) The same-day association between felt inferiority and dependence-increasing behavior revealed that women felt less inferior on days they sacrificed more. This effect was not significant for men, $\chi^2(1) = 6.7, p < .05$.

Did global self-esteem moderate the strength of the behavioral contingency linking felt inferiority to the next day's dependence-promoting behavior? This question posits a cross-level interaction. To determine whether people differed significantly in the strength of the "if inferior, then promote dependence" contingency, we ran a further model that estimated random rather than fixed B_2 coefficients. This allowed us to determine whether people differed significantly in the strength of the "if inferior, then promote dependence" association – a precondition for moderation. However, the change in deviance comparing the fixed and random effects models was not significant. This suggests that the "if inferior, then promote dependence" effect is sufficiently robust that it is not possible to examine the question of moderation (Hox, 1995).

Is Dependence-Promotion Functional?—Did Sally's dependence-promoting acts actually heighten Harry's commitment on subsequent days? We expected to find a significant and negative across-person lagged effect of dependence-promoting behavior, such that Sally's sacrifices Monday predicted Harry's diminished doubts about his commitment Tuesday. The equations we utilized follow:

$$Y_{W_t} = B_{0W} + B_{1W} Y_{t-1} + B_{2W} I_{t-1} + v_{0W} + u_W \quad (1)$$

$$Y_{M_t} = B_{0M} + B_{1M} Y_{t-1} + B_{2M} I_{t-1} + v_{0M} + u_M \quad (2)$$

Equation 1 represents the effects for women (W); equation 2, the effects for men (M). We predicted today's level of doubts about the marriage (Y) from an average level term (B_0 , a random coefficient), doubts about the marriage on the prior day (B_1 , a fixed effect), the partner's dependence-promoting behavior on the prior day (B_2 , another fixed effect), an error

⁶Some readers might wonder if we provided an overly liberal test of our hypotheses because the measure of inferiority anxiety included two items that tapped the behavioral impetus to do more for the partner. To examine this possibility, we conducted a further set of analyses using an inferiority measure that contained only the three items directly tapping felt inferiority (i.e., "I'm not good enough for my partner"; "My partner is a better person than I am;" "My partner is more fun to be around than I am."). These analyses continued to revealed a significant, cross-day effect of inferiority anxiety predicting dependence-promoting behaviors.

term (v_0) that reflects the deviation of each person's average from the overall average, and an error term (u) that reflects each person's daily deviation from his or her own mean on Y .

Our initial examination of this model did not reveal significant gender differences. Table 3 contains the results of a model that pooled corresponding coefficients across gender. As expected, the lagged, across-person effect of dependence-promoting behavior was significant and negative. Behaving in more dependence-promoting ways actually diminished the partner's doubts about his/her commitment on subsequent days.

Discussion

Not even newlyweds can escape the contingent effects of feeling inferior to their new spouse. On days after they felt more anxious about being inferior, these newlyweds behaved in ways that could solidify their partner's dependence, seeking a substitute form of trust-insurance in the mundane tasks of searching for lost keys, making lunches, and picking up dirty dishes. Making such sacrifices did indeed predict reduced inferiority anxieties that same day for women. These dependence-promotion efforts also had the intended effect on the partner: On days after they were the object of such behaviors, partners expressed fewer doubts about their marriage. Impressively, the lagged effect of inferiority on dependence-promoting behavior emerged when we controlled for contemporaneous feelings of inferiority. Although not conclusive evidence for automaticity, it suggests that the procedural rule linking felt inferiority to dependence-promotion is automatic because conscious or controlled contemplation of one's anxieties is not necessary to compel behavior (Bargh et al., 1995).

There are at least four alternative explanations for these effects. First, inferiority anxieties might predict subsequent dependence-promoting behavior because feeling badly motivates people to do nice things for their partner. To examine this "mood regulation" alternative, we conducted a further set of analyses where we controlled for state self-esteem on both the prior and the current day. The cross-day association between felt inferiority and dependence-promotion was still strong and significant in these analyses. Second, inferiority anxieties might predict subsequent dependence-promoting behavior simply because it triggered a generic desire to be good (or avoid being bad). However, further analyses revealed that Monday's felt inferiority did not predict Tuesday's willingness to behave in generally positive (e.g., giving compliments, being affectionate) or negative ways (e.g., being critical, snapping or yelling at the partner). The cross-day association between felt inferiority and dependence-promotion was also strong and significant when we controlled for same-day reports of such behaviors. Thus, feeling inferiority selectively elicits the behavioral tendency to increase dependence by usurping the partner's opportunity to do things they could readily do for themselves. Third, feeling inferiority might prompt dependence-promotion because feeling rejected or devalued by the partner motivates people to make amends. But further analyses revealed that the cross-day association between felt-inferiority and dependence-promotion was still strong and significant when we controlled for feelings of rejection on the prior day. Fourth, Sally's engaging in dependence-promoting behaviors might decrease Harry's doubts about his commitment because such behaviors increase his affection for Sally (not because they make him more dependent in a structural sense). However, further analyses that controlled for the partner's feelings of love continued to reveal a significant lagged effect of dependence-promoting behaviors on commitment. Additional analyses also revealed that Sally's dependence-promoting behavior decreased Harry's doubts even when we controlled for her general tendency to behave in an accepted or rejecting way on the prior day. As the trust insurance model stipulates, these newlywed data suggest that state anxieties about being inferior to the partner selectively elicit the very behaviors that should (and did) make people indispensable.

Experiment 1: The Activation of The Exchange Script

Experiment 1 examined the activation and suppression of the exchange script. It examined whether drops in the perception of equivalence activate exchange norms – namely, the perception that benefits are traded as opposed to given freely. Designing this experiment required creating a procedure to induce situated or state feelings of inferiority to the partner. In a preliminary pilot experiment ($N = 133$), we manipulated the motivation to engage in social comparison by utilizing a procedure developed by Stapel and Tesser (2001). As detailed below, this manipulation strengthens social comparison goals by inducing a state of uncertainty about the self. We then manipulated the nature of the social comparison made (i.e., upward or downward) by soliciting descriptions of the partner's two most positive or two most negative traits. This procedure induced feelings of inferiority for low and high self-esteem people alike. When motivated to engage in social comparison, people reported greater feelings of inferiority when focused on their partner's most positive than negative traits. No such effect emerged when people were not motivated to engage in social comparison.

In Experiment 1, we manipulated social comparison goals and the nature of the standard the partner set. We then measured the activation and suppression of the exchange script. To tap its activation, we measured adherence to exchange norms. Specifically, we measured the tendency to interpret a partner's sacrifices as accrued debt. As we reasoned that high self-esteem people may be motivated to deny or counter the relevance of exchange principles to their relationship when they contemplate upward social comparisons, we also measured the conceptual opposite of exchange norm – that is, the strength of people's desire to be communal and not count relative contributions (Clark & Grote, 1998; Holmes, 1981). Because low self-esteem people chronically feel inferior to their partner (Murray et al., 2005), the exchange script should be central to their relationship expectations. Accordingly, we expected upward social comparisons to the partner to readily activate their highly accessible exchange script. We expected low self-esteem people in the high need for social comparison condition to see themselves as more seriously indebted after partner sacrifice when they focused on their partner's positive than negative traits. In contrast, we expected high self-esteem people in the high need for social comparison condition to counter the exchange script by reporting stronger communal norms when they focused on their partner's positive traits.⁷

Method

Participants—One hundred forty-six undergraduates who were currently involved in exclusive dating relationships participated in exchange for course credit. Eight participants were eliminated for not following the instructions, leaving a sample of 138 (64 men). Participants were 19.9 years old on average ($SD = 2.3$) and their relationships averaged 18.0 months ($SD = 13.6$) in length.

Procedure—On arriving at the laboratory, all participants first completed a short background questionnaire that included basic demographic questions and the Rosenberg (1965) self-esteem scale. Next, we manipulated both social comparison goals and the standard the partner set. To manipulate social comparison goals, we utilized the manipulation developed by Stapel and Tesser (2001). Under the guise of completing a computer-administered impressionistic personality test, participants first completed a 15-item questionnaire about preferences and philosophy (e.g., “Spontaneity can be an excuse for irresponsibility”; “Many people feel uneasy when there is little work for them to do”). Once participants completed the items, the computer furnished a message that it was tabulating a tailored summary of their personality. Participants

⁷We did not measure feelings of inferiority in Experiment 1 to avoid priming the exchange script by making feelings of inferiority especially salient.

in the “self-uncertain” or social comparison goal condition then received feedback stating that the program was unable to compute a consistent profile of their personality. Such feedback increases self-uncertainty, thereby heightening the need for social comparison information to define the self (Stapel & Blanton, 2004; Stapel & Tesser, 2001). Participants in the “self-certain” or control condition learned that the program had assembled a consistent personality profile. Participants in the “high partner standard” condition then described their partner's two most positive qualities. Participants in the “low partner standard condition” described their partner's two most negative qualities. Next we administered a package of dependent measures that assessed exchange norms, communal norms and state self-esteem among fillers. We then administered manipulation checks for stability of personality and valence of partner qualities. Participants were debriefed and thanked at the conclusion of the experiment.

Measures

Exchange norms: This scenario measure asked participants to imagine 7 different situations in which they had to contemplate asking their partner for a sacrifice or favor. In one scenario, participants had to imagine that they were sick with the flu and they needed their partner to go to their classes to take notes for them. In another, participants had to imagine asking their partner to go to a party they wanted to attend, but they knew their partner did not want to attend. For each situation, participants answered four questions, two of which directly tapped exchange concerns (i.e., “If your partner agreed to do this, how much would you be in your partner's debt?” (1 = not at all, 5 = a great deal); “If your partner agreed to do this, how much would your partner expect you to do to make it up to him/her?” (1 = nothing, 5 = a great deal)). In computing the measure of exchange script activation, we first averaged responses to each question across scenarios and then averaged these averages ($\alpha = .88$).

Communal norms: This 10-item scale ($\alpha = .84$), adapted from Mills, Clark, Ford and Johnson (2004), tapped participants' desire to meet their partner's needs as they arose without concern for the self (e.g., “How large a benefit would you be likely to give your partner?” (0 = not at all large, 8 = extremely large); “How much would you be willing to give up to benefit your partner?” (1 = I would give up nothing, 8 = I would give up everything).

State self-esteem: This 23-item scale ($\alpha = .96$), taken from Murray et al. (2005), tapped people's current feelings about the self on bipolar dimensions (e.g., 1 = “good” ... 7 = “bad”; 1 = “rejected” ... 7 = “accepted”; 1 = “ashamed” ... 7 = “proud”; 1 = “adequate” ... 7 = “inadequate”). Negative items were reversed, such that higher scores reflected higher state self-esteem.

