

Is it my overactive imagination? The effects of contextually activated attachment insecurity on sexual fantasies

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Abstract

Three studies examined the effects of explicit and implicit insecurity priming on the content of sexual fantasies. In all studies, participants described a sexual fantasy narratively (Studies 1 and 2) or completed a fantasy checklist (Study 3) following contextual activation of attachment representations. In Study 1, explicit insecurity priming led to fantasies that involved interpersonal distance and hostility themes. This pattern was particularly pronounced among anxiously attached men, implying that they use distancing strategies when confronted with insecurity. In Studies 2 and 3, implicit insecurity priming led to similar distancing themes, regardless of attachment orientations. These findings suggest that sexual expressions constitute a unique route for coping with insecurities, which manifests the goals that are most likely to be challenged.

Keywords

Attachment, relationship insecurity, security priming, sexual fantasies, sexuality, threat

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Sexual fantasies are unique components of the sexual behavioral system that provide a window through which to view desires, goals, and preferences. Past research addressing the functional significance of sexual fantasies has focused mainly on variables associated with their occurrence, showing that more frequent sexual fantasizing is associated with more active and satisfying sex lives (see Leitenberg & Henning, 1995, for a review). Although these findings imply that sexual fantasizing reflects sexual experiences rather than compensates for sexual frustration, they cannot rule out the possibility that it is the content of sexual fantasies, and not their frequency, that makes up for unmet needs. Surprisingly little attention has been given to factors that contribute to the thematic content of sexual fantasies that may elucidate psychological mechanisms regulating these unique expressions of the sexual system. Thus, it is not clear what guides specific sexual themes and why people vary in the content of their sexual fantasies. Using attachment theory (Bowlby, 1969/1982, 1973) as an organizing framework, we designed the present research to fill these empirical gaps.

The attachment system is the earliest developing social behavioral system in humans. As such, it is likely to shape the regulatory functioning of the later-developing sexual system (Bowlby, 1969/1982; Shaver, Hazan, & Bradshaw, 1988). Indeed, attachment orientations are systematically associated with the functioning of the sexual system in romantic relationships (see Birnbaum, 2010; Mikulincer & Shaver, 2007a). It is therefore reasonable to expect that the content of sexual fantasies may depend on the specific interpersonal goals associated with variations in attachment orientations. In line with this reasoning, previous studies have found that chronic attachment insecurities are associated with theoretically predictable patterns of sexual themes (Birnbaum, 2007b; Birnbaum, Mikulincer, & Gillath, 2011). However, these studies are correlational and thus preclude causal inferences about the connection between the accessibility of representations of attachment insecurity and the content of sexual fantasies.

Drawing clearer conclusions about a possible causal link between attachment insecurity and the content of sexual fantasies may be particularly relevant to understanding the underlying functions of these fantasies. This is true because behaviors and cognitions characteristic of the sexual system may serve attachment-related goals, primarily in conditions that call for distress regulation and activate attachment strategies, such as relationship threats, which generate insecurity regarding the love of one's partner (Birnbaum, 2010; Birnbaum, Weisberg, & Simpson, 2011; Davis, Shaver, & Vernon, 2004). In other words, people may fantasize about specific sexual themes to handle the threats elicited by relationship insecurity (e.g., threats to the future of the relationship or to one's self-image). Nevertheless, we do not know whether and for whom goals elicited by attachment insecurity, such as relationship-promotion or self-protection, are uniquely manifested in the thematic content of sexual fantasies. For example, does feeling insecure about being loved trigger sexual fantasies that involve intimacy themes, which then provide reassurance of a partner's love? Or does it lead to limited expressions of intimacy and instead generate self-enhancement themes, which reduce distress by restoring self-esteem or self-confidence? To address these questions, we used an experimental approach and tested the effects of explicitly and implicitly activated attachment insecurity on the content of sexual fantasies. We also examined whether individual differences in attachment orientations moderated these effects.