Stability of personality: This 2-item measure ($\alpha = .61$) tapped understanding of the computer feedback (i.e., “Describe your view of yourself on the following scale (1 = unstable and inconsistent, 7 = stable and consistent); “How did the computer feedback characterize the consistency of your personality?” (1 = unstable and inconsistent, 7 = stable and consistent)

Valence of partner qualities: Participants rated how positively and how negatively they perceived each of the two partner qualities they generated. Participants made these ratings on 7-point scales (e.g., 1 = not at all, 7 = extremely positive). Negative ratings were reversed scored in the valence scale, such that higher scores reflected more positive evaluations ($\alpha = .93$).

Results

Did comparing oneself to a partner's most positive traits activate the exchange script for low, but not high, self-esteem people? We conducted hierarchical regression analyses predicting the dependent measures from (a) social-comparison condition (1 = self-uncertain, -1 = self-certain), partner-standard condition (1 = most positive traits, -1 = most negative traits), the

centered main effects of self-esteem, (b) the two-way interaction terms, and (c) the three-way self-esteem by social comparison by partner-standard interaction term. Table 3 contains the predicted scores for participants relatively low and high in self-esteem in each condition. Tables 4 and 5 contain the results of the regression analyses. We discuss only the significant effects involving the experimental conditions for brevity.⁸

Exchange Norms—The regression analysis predicting exchange norms revealed the expected and significant three-way interaction. The two-way social comparison goal by partner-standard interaction was significant for low, $\beta = .29$, $t(130) = 2.49$, $sr^2 = .04$, $p < .05$, but not high, $\beta = -.14$, $t(130) = -1.25$, $sr^2 = .01$, self-esteem participants. In the high need for social comparison condition, low self-esteem people perceived stronger exchange norms when they focused on their partner's positive than negative qualities, $\beta = .35$, $t(130) = 2.17$, $sr^2 = .03$, $p < .05$. The simple effect of partner standard was not significant for low self-esteem people in the low need for social comparison condition, $\beta = -.23$, $t(130) = -1.37$, $sr^2 = .01$. The corresponding simple effects of partner-standards were not significant for high self-esteem people in either social comparison goals condition, $p > .25$.

Communal Norms—The regression analysis predicting communal strength revealed a significant three-way interaction. The two-way social comparison goal by partner-standard interaction was significant for high, $\beta = .28$, $t(130) = 2.32$, $sr^2 = .04$, $p < .05$, but not low, $\beta = -.06$, $t(130) < 1$, $sr^2 = .00$, self-esteem people. In the high need for social comparison condition, high self-esteem participants reported stronger communal motivation when focused on their partner's positive than negative qualities, $\beta = .31$, $t(130) = 1.81$, $sr^2 = .02$, $p = .07$, although this simple effect was only marginally significant. The simple effect of partner-standards was not significant for highs in the low need for social comparison condition, $\beta = -.25$, $t(130) = -1.47$, $sr^2 = .02$. The simple effects of partner-standards were not significant for low self-esteem participants, $p > .50$.

Manipulation Checks—The analysis predicting understanding of the feedback revealed a significant main effect of social comparison. Participants in high need for social comparison condition ($M = 4.61$) reported less personality consistency than participants in the low need for social comparison condition ($M = 5.40$). The analysis predicting ratings of the partner's qualities revealed significant main effects of partner-standard and social comparison conditions. Participants rated positive qualities ($M = 6.44$) more positively than negative qualities ($M = 2.87$). Participants in the high need for social comparison condition rated partner qualities more positively ($M = 4.82$) than participants in the low need for social comparison condition ($M = 4.50$).

Discussion

Experiment 1 suggests that comparing oneself to a partner's most positive traits activates the exchange script for people low in self-esteem. In the high need for social comparison condition, they perceived partner sacrifices in more exchange-based terms when they focused on their partner's positive than negative qualities. In contrast, high self-esteem participants counteracted the exchange script when they were in a position of inferiority. In the high need for social comparison condition, they reported stronger communal norms when focused on their partner's positive than negative qualities. These effects were not due to comparable shifts in people's feelings about themselves. The experimental manipulations did not have any significant effects on state self-esteem (see Table 4). When we controlled for state self-esteem, the three-ways predicting exchange norms, $\beta = -.21$, $t(129) = -2.64$, $sr^2 = .05$, $p < .01$, and communal norms, $\beta = .17$, $t(129) = 2.00$, $sr^2 = .03$, $p < .05$, also remained significant.⁹

⁸We did not find any moderating effects of gender in any of the experiments. We collapse across gender in reporting the results.

Experiment 2: Examining System Efficiency One

Experiments 2 and 3 examined the efficient operation of the alarm and repair rules. In these experiments, we assumed that the exchange script is so central to social life that its mandates should be available within the relationship representations of low and high self-esteem people alike – making this script amenable to implicit primes (Bargh, 2007). In Experiment 2, we primed the exchange script incidental to the pursuit of another task by asking people to evaluate the general appeal of purported personal ads. In the experimental condition, these ads emphasized the romantic hopefuls' expectations of making a matched trade. We then measured felt inferiority to the partner, concerns about being replaced by desirable alternatives, and behavioral steps taken to increase the partner's dependence. We employed multiple new measures of efforts and intentions to promote dependence, including role specialization, taking responsibility for the partner's life, narrowing the partner's social network, and imposing barriers to dissolution. Because implicitly priming the exchange script limits the opportunity for behavioral control (Bargh, 2007), we expected low and high self-esteem participants primed with the exchange script to report heightened worries about being inferior and being replaced and greater efforts to secure the partner's dependence.

Method

Participants—Fifty-six undergraduates currently involved in exclusive dating relationships participated in exchange for course credit. Two participants were eliminated for failing to follow instructions, leaving a sample of 54 (35 men). Participants averaged 19.9 years of age ($SD=2.1$) and they were involved in relationships averaging 16.3 months in length ($SD = 14.7$).

Procedure—On arriving at the laboratory, participants learned they would be involved in two short, unrelated experiments, the first examining people's perceptions of what kinds of personal ads were effective in attracting partners, and the second examining people's perceptions of their own relationships. Participants then completed background measures on computer including demographic questions and the Rosenberg (1965) self-esteem scale. Participants then evaluated a series of 13 (purportedly real) personal ads and evaluated the attractiveness of the ad to potential partners (1 = fairly attractive, 5 = very attractive). In the exchange condition, the romantic hopeful's solicitation emphasized making an even-trade. In the control condition, the ads were generally parallel, but they did not contain even-trade expectations. Two exchange ads (marked E) and two control ads (marked C) follow:

E: “Accomplished man seeking attractive woman for a meaningful relationship. I am looking for someone who is a good fit for me, and can live up to the qualities I bring to the relationship in her own way. My hobbies include sailing, tennis, and going out to restaurants”.

E: “Twenty-ish female seeking male for a serious relationship. My friends describe me as attractive in my own way, and as being a great conversationalist, intelligent, and as having a great sense of humor. I'm not interested in aiming too high, but I'm looking for a partner who would bring similarly desirable qualities to the relationship.”

C: “Caring man seeking female partner for a meaningful relationship. My hobbies including sailing, tennis, and going out to restaurants”.

C: “Twenty-ish female seeking male for a serious relationship. My friends describe me as being a great conversationalist, intelligent, and as heaving a great sense of humor.”

⁹Somewhat surprisingly, high self-esteem people did not report less preoccupation with debt when they were induced to compare themselves to their partner's most positive traits (i.e., the most seemingly obvious way of denying the relevance of exchange). Instead, high self-esteem people countered the exchange script by activating a counter and compensatory communal norm.

Under the guise of a second study on relationships, participants completed the dependent measures intermixed with filler measures. These measures (as administered) included anxiety about being inferior to the partner, taking responsibility for the partner's mundane life tasks, perceived barriers to dissolution, role specialization, narrowing the partner's social network, anxiety about being replaced by an alternate partner, closeness (included for control purposes), and a manipulation check that tapped the importance of equality.

Measures

Inferiority anxiety: This 13-item scale ($\alpha = .84$) tapped anxiety about being inferior to the partner and not meeting the partner's standards (e.g., "I feel inferior to my partner"; "My partner has a more interesting personality than I have"; "Sometimes I feel like I don't deserve my partner"; "I worry that I don't always live up to my partner's ideals or expectations"). Participants responded on 9-point scales (1 = not at all true, 9 = completely true).

Replacement anxiety: This 5-item scale ($\alpha = .81$) assessed the anxiety that another partner might try to substitute for the self (e.g., "I worry about somebody taking my partner away from me"; "I worry that other people think my partner could do better than me"; "I worry that other women/men might wonder what my partner sees in me"). Participants responded to these items on 9-point scales (1 = not at all characteristic, 9 = completely characteristic).

Responsibility for mundane activities: This 17-item scale ($\alpha = .87$) assessed how often people took responsibility for mundane, instrumental aspects of the partner's life (e.g., "cooking for my partner"; "keeping track of my partner's school schedule"; "helping my partner with school assignments/exams"; "keeping my partner up to date on things that are going on with friends"; "remembering my partner's important appointments"; "doing favors for my partner"; "making sure my partner's bills get paid on time"). Participants rated how often they engaged in each activity on a 8-point scale (0 = never, 4 = every couple of weeks, 8 = every day).

Perceived barriers to dissolution: This 9-item scale ($\alpha = .80$) tapped how much the participant thought their partner stood to lose if they ended the relationship (e.g., "My partner would lose friends we share"; "My partner would upset people who are important to him/her"; "My partner would have trouble filling his/her needs for emotional support"; "My partner would have trouble finding a partner who did as much for him/her as I do"). Participants rated the likelihood of each event occurring on a 7-point scale (1 = very unlikely, 7 = very likely).

Role specialization: This 11-item scale ($\alpha = .75$) assessed people's efforts to specialize roles in ways that heightened their responsibility for their partner (e.g., "It bothers me when my partner does things for him/herself that I could do for him/her"; "I like to be in the position of being the "care-taker" in my relationship"; "I like doing things for my partner that he/she could easily do for him/herself"; "I want my partner to feel like there are some things that she/he needs me to do for him/her"). Participants indicated how well each item characterized their behavior on a 9-point scale (1 = not at all characteristic of me, 9 = completely characteristic of me).

Narrowing social network: This 10-item scale ($\alpha = .70$) tapped people's efforts to narrow their partner's social network in ways that ensured they were at its center and that they were valued by others in this network (e.g., "I try to find activities that just my partner and I can do together"; "I do the things my partner likes to do so he/she won't need to do those things with other people"; "I make a lot of effort to get my partner's friends to like me"; "It is really important to me that my partner's parents like me"). Participants responded to these items on 9-point scales (1 = not at all characteristic of me, 9 = completely characteristic of me).

Closeness: This 5-item scale ($\alpha = .87$) tapped feelings of connection to the partner (e.g., “I am closer to my partner than any other person in my life”; “I feel extremely attached to my partner”). Participants responded on 9-point scales (1 = not at all true, 9 = completely true).

Manipulation check: This 6-item scale ($\alpha = .76$) tapped the belief that partners need to be matched (e.g., “A relationship isn't likely to work if one partner feels the other partner is a better person”; “People need to realize that the qualities they have limit the kind of partner they can attract”). Participants responded on a 7-point scale (1 = strongly disagree, 7 = strongly agree).

Results

Did incidentally priming the exchange script through the personal ads trigger anxieties about being inferior and substitutable (Path B in Figure 1) and heighten efforts to increase their partner's dependence (Path C in Figure 1)? We first created composite measures of exchange script anxiety and partner dependence-promotion. The exchange anxiety composite contained the measures of inferiority and replacement anxiety (each transformed to a z-score and averaged, $\alpha = .55$). The dependence-promotion composite contained the measures of responsibility for mundane activities, role specialization, narrowing social network, and perceived barriers to dissolution, each transformed to a z-score, and averaged, $\alpha = .66$). We then conducted hierarchical regression analyses predicting each dependent measure from (a) exchange condition (1 = experimental, 0 = control) and the centered main effects of self-esteem, and (b) the two-way self-esteem by condition interaction. Table 6 contains the results. We only discuss the significant main effects of experimental condition for the primary dependent measures. We did not find any significant self-esteem by condition interactions (as expected).

Exchange Anxiety—The regression analysis predicting exchange anxiety revealed the expected significant main effect for condition. Participants reported greater worry about being inferior and being replaced when the ads primed exchange anxieties ($M = .25$) than when they did not ($M = -.27$).

Partner-Dependence Promotion—The regression analysis predicting the composite measure of dependence promotion also revealed the expected significant main effect for condition. Participants reported engaging in significantly more activities that made their partner need them when the ads primed the exchange script ($M = 0.19$) than when the ads did not mention making an even-trade ($M = -0.20$).

Manipulation Check—The analysis predicting the manipulation check revealed a marginal main effect for condition. Participants reported stronger perceptions that partners needed to be matched in the exchange ($M = 4.80$) than control ad condition ($M = 4.36$).

Discussion

Experiment 2 provides initial evidence that the alarm and repair rules are normative and implicit features of people's relationship representations. Implicitly priming the exchange script heightened people's worries about being inferior and being replaced regardless of self-esteem. It also motivated people to find alternate means of ensuring their partner's dependence and commitment. The effects of implicitly priming the exchange script also emerged even though the ads were seen as equally appealing in the experimental and control conditions and even though both sets of ads made the availability of alternative partners salient. At least one alternative explanation for these effects exists. Priming the exchange script diminished reports of closeness. This raises the possibility that priming exchange simply results in people evaluating their relationships as more burdensome. However, when we controlled for reports of closeness, priming exchange also continued to predict heightened exchange anxieties, $\beta = .$

32, $t(50) = 2.76$, $sr^2 = .10$, $p < .01$, and increased dependence-promotion, $\beta = .37$, $t(50) = 2.85$, $sr^2 = .13$, $p < .01$. This suggests that the system solves the specific problem posed by securing a partner's commitment rather than simply regulating relationship sentiment.

Experiment 3: Examining System Efficiency Two

In Experiment 3, we utilized a still more subtle manipulation of the exchange script to buttress our argument for automaticity. We also increased our statistical power to detect an interaction between global self-esteem and the exchange prime (should one exist). We implicitly primed the exchange script in the experimental condition by superimposing pictures of U.S. coins on the computer screen displaying measures of felt inferiority to the partner, worry about being substituted, and dependence-promotion. We chose to prime the exchange script in this way because metaphors or symbols have powerful influences on behavior (Williams & Bargh, in press). Specifically, pictures of money sensitize people to the exchange norms – decreasing willingness to solicit or provide help to a stranger (Vohs, Mead & Goode, 2006). When the coins made the metaphor of an economic exchange salient, we expected both low and high self-esteem people to report greater worries about being inferior and being replaced and to respond to such worries by heightening behavioral efforts to increase their partner's dependence on them.¹⁰

Method

Participants—One hundred twenty-six undergraduates involved in exclusive dating relationships participated in exchange for course credit. Four participants were eliminated for failing to follow instructions, leaving a sample of 122 (52 men). Participants were 19.3 years old on average ($SD = 1.8$) and they were involved in relationships averaging 18.5 months in length ($SD = 14.5$).

Procedure—Participants were told that the experiment examined people's experiences in close relationships. They first completed background measures on computer (via Media Lab) including demographic questions and the Rosenberg (1965) self-esteem scale. Overlaying pictures of circles were superimposed across the screen for the preliminary questions. For participants in the exchange condition, the screen background then transitioned to overlaying pictures of U.S. coins. The condition-specific background (i.e., coins in the exchange and circles in the control condition) remained on the screen for the rest of the experiment. We then introduced the manipulation of partner-standards utilized in Experiment 1 (included for exploratory purposes). All participants then completed the dependent measures including a longer measure of inferiority anxiety, responsibility for mundane activities ($\alpha = .85$), perceived barriers to dissolution ($\alpha = .62$), role specialization ($\alpha = .79$), narrowing the social network ($\alpha = .73$), worry about alternative partners ($\alpha = .85$), closeness ($\alpha = .89$), and the manipulation check of exchange beliefs ($\alpha = .54$) from Experiment 2. Participants were thanked and debriefed.

Inferiority Anxiety—This 27-item measure ($\alpha = .86$) tapped people's anxiety about being inferior and not living up to the standards their partner set (e.g., “My partner has a more interesting personality than I have”; “Sometimes I feel like I don't deserve my partner;” “Sometimes I feel like my partner is a better person than I am”; “I feel like I'm in my partner's debt”). Participants responded on 9-point scales (1 = not at all true, 9 = completely true).¹¹

¹⁰In a separate experiment ($N = 38$), dating participants primed with coins were more likely to endorse an exchange-oriented view of relationships ($M = 4.82$) than participants ($M = 4.46$) primed with circles (i.e., “Trading one thing for another is part of social life”; “In relationships, partners trade or exchange contributions to the relationship”; “Relationships experience difficulty when one partner doesn't measure up to the other”; “People in relationships are most concerned about meeting their own needs”), $t(36) = 1.94$, $p = .06$.

Results

Did implicitly priming the metaphor of exchange automatically elicit anxieties about being inferior and replaced and trigger dependence-promoting behaviors? We again created composite measures of exchange anxieties (i.e., inferiority and replacement anxiety, each transformed to a z-score and averaged, $\alpha = .69$) and dependence-promotion (responsibility for mundane activities, perceived barriers to dissolution, role specialization, and narrowing social network, each transformed to a z-score and averaged, $\alpha = .66$). We then conducted hierarchical regression analyses predicting the dependent measures from (a) exchange condition (1 = exchange, 0 = control), partner-standard condition (1 = most positive traits, 0 = most negative traits), the centered main effects of self-esteem, (b) the two-way self-esteem by exchange, self-esteem by partner-standard, and exchange by partner-standard interaction terms, and (c) the three-way self-esteem by exchange by partner-standard interaction term. Tables 7 and 8 contain the results. We discuss only the significant main effects of the exchange manipulation on the primary measures. We did not find any significant self-esteem by condition interactions.

Exchange Anxieties—The regression analysis predicting the exchange anxiety composite revealed the anticipated significant main effect of exchange condition. Participants primed with coins actually reported significantly greater combined concerns about being inferior to their partner and being replaced ($M = .17$) than control participants ($M = -.17$).

Partner Dependence-Promotion—The regression analysis revealed the expected significant main effect of condition. Exchange-primed participants ($M = 0.13$) reported behaving in more ways that increased partner dependence than control participants ($M = -0.13$).

Manipulation Check—The manipulation check revealed a significant exchange by partner-standard interaction. When focused on positive partner qualities, people primed with exchange ($M = 4.50$) reported less need for equality than controls ($M = 4.80$), $\beta = -.21$, $t(107) = -1.66$, $sr^2 = .02$, $p = .10$. No significant effect of exchange ($M = 5.0$ vs. 4.79) emerged when participants focused on negative partner qualities, $\beta = .15$, $sr^2 = .01$, $t(107) = 1.14$.¹²

Discussion

Experiment 3 provides further evidence that the alarm and repair rules are implicit and normative features of people's relationship representations. Merely making the metaphor of an economic exchange salient through the image of coins increased anxieties about being inferior and replaced and redoubled efforts to prove one's indispensability to the partner regardless of self-esteem. Thus, the alarm and repair rules do indeed seem to operate automatically. When we controlled for closeness, priming exchange also continued to predict heightened exchange anxieties, $\beta = .15$, $t(110) = 1.93$, $sr^2 = .02$, $p < .06$, and increased dependence-promotion, $\beta = .15$, $t(110) = 1.68$, $sr^2 = .02$, $p < .10$, despite the conservative nature of these analyses. This further suggests that the trust-insurance system does not simply regulate relationship sentiment, but functions to solve the specific problem posed by ensuring a partner's commitment.

¹¹We used this measure in all subsequent experiments. We found a parallel pattern of results across Experiments 3 through 5 when we utilized only those items available for Experiment 2 in the composite measure of exchange anxieties.

¹²The marginal self-esteem by exchange interaction revealed that high self-esteem participants were also less likely to believe that partners needed to be equal when they were focused on their partner's positive ($M = 4.56$) than negative ($M = 5.05$) traits, $\beta = -.35$, $t(107) = -2.64$, $sr^2 = .06$, $p < .01$. The simple effect of partner-standards ($M = 4.74$ vs. $M = 4.74$) was not significant for low self-esteem participants, $\beta = .00$, $t(107) < 1$, $sr^2 = .00$.

Experiment 4: Examining System Flexibility One

Experiments 4 and 5 examined the flexible operation of the trust-insurance system. When the exchange script becomes the focus of conscious preoccupations, we expected high, but not low, self-esteem people to override the alarm and repair rules. In Experiment 4, we explicitly primed the exchange script by asking participants to match potential dates within a dating service simulation. When consciously deliberating exchange principles, we expected high self-esteem people to actively defend against such considerations, seeing themselves as less inferior and less in need of the insurance provided by their partner's dependence relative to high self-esteem controls. However, we expected low self-esteem people to report heightened worries about being inferior and to redouble efforts to increase their partner's dependence.

Method

Participants—Ninety undergraduates (13 men) involved in exclusive dating relationships participated in exchange for course credit. Participants were 19.8 years old on average ($SD = 1.41$) and their relationships averaged 22.0 months ($SD = 12.0$) in length.¹³

Procedure—Participants were randomly assigned to one of three experimental conditions. They were informed that they would be completing two unrelated tasks. The first task varied across experimental conditions. Participants in the control condition perused four magazines and selected articles they thought other students would find interesting. Participants in the two experimental conditions matched potential dates in a dating service simulation. In both experimental conditions, each participant received laminated cards that depicted 2 male and 2 female target profiles and 6 male and 6 female potential dates. Based on the information on the cards, participants were asked to select the opposite-sex potential date that best matched each of the targets. The content of the information provided varied across the experimental conditions.