Attachment insecurities and the construal of sex

Attachment theory (Bowlby, 1969/1982) proposes that interactions with attachment figures are internalized in the form of conscious and unconscious mental representations of self and others (“working models”), which shape goals and motives in close relationships (Mikulincer & Shaver, 2007a). When attachment figures are physically or emotionally unavailable, serious doubts about one’s self-worth and others’ good-will prevail and negative models of self and others are formed. Recurrent failures to attain the goal of “felt security” foster the development of two alternative defensive strategies that replace the primary strategy of proximity-seeking: hyperactivation, which characterizes anxious attachment, and deactivation, which characterizes avoidant attachment. These secondary attachment strategies have distinct constellations of interpersonal goals, motives, and mental representations of the self and others. Attachment anxiety is associated with heightened separation anxiety, intense wishes for more closeness, negative views of the self, and positive and hopeful expectations of others as being affectionate and supportive. Conversely, attachment avoidance is associated with wishes for greater distance and self-reliance in close relationships, negative models of others as distant and hostile, and positive models of the self as powerful and controlling (Bartholomew & Horowitz, 1991; Mikulincer & Shaver, 2007a). These early-developing working models are believed to guide interpersonal interactions over the lifespan and may, therefore, affect sexual interactions (Shaver et al., 1988).

Research has consistently shown that attachment insecurities are, in fact, associated with the construal of virtual and actual sexual interactions in close relationships, both in everyday life and in relationship-threatening situations (see Birnbaum, 2010; Mikulincer & Shaver, 2007a). People who are anxiously attached use sex as a way of meeting their intense attachment-related needs for personal reassurance and emotional intimacy (e.g., Davis et al., 2004; Impett, Gordon, & Strachman, 2008; Schachner & Shaver, 2004). However, sexual experiences often fail to meet their unrealistic relationship expectations, resulting in sexual frustration and feelings of estrangement and alienation (Birnbaum, 2007a; Birnbaum, Reis, Mikulincer, Gillath, & Orpaz, 2006). These aversive experiences then migrate into their sexual fantasy lives in the form of interpersonal distance and hostility themes, which are particularly marked following relational threats (e.g., a partner’s infidelity; Birnbaum, Svitelman, Bar-Shalom, & Porat, 2008). Avoidantly attached individuals, by comparison, isolate sexual activity from psychological intimacy (e.g., Birnbaum, 2010; Birnbaum & Reis, 2006). Their emotionally detached stance is also evident in their everyday sexual fantasies, which involve emotionless sex and themes of alienation and aggression (Birnbaum, 2007b; Birnbaum et al., 2011).

The present research

As outlined above, previous studies have focused on relations between chronic attachment orientations and sexual fantasies. These studies have left unanswered questions about the impact of attachment models relevant to specific relationships (i.e., contextually activated attachment relationships), especially those that involve threats to

feelings of security, generated by withdrawal of love. Although people are guided by their global attachment orientations, which are largely based on attachment experiences encountered throughout life, they also develop beliefs and expectancies about specific relationships (Creasey & Ladd, 2005; Treboux, Crowell, & Waters, 2004), which can change over time and are sensitive to specific situations (Cozzarelli, Karafa, Collins, & Tagler, 2003; Kirkpatrick & Hazan, 1994). For example, even people who are chronically secure can temporarily feel insecure if they recall a past event that made them feel highly anxious or avoidant. Thus, people have multiple attachment models (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996; Pierce & Lydon, 2001) that are not necessarily highly correlated with their global attachment orientation (Crowell, Treboux, & Waters, 1999) and, therefore, may uniquely predict interpersonal perceptions and interactions when they are activated (Creasey & Ladd, 2005; Simpson & Rholes, 2002). In the present studies, we used well-validated social-cognition research techniques to activate a person's sense of attachment insecurity (e.g., Baldwin et al., 1996; Bartz & Lydon, 2004), and then measured the effects on sexual fantasies. In doing so, we sought to clarify the determinants of sexual fantasies and their underlying functions.