In the social commodities exchange priming condition, each profile focused on social commodity traits that are often advertised for trade in the interpersonal market place. Each profile contained a short client self-description (e.g., “I’m outgoing, fit, and financially secure, and I’m looking for the same in a partner. I love Indian and Thai food, independent films, and a man who can tell a good story”) and trait ratings (/100) of the client on four common social commodities (i.e., career success, physical attractiveness, social skills, social status). In the communal qualities exchange priming condition, each profile focused on communal qualities that are highly valued in close relationships. The profiles contained a short client self-description (e.g., “I’m honest, caring, and friendly, and I’m looking for the same in a partner. I love Indian and Thai food, independent films, and a man who can tell a good story”) and trait ratings of the client (/100) on four communal qualities (i.e., emotional stability, warmth, openness and honesty, and responsiveness). Within each condition, the averaged trait ratings for the target and potential date profiles varied, hence some potential dates were better matched to the targets than others. (We included two experimental conditions to determine whether exchange effects generalize across both domains of traits; see Anthony, Holmes & Wood, 2007). The experimenter told participants that the best romantic relationships are ones in which romantic partners are well-matched and that relationships work best when partners feel they have gotten a good deal. The experimental participants then completed the match-making task.

Under the guise of a second relationships study, all participants then completed the dependent measures utilized in Experiment 3. They completed measures of felt inferiority ($\alpha = .86$),

¹³The demographic information (i.e., age, relationship length) was obtained in an on-line sign up system prior to the experiment. This information was only available for the first 33 participants .

responsibility for mundane activities ($\alpha = .87$), perceived barriers to dissolution ($\alpha = .77$), role specialization ($\alpha = .78$), narrowing the partner's social network ($\alpha = .69$), worry about alternative partners taking one's place ($\alpha = .80$), closeness ($\alpha = .88$), and the manipulation check ($\alpha = .69$). Participants were then thanked and debriefed.

Results

Did explicitly priming exchange elicit inferiority worries and dependence-promotion for low, but not high, self-esteem participants? We again created composite measures of exchange anxiety (i.e., inferiority and replacement anxiety, each transformed to a z-score and averaged, $\alpha = .65$) and dependence-promotion (responsibility for mundane activities, perceived barriers to dissolution, role specialization, and narrowing social network, each transformed to a z-score and averaged, $\alpha = .72$). We then conducted hierarchical regression analyses predicting each dependent measure from (a) two dummy-coded contrasts for the main effects of condition (each contrast compared one of the exchange conditions against the control condition), the centered main effects of self-esteem, and (b) two terms tapping the interaction between self-esteem and each condition contrast. Table 9 contains the predicted scores for participants low versus high in self-esteem (defined as one standard deviation below and above the mean) in each condition. Tables 10 and 11 contain the results of the regression analyses. We discuss only those measures that revealed significant effects involving the experimental conditions.

Exchange Anxieties—The regression analysis predicting exchange anxieties revealed significant self-esteem by social commodities exchange and self-esteem by communal qualities exchange interactions. As expected, low self-esteem participants reported greater exchange anxieties in both the social commodities, $\beta = .32$, $t(84) = 1.90$, $sr^2 = .03$, $p = .06$, and the communal qualities, $\beta = .37$, $t(84) = 2.11$, $sr^2 = .03$, $p < .05$, exchange prime conditions. The simple effect of the prime was not significant for high self-esteem participants in the social commodities, $\beta = -.23$, $t(84) = -1.53$, $sr^2 = .02$, or communal, $\beta = -.14$, $t(84) < 1$, $sr^2 = .01$, qualities conditions.

Partner Dependence-Promotion—The regression analysis predicting the composite measure of dependence-promotion revealed a marginally significant self-esteem by communal qualities exchange interaction. Low self-esteem participants in the communal qualities exchange prime condition increased their efforts to secure their partner's dependence relative to controls, $\beta = .45$, $t(84) = 2.22$, $sr^2 = .05$, $p < .05$. This simple effect was not significant for high self-esteem participants, $t(84) < 1$. The self-esteem by social commodities exchange interaction was not significant.¹⁴

Manipulation Check—The manipulation check revealed a marginally significant self-esteem by social commodities exchange interaction. (A parallel, but not significant, self-esteem by communal qualities exchange interaction also emerged). Low self-esteem people expressed stronger beliefs that partners needed to be matched in the exchange than control condition, $\beta = .44$, $t(84) = 2.15$, $sr^2 = .05$, $p < .05$. This simple effect was not significant for high self-esteem people, $t(84) < 1$.

Discussion

Experiment 4 yielded preliminary support for the hypothesis that high, but not low, self-esteem people can effectively defend against deliberate considerations of exchange. Putting low self-esteem people in the position of arranging an even exchange among potential dates activated

¹⁴A further set of contrasts (one that compared the combined exchange conditions against the control condition and one that compared the social commodities and communal qualities exchange conditions) revealed that the difference between the communal qualities exchange prime and the social commodities exchange prime was significant.

concerns about being replaced by another and heightened their behavioral efforts to secure their partner's dependence. However, high self-esteem people did not evidence these effects. These findings are impressive on two grounds. First, the effects of exchange priming on exchange anxieties extended to both the social commodities that the culture prescribes for trade (Berscheid & Regan, 2005) as well as more intangible communal qualities. Second, when we controlled for reports of closeness, the effects of exchange priming again were still evident predicting exchange anxieties in both the communal, $\beta = -.26$, $t(83) = 1.69$, $sr^2 = .02$, $p < .10$, and exchange, $\beta = -.36$, $t(83) = -2.07$, $sr^2 = .03$, $p < .05$, qualities conditions, and in predicting dependence-promotion, $\beta = -.24$, $t(83) = -1.60$, $sr^2 = .04$, $p = .11$. Unexpectedly, the effects of exchange priming on dependence-promotion only emerged for communal qualities (see Footnote 14). We hoped to redress this limitation in Experiment 5 by utilizing a stronger explicit manipulation of the exchange script by emphasizing the importance of matching for long-term marital well-being.

Experiment 5: Examining System Flexibility Two

In Experiment 5, we explicitly manipulated the exchange script by asking participants in the exchange conditions to sort matched and mismatched married couples according to their relationship's eventual fate (i.e., together vs. divorced). We then measured inferiority and replacement anxieties and dependence-promotion. We expected low self-esteem participants to again report greater anxiety and double their behavioral efforts to prove their indispensability to their partner as compared to low self-esteem controls. In contrast, we expected high self-esteem participants explicitly primed with exchange to suppress the exchange script by denying feelings of inferiority and the need for a dependent partner as compared to high self-esteem controls.

Method

Participants—One hundred twenty-three undergraduates involved in exclusive dating relationships participated in exchange for course credit. One participant was eliminated for failing to follow instructions, leaving a total sample of 122 (39 men). Participants were 19.3 years old on average ($SD = 2.0$). Their relationships averaged 18.4 months in length ($SD = 14.3$).

Procedure—On arriving at the laboratory, participants were told they would be involved in two short experiments, the first examining people's capacity to make accurate first impressions about other people's relationships, and the second examining general perceptions of their own relationships. Participants in the two exchange priming conditions then learned they would be reading profiles of real couples that had been involved in a longitudinal study of marriage and that they were to identify which couples still remained together after 7 years of marriage. Participants in the exchange priming or experimental conditions predicted the relationship outcomes of 14 couples. Participants in the control condition did not complete a prediction task.

In the social commodities version of the exchange-prime condition, the profiles described couples that were either matched or mismatched on social commodities. Participants read all the profiles, and then each profile appeared again on the computer screen and they judged whether the couple had divorced. The computer responded “correct” when they designated a matched couple as together or a mismatched couple as divorced and “incorrect” when participants designated a matched couple as divorced and a mismatched couple as together (for all but two couples). Excerpts from matched and mismatched social commodities couples follow:

(Matched). Jim and Janet discovered they shared many of the same interests when they met in high school. They were both popular among their peers, and both worked hard to achieve high academic standards. They chose the same college, and they felt lucky to have found an appropriate match so early on in their lives.

(Matched). Bill and Francie got married during college. No one was surprised when they got engaged because they seemed so well within each other's grasp. In college, they were both popular. Bill participated in sporting activities and was selected as team captain in more than one sport. Francie was one of the top students in their class.

(Mismatched). Alison and Michael even seemed like an unlikely pairing to themselves. Alison was always very motivated to succeed in her career, and really valued ambition in others. Michael is more content taking a laid-back approach to his work. Although Alison appreciates many of Michael's qualities, his laid-back approach sometimes makes her wonder whether she settled for someone who wasn't quite up to her level of professionalism.

(Mismatched). Julia and John got married after they both finished graduate degrees. Despite similar educational backgrounds, their immediate family members thought they were mismatched in some curious ways. John was really attractive, athletic and popular among his peers, whereas Julie had few friends and didn't seem to have the types of qualities that would really draw others.

In the communal qualities exchange-prime condition, the profiles described couples that were matched or mismatched on valued communal qualities. Each profile appeared on the computer screen and they judged whether the couple had stayed together or divorced. They did not receive corrective feedback. (This allowed us to determine whether people's implicit theories about matching were sufficient to activate exchange contingencies for even communal traits.)¹⁵ Excerpts from matched and mismatched communal qualities couples follow:

(Mismatched). Alison and Michael even seemed like an unlikely pairing to themselves. Michael values being professional in his interactions with others, whereas Alison has a warmer interpersonal style. Although Alison appreciates many of Michael's qualities, she sometimes wonders why he can't be a little more approachable when he's dealing with new people.

(Mismatched). Julia and John got married after they both finished graduate degrees. They have always thought they were mismatched in some curious ways. John has a great sense of humor, but Julie is very serious and has trouble finding humor in things.

(Matched). Jim and Janet discovered they shared many of the same interests when they met in high school. They both loved science, and they ended up choosing the same college. Three years into their marriage, they are talking about having children.

(Matched). Bill and Francie got married during college. They are both warm, friendly, and outgoing. They have a boy and a girl.

Under the guise of a second relationships study, all participants then completed the dependent measures utilized in Experiment 3. They completed measures of inferiority anxiety ($\alpha = .87$), responsibility for mundane activities ($\alpha = .88$), perceived barriers to dissolution ($\alpha = .76$), role specialization ($\alpha = .71$), narrowing the partner's social network ($\alpha = .71$), worry about alternative partners trying to take one's place ($\alpha = .84$), closeness ($\alpha = .87$), and the manipulation check ($\alpha = .71$). Participants were then thanked and debriefed.

¹⁵We realize this procedure introduced a confound into the design, but this confound does not affect our capacity to interpret the effects because we do not wish to conclude that the social commodities and communal qualities primes have different effects. Admittedly, though, this conclusion would have been better reached by including corrective feedback within both exchange priming conditions.

Results

Did explicitly priming exchange again elicit inferiority worries and dependence-promotion for low, but not high, self-esteem participants? We again created composite measures of exchange anxieties (i.e., inferiority and replacement anxiety, each transformed to a z-score and averaged, $\alpha = .50$) and dependence-promotion (responsibility for mundane activities, perceived barriers to dissolution, role specialization, and narrowing social network, each transformed to a z-score and averaged, $\alpha = .57$). We then conducted hierarchical regression analyses predicting each dependent measure from (a) two dummy-coded contrasts for the main effects of condition (each contrast compared one of the exchange conditions against the control condition), the centered main effects of self-esteem, and (b) two multiplicative terms tapping the interaction between self-esteem and each condition contrast. Table 12 contains the predicted scores for participants relatively low versus high in self-esteem in each condition. Tables 13 and 14 contain the results of the regression analyses. We again discuss only those measures that revealed significant effects involving the experimental conditions.

Exchange Anxieties—The regression analysis predicting the composite measure of exchange anxieties revealed a significant self-esteem by communal qualities exchange prime interaction and a self-esteem by social commodities exchange prime interaction that neared marginal significance ($p < .11$). High self-esteem participants who learned the fate of people's marriages depended on equivalence reported fewer exchange anxieties in the communal, $\beta = -.26$, $t(116) = -1.94$, $sr^2 = .03$, $p = .05$, and social commodities, $\beta = -.23$, $t(116) = -.23$, $sr^2 = .02$, $p < .11$, exchange conditions. The simple effects of the exchange primes were not significant for low self-esteem people, $t(116) < 1$.

Partner Dependence-Promotion—The regression analysis predicting the composite measure of dependence-promotion revealed significant self-esteem by exchange interactions for both the social commodities and communal qualities exchange primes. Low self-esteem participants redoubled efforts to increase their partner's dependence in response to both assigning relationship fates on the basis of equivalence on social commodities, $\beta = .26$, $t(116) = 1.94$, $sr^2 = .03$, $p = .06$, and on the basis of communal qualities, $\beta = .26$, $t(116) = 1.75$, $sr^2 = .02$, $p = .08$. In contrast, high self-esteem participants downplayed their need to prove their indispensability in both the social commodities, $\beta = -.30$, $t(116) = -2.11$, $sr^2 = .06$, $p < .05$, and communal qualities, $\beta = -.42$, $t(116) = -2.81$, $sr^2 = .03$, $p < .01$, exchange prime conditions.

Manipulation Check—The manipulation check revealed a significant self-esteem by social commodities exchange prime interaction. Low self-esteem participants reacted to sorting couples matched and mismatched on social commodities by their relationship fates by expressing a stronger belief that partners need to be matched, $\beta = .29$, $t(116) = 2.12$, $sr^2 = .04$, $p < .05$. This simple effect was not significant for high self-esteem participants, $\beta = -.12$, $sr^2 = .01$, $t(116) < 1$. A parallel, but not significant, self-esteem by communal qualities exchange prime interaction also emerged.

Discussion

Experiment 5 provides evidence that high self-esteem people do indeed suppress the exchange script when they explicitly consider its implication. When confronted with the task of assigning people's marital fates on the basis of their degree of match, high self-esteem people reported diminished worries about being inferior or being replaced. They also downplayed their partner's dependence on them. Doing so presumably protected their desired belief that their partner wanted, rather than needed, to stay committed. In contrast, low self-esteem people still buttressed their partner's dependence when exchange anxieties were on their minds. These divergent effects of deliberating exchange principles generally emerged regardless of the type of qualities that sealed the marriage's fate. Deliberating about exchange again had the predicted

specific, rather than generalized, relationship consequences. The effects on dependence-promotion all remained significant when we controlled closeness.

General Discussion

Interdependence presents many dilemmas. Each person marries his or her own welfare to the occasionally capricious, unpredictably generous, and sometimes downright selfish behavior of another (Kelley, 1979). To negotiate such terrain, people need regulatory systems in place to help them discern which situations are likely to satisfy their needs (Murray et al., 2006). This paper delineates how people solve one vexing problem – ensuring the partner's commitment, and thus, securing the partner's motivation to be responsive to one's needs in costly situations.

The Trust-insurance System

The trust-insurance system minimizes the problem of non-responsiveness that could arise if a partner's intrinsic motivation to be responsive was to fade. By invoking the power of the exchange script, it links drops in the value of one's own qualities relative to the partner's qualities to behavioral efforts to increase a partner's dependence. Feeling inferior to the partner automatically activates the exchange script. The ensuing anxieties about the knowledge that partner qualities must be fairly traded then elicit behaviors that function to increase the partner's dependence. Through the activation of such normative procedural rules, Harry makes himself indispensable to Sally. He ensures that there are at least instrumental reasons for Sally to need to meet his needs when her intrinsic motivation to do so might be in question. In this way, the operation of the trust-insurance system minimizes the occurrence of power imbalances that might otherwise destabilize a relationship (Waller, 1938).

The current findings provide compelling convergent evidence for the existence of the trust-insurance system. The newlywed data dramatically illustrate the power of this system in regulating behavior in daily life. In the newlyweds, uncontrolled (i.e., unacknowledged) feelings of inferiority to the partner prompted mundane acts of sacrifice regardless of self-esteem. On days after they felt more inferior to their partner than they typically did, these newlyweds behaved in ways that heightened their partner's dependence – going out of their way to search for lost keys, repair broken items, and do special favors. Such dependence-promoting behavior had the intended effect: Being the recipient of such acts actually diminished the partner's doubts about the relationship on subsequent days.

The experiments illustrated both the efficient (i.e., automatic) and flexible (i.e., sensitive to circumstance) operation of the trust insurance system. They also revealed the mechanisms and moderators governing the felt-inferiority to dependence-promotion association. Feeling inferior activates the exchange script (i.e., the first component of the alarm rule); the activation of the exchange script elicits an accounting process that exacerbates inferiority anxieties (i.e., the second component of the alarm rule) and elicits dependence-promoting behavior (i.e., the repair rule). However, the likelihood of these rules being expressed depends on people's capacity (i.e., conscious insight into the exchange script) and motivation (i.e., chronic self-esteem) to correct or control the influence of these default procedural rules.

Experiment 1 revealed that low self-esteem people perceive stronger exchange norms when they compare themselves against their partner's most positive qualities. Low self-esteem people believed they were more indebted by their partner's sacrifices when they compared themselves against their partner's positive than negative qualities. In contrast, high self-esteem people denied exchange norms by reporting stronger communal norms when they were induced to compare themselves against their partner's most positive qualities.

Limiting behavioral control by implicitly priming the exchange script activated the alarm and repair rules regardless of self-esteem. This suggests that these rules are indeed implicit and normative procedural rules (Baldwin, 1992). Evaluating the appeal of personal ads that emphasized romantic hopefuls' expectations of an equivalent trade heightened exchange anxieties and prompted reparative behaviors meant to increase a partner's dependence (Experiment 2). The metaphor of an economic exchange imparted by U.S. coins induced anxieties about being inferior and being replaced and then increased people's desire to make themselves indispensable to their partner (Experiment 3). We believe that such effects emerged because people know their faults and limitations; consequently, any accounting surfaces at least some ways in which people fail to measure up to the partner's standards.

Introducing greater behavioral control by explicitly priming the exchange script shifted the effects of the alarm and repair rules as a function of self-esteem. Low self-esteem people generally do not believe they possess the kinds of attributes that can secure a partner's long-term commitment (Murray et al., 2000; 2001). Because they are in chronic need of supplementary insurance, they cannot afford to suppress the trust-insurance system. When playing match-maker or divining relationship fates on the basis of people's equivalence in worth, low self-esteem people reported greater anxieties about being inferior and being replaced (Experiment 4) and they increased their behavioral efforts to make themselves indispensable (Experiments 4 and 5). In contrast, high self-esteem people believe their partner values their qualities and sees them as special (Murray et al., 2000; 2001). Trusting in an intrinsic motivation for their partner's commitment, they have less need to seek supplementary forms of insurance. Indeed, perceiving a partner as (merely) dependent could undermine their confidence in a partner's intrinsic motivation (Seligman, Fazio & Zanna, 1981). Consequently, high self-esteem people suppressed or discounted the alarm and repair rules when they had the capacity to do so (see Leary & Baumeister, 2000 for a related discussion of how high self-esteem people override the sociometer). In Experiment 5, they reported fewer fears of being inferior or replaced when they predicted people's marital fates according to exchange principles. They also downplayed their partner's dependence on them as compared to controls.

Apart from providing convergent support for the existence of the trust-insurance system, the current findings also delimit its function. The control analyses we reported provide preliminary evidence that the trust-insurance system solves the specific interdependence problem posed by ensuring that one's trust in a partner's commitment is not misplaced. It does not simply function to regulate general affect, global relationship sentiment, or general relationship behaviors. In Experiment 1, feeling inferior to the partner activated the exchange script for low self-esteem people. However, such comparisons did not affect state self-esteem. The effects of being induced to feel inferior on exchange script activation also remained significant when we controlled for state self-esteem. In Experiments 2 through 5, priming exchange had no consistent effects on feelings of closeness. The significant effects of exchange priming on exchange anxieties and dependence promotion also emerged when we controlled for reports of closeness. And finally, among the newlyweds, feeling inferior prompted the next day's strategic efforts to increase the partner's dependence. Generally feeling badly about the self did not have this effect; feeling inferior also did not promote generally good (and inhibit bad) behavior.

Some limitations of the studies merit mention. First, Experiments 4 and 5 did not reveal consistent self-esteem by exchange priming interactions for each type of quality. To examine the strength of the interaction in each of the social commodities and communal trait domains, we meta-analyzed the self-esteem by social commodities exchange prime and the self-esteem by communal qualities exchange prime interactions across Experiments 4 and 5. Winer's (1971) combined test revealed that self-esteem significantly moderated the effects of each exchange prime for each composite dependent measure. The self-esteem by exchange prime

interactions involving social commodities and communal qualities were significant predicting both exchange anxieties, $d = .40$, $z = 2.74$, $p < .01$, and $d = .29$, $z = -2.74$, $p < .01$, respectively, and partner-dependence promotion, $d = .37$, $z = 2.68$, $p < .05$, and $d = .45$, $z = -3.16$, $p < .01$, respectively.

Second, high self-esteem people defended against the need for supplemental insurance when deliberating marital fates (Experiment 5), but not when playing match-maker (Experiment 4). To examine the strength of this simple effect across Experiments 4 and 5, we meta-analyzed the simple effect of each type of exchange prime on exchange anxieties and dependence-promotion for people high in self-esteem. The simple effect of the exchange prime in reducing exchange anxieties was significant for the social commodities exchange prime, $d = .32$, $z = -2.21$, $p < .05$, and for the communal qualities exchange prime, $d = .28$, $z = -1.97$, $p < .05$. The simple effect of the exchange prime in reducing dependence-promotion was also significant for the social commodities exchange prime, $d = .31$, $z = -2.29$, $p < .05$, and marginally significant for the communal qualities exchange prime, $d = .25$, $z = -1.82$, $p < .10$. Low self-esteem people similarly reported heightened exchange anxieties when they played match-maker, but not when they deliberated people's marital fates. To examine this simple effect across Experiments 4 and 5, we meta-analyzed the simple effect of each type of exchange prime on exchange anxieties for people low in self-esteem. This simple effect of the exchange prime in increasing exchange anxieties was significant for the communal qualities exchange prime, $d = .31$, $z = 2.09$, $p < .05$, and marginally significant for the social commodities exchange prime, $d = .26$, $z = 1.74$, $p < .10$.

A more conceptual ambiguity in the current findings also notes comment. We believe that alarm and repair rules are implicit, procedural features of people's general working models of relationships (Baldwin, 1992). If these rules do indeed have a default status, they should control behavior when people's capacity to adjust for the appropriateness of the rules is limited or compromised. In situations that afford greater behavioral control, people who need these rules less can afford to over-rule or ignore these behavioral inclinations. Our findings are consistent with these expectations. Implicit reminders of the exchange script triggered the alarm and repair rules regardless of self-esteem. Explicit reminders of this script allowed high, but not low, self-esteem people to over-turn these rules. However, the primes we utilized not only differed in the degree of conscious attention devoted to the exchange script. They also differed in the degree of threat posed. Matching couples on the basis of equality (i.e., the explicit primes) is inherently more threatening than simply being exposed to the metaphor of exchange (i.e., the implicit primes) because the explicit task of matching raises the possibility of relationship loss and instability. We believe that this confound is a natural one. Deliberating the exchange script activates defensiveness precisely because deliberating exchange reifies relationship loss. This coupled threat (exchange plus loss) then might have activated people's personal working models (i.e., self-esteem) as a means of coping with this threat (Mikulincer & Shaver, 2003).

Social Comparison and Seeking Supplemental Insurance Against Risk

The current findings underscore the inherently dyadic nature of relationship experience and point to directions for future research. Our model assumes that people must feel equal to their partner to trust in their partner's intrinsic motivation to be responsive. Such overall assessments of worth can be based on a myriad of different sources of information, some of it more flattering to the self, and some more flattering to the partner. Our model assumes that the comparisons that figure most prominently in such general assessments of worth involve traits or qualities, such as warmth, sense of humor, and intelligence. It is only when people find themselves falling short on such dimensions that they then turn to comparisons involving more practical or instrumental contributions. For instance, if Sally concludes that she isn't as funny, smart, and gregarious as Harry, she might then assess whether her behavioral solicitude can compensate

for Harry's greater inherent desirability as a partner. Although interdependence theorists (Kelley, 1979) have always emphasized such comparative considerations, little attention has been paid to this issue in recent years (see Attridge, Berscheid & Simpson, 1995 for an exception). The model presented here helps redress this critical imbalance in the literature.

Aspects of the trust-insurance system require refinement and further research. Future research might examine what types of upward social comparisons to the partner are most likely to activate the exchange script. For instance, Sally might worry more about whether she deserves Harry when he outperforms her in a domain she believes is highly important to Harry (or highly important to the relationship). She might also worry more about deservingness when she fails in a domain that is highly relevant to her self-worth than one that is less relevant (e.g., Beach et al., 2001). Subsequent research might examine whether implicit and explicit social comparisons have similar effects on the activation of the exchange script. In Experiment 1, the manipulation of social comparison goals may have operated in a more implicit fashion (as people may not be aware that feeling unsure of themselves increases social comparison need, Stapel & Blanton, 2004). Nonetheless, high self-esteem people still resisted exchange norms in Experiment 1 by reporting stronger communal motivation when they compared themselves against their partner's most positive qualities. This suggests that high self-esteem people might become highly practiced at defending themselves against worrisome social comparisons to their partner, automatically suppressing exchange anxieties. Consistent with this logic, people who feel close to their partner compensate for upward social comparisons by affirming the general strength of their relationships (Lockwood, Dolderman, Sadler & Gerchak, 2004).

Subsequent research might also provide more direct evidence that the activation of the exchange script triggers an accounting process. This research might examine whether feelings of inferiority arise because priming exchange heightens the salience of one's own faults, sharpens insight into the positive qualities that would make one's partner attractive to others, or both. The current research suggests that the exchange script is available within the mental representations of both low and high self-esteem people. However, the main effect of self-esteem on exchange anxieties in all of the experiments also suggests that low self-esteem people possess stronger chronic exchange anxieties than highs. This raises the possibility that the exchange script may be more chronically accessible for low than high self-esteem people. As a result, accounting processes might have a lower activation threshold for low self-esteem people. For lows, a partner's recent accomplishment might be sufficient to activate the exchange script and the need to compute one's merit or deservingness. For highs, it might take the partner's accomplishment coupled with a salient personal failure to trigger an active tally or comparison of relative worth.

Further research might also examine situations that disengage the trust-insurance system, such as feeling superior to one's partner or activating the communal script. From the perspective of the model, feeling superior should increase confidence in the partner's love and commitment. However, inordinate feelings of superiority might also diminish rejection anxieties to such a degree that they effectively depress dependence-promoting behaviors, creating relationship circumstances where the superior partner feels little compunction to tend to the inferior partner's needs. In a related vein, priming the communal expectation that benefits are given freely without expectation of repayment – might also inoculate people against the anxiety-inducing effects of feeling inferior (Clark & Grote, 1998), effectively desensitizing the trust-insurance system. This suggests that invoking the exchange script might have the ironic effect of inducing greater self-sacrificing behavior than the communal script because activating the exchange script heightens the need to prove one's worth to the partner. Thus, contrary to the notion that exchange norms dissipate once communal bonds are established (Grote & Clark, 1998), exchange might be part and parcel of relationships that reliably meet partners' instrumental needs (Kelley, Holmes, Kerr, Reis, Rusbult, & Van Lange, 2003).

Subsequent longitudinal research might also examine the relationship consequences of seeking supplemental insurance. The present findings point to one way in which low self-esteem people might actually protect and maintain their relationships in the short term – a striking contradiction to the many demonstrated relationship costs of low self-esteem (e.g., Murray et al., 1998; 2000; 2002). Such a strategy might have different long-term effects. Trust in a partner's commitment that stems from feeling irreplaceable and intrinsically valued should afford greater protection than trust in a partner's commitment that stems from feeling needed or indispensable. If that is the case, dependence-promotion may come with some psychological costs for the self. For instance, continued efforts to prove one's indispensability to a partner might create feelings of unfairness or being taken for granted that can precipitate distress by allowing exchange concerns to contaminate a communal atmosphere (Grote & Clark, 2001). Consistent with this logic, people's motivations for sacrificing for a partner constrain the relationship benefits of such kind deeds. Sacrificing to avoid relationship costs, such as a partner's anger or rejection, predicts daily relationship and long-term difficulties, whereas sacrificing to promote relationship benefits, such as a partner's happiness, does not (Impett, Gable, & Peplau, 2005). In such ways, the alarm and repair rules might have the paradoxical effect of gradually eroding the enactor's satisfaction while simultaneously making the partner more resistant to leaving – creating a stable, but not completely satisfying relationship bond.

Conclusion

What happens when one partner falls outside the other's "cute-gory?" As the attractiveness-impaired author of the *Time* article lamented, such imbalances create an attribution dilemma for intimate partners and quizzical observers. Why would a seemingly superior partner want to stay with a seemingly inferior one? The trust-insurance system solves this interdependence problem: If people's standing relative to their partner does not easily support the inference that they are irreplaceable, the consequent activation of the implicit "if-then" contingencies of exchange can at least afford the inference that they are indispensable.

Acknowledgements

We thank Ellen Berscheid for comments that inspired this line of research. We also thank Ralph Molaro for creating the electronic diary program, Dale Griffin for statistical consultation, and Ashley Fulmer, Lisa Jaremka, Rebecca Pinkus and numerous undergraduate research assistants for their contributions to this research. The research reported in this manuscript was supported by a grant from the National Institute of Mental Health (MH 60105-02) to S. Murray.

References

- Aarts H, Custers R, Holland RW. The nonconscious cessation of goal pursuit: When goals and negative affect are coactivated. *Journal of Personality and Social Psychology* 2007;92:165–178. [PubMed: 17279843]
- Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Sage Publications; NY: 1991.
- Anthony DB, Holmes JG, Wood JV. Social acceptance and self-esteem: Tuning the sociometer to interpersonal value. *Journal of Personality and Social Psychology* 2007;92:1024–1039. [PubMed: 17547486]
- Aron A, Aron EN, Tudor M, Nelson G. Close relationships as including other in the self. *Journal of Personality and Social Psychology* 1991;60:241–253.
- Attridge M, Berscheid E, Simpson JA. Predicting relationship stability from both partners versus one. *Journal of Personality and Social Psychology* 1995;69:254–268.
- Baldwin MW. Relational schemas and the processing of social information. *Psychological Bulletin* 1992;112:461–484.
- Bargh, JA. The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition.. In: Wyer, RS.; Strull, TK., editors. *Handbook of social cognition*. 1. Erlbaum; Hillsdale, NJ: 2004. p. 1-40.

- Bargh, JA. *Social psychology and the unconscious: The automaticity of higher mental processes*. Psychology Press; NY: 2007.
- Bargh JA, Chen M, Burrows L. Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology* 1996;71:230–244. [PubMed: 8765481]
- Bargh JA, Ferguson MJ. Beyond behaviorism: On the automaticity of higher mental processes. *Psychological Bulletin* 2000;126:925–945. [PubMed: 11107883]
- Barnett RC, Marshall NL, Raudenbush SW, Brennan RT. Gender and the relationship between job experiences and psychological distress: A study of dual earner couples. *Journal of Personality and Social Psychology* 1993;64:794–806. [PubMed: 8505708]
- Barnett RC, Raudenbush SW, Brennan RT, Pleck JH, Marshall NL. Change in job and marital experiences and change in psychological distress: A longitudinal study of dual-earner couples. *Journal of Personality and Social Psychology* 1995;69:839–850. [PubMed: 7473034]
- Baumeister RF, Bratslavsky E, Finkenauer C, Vohs KD. Bad is stronger than good. *Review of General Psychology* 2001;5:323–370.
- Beach SRH, Whitaker DJ, Jones DJ, Tesser A. When does performance feedback prompt complementarity in romantic relationships? *Personal Relationships* 2001;8:231–248.
- Berscheid, E.; Walster, EH. *Interpersonal attraction*. Addison-Wesley Publishing Company; Reading, MA: 1969.
- Berscheid E, Dion K, Walster E, Walster GW. Physical attractiveness and dating choice: A test of the matching hypothesis. *Journal of Experimental Social Psychology* 1971;7:173–189.
- Berscheid, E.; Regan, P. *The psychology of interpersonal relationships*. Prentice-Hall; Upper Saddle River, NJ: 2005.
- Bowlby, J. *Attachment and loss*. 1. Hogarth Press; London: 1982. Attachment
- Buss D,M, Barnes M. Preferences in human mate selection. *Journal of Personality and Social Psychology* 1986;50:559–570.
- Campbell JD. Self-esteem and clarity of the self-concept. *Journal of Personality and Social Psychology* 1990;59:538–549. [PubMed: 2231284]
- Campbell L, Simpson JA, Kashy DA, Fletcher GJO. Ideal standards, the self, and flexibility of ideals in close relationships. *Personality and Social Psychology Bulletin* 2001;27:447–462.
- Cavallo, J.; Fitzsimons, GM.; Holmes, JG. *Regulating prevention goals in close relationships: Automatic and controlled processes*. University of Waterloo; 2007. Unpublished manuscript
- Chen, S.; Fitzsimons, GM.; Andersen, SM. Automaticity in close relationships.. In: Bargh, JA., editor. *Social psychology and the unconscious: The automaticity of higher mental processes*. Psychology Press; NY: 2007. p. 133-172.
- Clark MS, Grote NK. Why aren't indices of relationship costs always negatively related to indices of relationship quality? *Personality and Social Psychology Review* 1998;2:2–17. [PubMed: 15647148]
- Clark MS, Mills J. The difference between communal and exchange relationships: What it is and is not. *Personality and Social Psychology Bulletin* 1993;19:684–691.
- Davila J, Karney BR, Bradbury TN. Attachment change processes in the early years of marriage. *Journal of Personality and Social Psychology* 1999;76:783–802. [PubMed: 10353202]
- Derrick JL, Murray SL. Enhancing relationship perceptions by reducing felt inferiority: The role of attachment style. *Personal Relationships* 2007;14:531–549.
- Dijksterhuis, A.; Chartrand, TL.; Aarts, H. Effects of priming and perception on social behavior and goal pursuit.. In: Bargh, JA., editor. *Social psychology and the unconscious: The automaticity of higher mental processes*. Psychology Press; NY: 2007. p. 51-132.
- Dijksterhuis A, Nordgren LF. A theory of unconscious thought. *Perspectives on Psychological Science* 2006;1:95–109.
- Downey G, Freitas AL, Michaelis B, Khouri H. The self-fulfilling prophecy in close relationships: Rejection sensitivity and rejection by romantic partners. *Journal of Personality and Social Psychology* 1998;75:545–560. [PubMed: 9731324]
- Drigotas SM, Rusbult CE. Should I stay or should I go? A dependence model of breakups. *Journal of Personality and Social Psychology* 1992;62:62–87.

- Eastwick PW, Finkel EJ, Mochon D, Ariely D. Selective versus unselective romantic desire: Not all reciprocity is created equal. *Psychological Science* 2007;18:317–319. [PubMed: 17470256]
- Feingold A. Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin* 1988;104:226–235.
- Gabriel S, Carvallo M, Dean K, Tippin BD, Renaud J. How I see “me” depends on how I see “we”: The role of attachment style in social comparison. *Personality and Social Psychology Bulletin* 2005;31:1561–1570. [PubMed: 16207774]
- Gabriel S, Carvallo M, Jaremka L, Tippin BD. Friends are presents we give to ourselves: Avoidance of intimacy, friendship, and feelings about the self. *Journal of Experimental Social Psychology*. in press
- Gangestad SW, Simpson JA. The evolution of human mating: Tradeoffs and strategic pluralism. *Behavioral and Brain Sciences* 2000;23:573–587. [PubMed: 11301543]
- Gilbert, P. Social mentalities: A biopsychosocial and evolutionary approach to social relationships.. In: Baldwin, M., editor. *Interpersonal cognition*. Guilford Press; NY: 2005. p. 299-333.
- Goldstein, H.; Rasbash, J.; Plewis, I.; Draper, D.; Brown, W.; Yang, M.; Woodhouse, G.; Healy, M. A user's guide to MlwiN. Multilevel Models Project, Institute of Education, University of London; 1998.
- Griffin DW, Ross L. Subjective construal, social inference and human misunderstanding. *Advances in Experimental Social Psychology* 1991;24:319–359.
- Grote NK, Clark MS. Perceiving unfairness in the family: Cause or consequence of marital distress. *Journal of Personality and Social Psychology* 2001;80:281–293. [PubMed: 11220446]
- Fiske, ST.; Neuberg, SL. A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation.. In: Zanna, MP., editor. *Advances in experimental social psychology*. 23. Academic Press; NY: 1990. p. 1-74.
- Holmes, JG. The exchange process in close relationships: Microbehavior and macromotives.. In: Lerner, ML.; Lerner, S., editors. *The justice motive in social behavior*. Plenum; New York: 1981. p. 261-284.
- Holmes JG, Murray SL. Felt security as a normative resource: Evidence for an elemental risk regulation system? *Psychological Inquiry* 2007;18:163–167.
- Hox, JJ. *Applied multilevel analysis*. The Netherlands; TT-Publikaties: Amsterdam: 1995.
- Impett E,A, Gable SL, Peplau LA. Giving up and giving in: The costs and benefits of daily sacrifice in intimate relationships. *Journal of Personality and Social Psychology* 2005;89:327–344. [PubMed: 16248717]
- Kelley, HH. *Personal relationships: Their structures and processes*. Erlbaum; Hillsdale, NJ: 1979.
- Kelley, HH.; Holmes, JG.; Kerr, N.; Reis, H.; Rusbult, C.; Van Lange, PA. *An atlas of interpersonal situations*. Cambridge Press; Cambridge, UK: 2003.
- Kirsner BR, Figueredo AJ, Jacobs WJ. Self, friends, and lovers: Structural relations among Beck depression inventory scores and perceived mate values. *Journal of Affective Disorders* 2003;75:131–148. [PubMed: 12798253]
- Leary, MR.; Baumeister, RF. The nature and function of self-esteem: Sociometer theory.. In: Zanna, MP., editor. *Advances in experimental social psychology*. 32. Academic Press; San Diego, CA: 2000. p. 2-51.
- Levinger G. A social psychological perspective on marital dissolution. *Journal of Social Issues* 1976;32:21–49.
- Lockwood P, Dolderman D, Sadler P, Gerchak E. Feeling better about doing worse: Social comparisons within romantic relationships. *Journal of Personality and Social Psychology* 2004;87:80–95. [PubMed: 15250794]
- Lykken DT, Tellegen A. Is human mating adventitious or the result of lawful choice? A twin study of mate selection. *Journal of Personality and Social Psychology* 1993;65:56–68. [PubMed: 8355143]
- Macrae CN, Johnston L. Help, I need somebody: Automatic action and inaction. *Social Cognition* 1998;16:400–417.
- MacDonald G, Jessica M. Family approval as a constraint in dependency regulation: Evidence from Australia and Indonesia. *Personal Relationships* 2006;13:183–194.

- Mikulincer, M.; Shaver, PR. The attachment behavioral system in adulthood: Activation, psychodynamics, and interpersonal processes.. In: Zanna, M., editor. *Advances in experimental social psychology*. 35. Academic Press; New York: 2003. p. 52-153.
- Mills J, Clark MS, Ford TE, Johnson M. Measurement of communal strength. *Personal Relationships* 2004;11:213–230.
- Murray SL, Derrick J, Leder S, Holmes JG. Balancing connectedness and self-protection goals in close relationships: A levels of processing perspective on risk regulation. *Journal of Personality and Social Psychology* 2008;94:429–459. [PubMed: 18284291]
- Murray, SL.; Holmes, JG. The commitment insurance system: Self-esteem and the regulation of connection in close relationships.. In: Zanna, MP., editor. *Advances in experimental social psychology*. 40. Academic Press; San Diego, CA: 2008. p. 1-60.
- Murray SL, Holmes JG, Collins NL. Optimizing assurance: The risk regulation system in relationships. *Psychological Bulletin* 2006;132:641–666. [PubMed: 16910746]
- Murray SL, Holmes JG, Griffin D. The benefits of positive illusions: Idealization and the construction of satisfaction in close relationships. *Journal of Personality and Social Psychology* 1996;70:79–98.
- Murray SL, Holmes JG, Griffin DW. Self-esteem and the quest for felt security: How perceived regard regulates attachment processes. *Journal of Personality and Social Psychology* 2000;78:478–498. [PubMed: 10743875]
- Murray SL, Holmes JG, MacDonald G, Ellsworth P. Through the looking glass darkly? When self-doubts turn into relationship insecurities. *Journal of Personality and Social Psychology* 1998;75:1459–1480. [PubMed: 9914664]
- Murray, SL.; Leder, S.; McClellan, JCD.; Holmes, JG.; Pinkus, RT.; Harris, B. *Becoming irreplaceable: How self-esteem affects relationship maintenance*. State University of New York at Buffalo; 2008. Manuscript under editorial review
- Murray, SL.; Pinkus, RT. *The insecurity-inducing effects of upward social comparisons to romantic partners*. State University of New York; 2008. Unpublished data
- Murray SL, Rose P, Holmes JG, Derrick J, Podchaski E, Bellavia G. Putting the partner within reach: A dyadic perspective on felt security in close relationships. *Journal of Personality and Social Psychology* 2005;88:327–347. [PubMed: 15841862]
- Olson, MA.; Fazio, RH. Implicit and explicit measures of attitudes: The perspective of the MODE model.. In: Petty, RE.; Fazio, RH.; Brinol, P., editors. *Attitudes: Insights from the new implicit measures*. Erlbaum; Mahwah, NJ: in press
- Overall NC, Fletcher GJO, Simpson JA. Regulation processes in intimate relationships: The role of ideal standards. *Journal of Personality and Social Psychology* 2006;91:662–685. [PubMed: 17014292]
- Pemberton M, Sedikides C. When do individuals help close others improve? The role of information diagnosticity. *Journal of Personality and Social Psychology* 2001;81:234–246. [PubMed: 11519929]
- Pinkus, RT.; Lockwood, P.; Schimmack, U.; Fournier, MA. *For better and for worse: Everyday social comparisons between romantic partners*. State University of New York at Buffalo; 2007. Unpublished manuscript
- Raudenbush SW, Brennan RT, Barnett RC. A multivariate hierarchical model for studying psychological change within married couples. *Journal of Family Psychology* 1995;9:161–174.
- Reis, HT.; Clark, MS.; Holmes, JG. Perceived partner responsiveness as an organizing construct in the study of intimacy and closeness.. In: Mashek, D.; Aron, AP., editors. *Handbook of closeness and intimacy*. Lawrence Erlbaum; Mahweh, NJ: 2004. p. 201-225.
- Rempel JK, Holmes JG, Zanna MP. Trust in close relationships. *Journal of Personality and Social Psychology* 1985;49:95–112.
- Rosenberg, M. *Society and the adolescent self-image*. Princeton University Press; Princeton, NJ: 1965.
- Rubin, Z. *Liking and loving: An invitation to social psychology*. Holt, Rinehart & Winston; New York: 1973.
- Rusbult CE, Martz JM, Agnew CR. The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships* 1998;5:357–391.
- Rusbult CE, Van Lange PAM. Interdependence, interaction, and relationships. *Annual Review of Psychology* 2003;54:351–375.

- Seligman C, Fazio RH, Zanna MP. Effects of salience of extrinsic rewards on liking and loving. *Journal of Personality and Social Psychology* 1980;38:453–460.
- Simpson JA. The dissolution of romantic relationships: Factors involved in relationship stability and emotional distress. *Journal of Personality and Social Psychology* 1987;53:683–692.
- Stapel DA, Blanton H. From seeing to being: Subliminal social comparisons affect implicit and explicit self-evaluations. *Journal of Personality and Social Psychology* 2004;87:468–481. [PubMed: 15491272]
- Stapel DA, Tesser A. Self-activation increases social comparison. *Journal of Personality and Social Psychology* 2001;81:742–750. [PubMed: 11642358]
- Thibaut, JW.; Kelley, HH. *The social psychology of groups*. Wiley; New York: 1959.
- Tooby J, Cosmides L. Friendship and the banker's paradox: Other pathways to the evolution of adaptations for altruism. *Proceedings of the British Academy* 1996;88:119–143.
- Vohs KD, Mead NL, Goode MR. The psychological consequences of money. *Science* 2006;314:1154–1156. [PubMed: 17110581]
- Waller, W. *The family: A dynamic interpretation*. 1938.
- Walster, E.; Walster, GW.; Berscheid, E. *Equity: theory and research*. Allyn and Bacon, Inc.; Boston: 1978.
- White GL. Physical attractiveness and courtship progress. *Journal of Personality and Social Psychology* 1980;39:660–668.
- Wieselquist J, Rusbult CE, Foster CA, Agnew CR. Commitment, pro-relationship behavior, and trust in close relationships. *Journal of Personality and Social Psychology* 1999;77:942–966. [PubMed: 10573874]
- Williams LE, Bargh JA. Keeping one's distance: The influence of spatial distance cues on affect and evaluation. *Psychological Science*. in press
- Winer, BJ. *Statistical principals in experimental design*. 2nd edition. McGraw Hill; New York: 1971.

Table 1

Predicting today's dependence promoting behavior in the newlyweds.

Today's Dependent Variable	b (standard error)			
	Intercept	Prior day's Behavior	Prior day's Inferiority	Today's inferiority
Dependence-promoting behavior	1.26	.029 (.014) *	.115 (.026) **	-.193 _W (.038) * -.056 _M (.038) *
				.080 (.039) *

* $p < .05$

** $p < .01$.

Table 2

Predicting the partner's relationship doubts today in the newlyweds.

Today's Dependent Variable	b (standard error)		
	Intercept	Prior day's Doubts	Partner's dependence-promoting behavior on the prior day
Doubts about the marriage	1.64	.077 (.015) **	-.030 (.012) *

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

Table 3
 Predicted scores for low and high self-esteem participants in each condition in Experiment 1.

<i>Dependent Measures</i>	Low Self-Esteem		High Self-Esteem	
	Social Comparison Positive Qualities	Social Comparison Negative Qualities	Social Comparison Positive Qualities	Social Comparison Negative Qualities
Exchange norms	2.94	2.35	1.98	2.15
Communal norms	7.15	7.18	7.63	6.93
State self-esteem	4.97	5.16	6.58	6.59
Stability of personality	4.10	4.03	5.33	4.99
Valence of partner qualities	6.31	2.91	6.72	3.32
			Neutral Negative Qualities	Neutral Negative Qualities
			2.89	2.43
			6.68	6.99
			5.42	6.51
			4.87	5.67
			2.69	6.60
				2.11
				7.54
				6.59
				6.30
				2.58

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

Table 4

Summary of Regression Analyses in Experiment 1.

Dependent Measure	Self-Esteem ^a		Social Comparison ^a		Partner-Standard ^a		Self-Esteem by Social Comparison ^b		Self-Esteem by Partner-Standard ^b		Social Comparison by Partner-Standard ^b		Three-Way ^c	
	β	t	β	t	β	t	β	t	β	t	β	t	β	t
Exchange norms	-.30	-3.65**	-.10	-1.19	.06	< 1	-.05	< 1	-.02	< 1	.07	< 1	-.21	-2.63**
Communal norms	.13	1.49	.10	1.20	.03	< 1	-.07	< 1	.00	< 1	.11	1.26	.17	2.00*
State self-esteem	.73	12.5**	-.05	< 1	-.07	-1.20	.07	< 1	.05	< 1	.02	< 1	.00	< 1
Stability of personality	.46	6.40**	-.31	-4.36**	-.04	< 1	-.01	< 1	-.02	< 1	.12	1.63	.08	1.09
Valence of partner qualities	.08	2.29*	.08	2.30*	.91	26.8**	.03	< 1	.04	1.12	-.04	-1.22	-.04	-1.10

+ $p < .10$

* $p < .05$

** $p < .01$.

^aThe error terms for the t 's are based on 134 degrees of freedom.

^bThe error terms for the t 's are based on 131 degrees of freedom.

^cThe error terms for the t 's are based on 130 degrees of freedom.

Table 5

Effect sizes for Experiment 1.

Dependent Measure	Self-Esteem sr^2	Social Comparison sr^2	Partner Standard sr^2	Self-Esteem by Social Comparison sr^2	Self-Esteem by Partner Standard sr^2	Social Comparison by Partner Standard sr^2	Three-Way sr^2
Exchange norms	.09	.01	.00	.00	.00	.01	.05
Communal norms	.02	.01	.00	.01	.00	.01	.03
State self-esteem	.53	.00	.01	.01	.00	.00	.00
Stability of personality	.21	.10	.00	.00	.00	.01	.01
Valence of partner qualities	.01	.01	.82	.00	.00	.00	.00

Table 6

Summary of Regression Analyses in Experiment 2.

Dependent Measure	Self-esteem ^a		Condition ^a		Self-Esteem by Condition ^b		sr ²
	β	t	β	t	β	t	
Exchange anxieties	-.52	-4.65**	.31	2.80**	-.02	< 1	.00
Dependence-promotion	-.01	< 1	.27	2.03*	.17	< 1	.02
Closeness	-.02	< 1	-.27	-1.99*	.23	1.28	.03
Manipulation check	.23	1.76 ⁺	.26	1.94 ⁺	.06	< 1	.00

⁺ p < .10

* p < .05

** p < .01.

^aThe error terms for the t's are based on 51 degrees of freedom.^bThe error terms for the t's are based on 50 degrees of freedom.

Table 7

Summary of Regression Analyses in Experiment 3.

Dependent Measure	Self-Esteem ^a		Exchange ^d		Partner-Standard ^e		Self-Esteem by Exchange ^b		Self-Esteem by Partner-Standard ^b		Exchange by Partner-Standard ^b		Three-Way ^c	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Exchange anxieties	-.39	-4.61**	.19	2.21*	.05	< 1	-.02	< 1	-.06	< 1	-.05	< 1	-.02	< 1
Dependence-promotion	.07	< 1	.18	1.95*	.05	< 1	.09	< 1	-.10	< 1	-.07	< 1	-.04	< 1
Closeness	.07	< 1	.10	1.05	.00	< 1	-.22	-2.32*	-.09	< 1	-.04	< 1	-.16	-1.70 ⁺
Manipulation check	.01	< 1	-.04	< 1	-.18	-1.91 ⁺	.12	1.34	-.17	-1.83 ⁺	-.18	-1.97*	.04	< 1

⁺ p < .10

* p < .05

** p < .01.

^aThe error terms for the I's are based on 111 degrees of freedom.

^bThe error terms for the I's are based on 108 degrees of freedom.

^cThe error terms for the I's are based on 107 degrees of freedom.

Table 8

Effect sizes in Experiment 3.

Dependent Measure	Self-Esteem	Exchange	Partner Standard	Self-Esteem by Exchange	Self-Esteem by Partner Standard	Three-Way
	sr^2	sr^2	sr^2	sr^2	sr^2	sr^2
Exchange anxieties	.15	.03	.00	.00	.00	.00
Dependence-promotion	.00	.03	.00	.01	.01	.00
Closeness	.01	.01	.00	.05	.01	.02
Manipulation check	.00	.00	.03	.01	.03	.00

Table 10

Summary of Regression Analyses in Experiment 4.

Dependent Measure	Self-Esteem ^a		Communal Qualities Exchange ^a		Social Commodities Exchange ^a		Self-Esteem by Communal Qualities Exchange ^b		Self-Esteem by Social Commodities Exchange ^b	
	β	t	β	t	β	t	β	t	β	t
Exchange anxieties	-.54	-5.95**	.08	< 1	.01	< 1	-.30	-1.97*	-.40	-2.29*
Dependence-promotion	.09	< 1	.18	1.43	-.05	< 1	-.33	-1.82 ⁺	-.08	< 1
Closeness	.00	< 1	-.01	< 1	.05	< 1	-.25	-1.35	-.24	-1.11
Manipulation check	.15	1.39	.12	< 1	.16	1.28	-.28	-1.52	-.36	-1.70 ⁺

⁺ $p < .10$ * $p < .05$ ** $p < .01$.^aThe error terms for the t 's are based on 86 degrees of freedom.^bThe error terms for the t 's are based on 84 degrees of freedom.

Table 11

Effect sizes in Experiment 4.

Dependent Measure	Self-Esteem	Communal Qualities Exchange	Social Commodities Exchange	Self-Esteem by Communal Qualities Exchange	Self-Esteem by Social Commodities Exchange
	sr^2	sr^2	sr^2	sr^2	sr^2
Exchange anxieties	.29	.00	.00	.03	.04
Dependence-promotion	.01	.02	.00	.04	.00
Closeness	.00	.00	.00	.02	.01
Manipulation check	.02	.01	.02	.03	.03

Table 13

Summary of Regression Analyses in Experiment 5.

Dependent Measure	Self-Esteem ^a		Communal Qualities Exchange ^a		Social Commodities Exchange ^a		Self-Esteem by Communal Qualities Exchange ^b		Self-Esteem by Social Commodities Exchange ^b	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Exchange anxieties	-.39	-4.58**	-.07	< 1	-.06	< 1	-.23	-1.95*	-.19	-1.63
Dependence-promotion	.05	< 1	-.02	< 1	-.04	< 1	-.33	-2.70**	-.41	-3.43**
Closeness	.16	1.70 ⁺	.01	< 1	.05	< 1	-.17	-1.33	-.16	-1.27
Manipulation check	.10	1.06	.03	< 1	.11	1.02	-.19	-1.53	-.25	-2.03 ⁺

⁺ $p < .10$ * $p < .05$ ** $p < .01$.^aThe error terms for the *t*'s are based on 118 degrees of freedom.^bThe error terms for the *t*'s are based on 116 degrees of freedom.

Table 14

Effect sizes in Experiment 5.

Dependent Measure	Self-Esteem	Communal Qualities Exchange	Social Commodities Exchange	Self-Esteem by Communal Qualities Exchange	Self-Esteem by Social Commodities Exchange
	sr^2	sr^2	sr^2	sr^2	sr^2
Exchange anxieties	.15	.00	.00	.03	.02
Dependence-promotion	.00	.00	.00	.06	.09
Closeness	.02	.00	.00	.01	.01
Manipulation check	.01	.00	.01	.02	.03