Within the sexual fantasies literature, scholars generally agree that fantasies are typically used to promote sexual arousal and enjoyment. They disagree, however, as to whether sexual fantasies compensate for relational and sexual difficulties or merely reflect sexual experiences and concerns (Leitenberg & Henning, 1995). Studies that have associated sexual difficulties with infrequent fantasizing (e.g., Arndt, Foehl, & Good, 1985; Lentz & Zeiss, 1983) tend to undermine the compensatory view of sexual fantasies. Still, both frequency and content of sexual fantasizing may compensate for overall relational distress rather than compensate for sexual dissatisfaction. This possibility is supported by findings that people in distressed marriages fantasize more frequently on various sexual themes and particularly extradyadic sex than do happily married people (Davidson & Hoffman, 1986; Trudel, 2002). Additional evidence for the involvement of compensatory imaginary processes in managing relational distress comes from studies on what sustains fantasies. This research has indicated that people habitually use mental imagery to manage stress by creating an alternative "reality" (e.g., being in a powerful position), which may counteract the initial stress-provoking event, alleviate related distress, or boost self-esteem (e.g., Harder et al., 1984; Zelin et al., 1983). The content of these fantasies is typically consistent with an individual's behavioral coping style (e.g., Greenwald & Harder, 1995, 2003).

These cross-sectional, retrospective studies have focused on fantasizing in general rather than on specific sexual themes. In addition, although they have illustrated the types of fantasies that people engage in when they are distressed in order to sustain themselves, these studies have not focused on attachment-related stress. Hence, it is unclear whether past findings about certain fantasy preferences elicited by general stress apply to more specific attachment-related stress (i.e., situations that involve threats to feelings of security and exacerbate rejection concerns). Clarifying this point is important, particularly given that fantasy reactions to stress-provoking events could be affected by event characteristics that signify what is being threatened (e.g., one's mate value in the case of sexual infidelity, the future of the relationship in the case of emotional infidelity; see Birnbaum et al., 2008).

The main goal of the present research was to test the hypothesis that priming attachment insecurity (i.e., increasing rejection concerns) would elicit self-protective fantasies that involve self-enhancement desires (e.g., expressing the desire to be irresistibly desired), limited expressions of affection, and hostility themes in which the self is viewed as more distant from the objects of the sexual fantasy. This prediction is grounded in theory and research suggesting that feeling insecure about being loved is threatening to one's self-worth. As such, it triggers a self-regulatory mechanism designed to defend the self against rejection, leading to compensatory self-enhancement (Andersen & Chen, 2002; Bartz & Lydon, 2004) and defensive distancing from the rejecting partner (Murray, Derrick, Leder, & Holmes, 2008; Murray, Holmes, & Collins, 2006). Specifically, heightened rejection concerns may activate avoidance motivation that is geared toward protecting the self from the pain of rejection by inhibiting intimacy and decreasing dependence on the potentially rejecting partner.

Another goal of the present research was to examine the differential fantasy effects of explicit and implicit insecurity priming. Prior attachment studies have found that priming attachment relationships affects emotion regulation at both explicit and implicit levels (see Mikulincer & Shaver, 2007b, for a review). However, whereas the effects of implicit priming of attachment representations are uniform and do not depend on dispositional (chronic) attachment insecurities, the effects of explicit priming are moderated by dispositional attachment anxiety (e.g., Mikulincer, Shaver, Bar-On, & Ein-Dor, 2010; Mikulincer, Shaver, & Rom, 2011). For example, consciously thinking about secure relationships inhibits the beneficial effects of security priming on mood in anxiously attached people (Mallinckrodt, 2007), possibly because it heightens accessibility to both positive and negative attachment-related experiences. Overall, conscious thinking about attachment experiences can amplify habitual emotion regulation tendencies. In particular, it may encourage anxious individuals' proclivity to ruminate about negative relational experiences (e.g., Mikulincer et al., 2011), thereby intensifying self-protection tendencies. Conversely, subliminal exposure to attachment representations operates at a preconscious, automatic level and may therefore bypass the conscious evaluation of attachment experiences, provoking a relatively invariant emotional reaction.

In the sexual domain, explicit and implicit priming have been found to exert similar differential effects on men's and women's sexual reactions. That is, gender, similarly to attachment anxiety, appears to play a larger role in controlled processes instigated by explicit priming than in automatic processes instigated by implicit priming. For example, the effects of sexual priming on sexual arousal were different for men and women when explicit self-reports of sexual arousal were used, but not when more implicit measures of sexual arousal were employed. These findings suggest that subliminal priming influences on sex-related mental contents (i.e., automatic cognitive responses to subliminal sexual stimuli) are similar in men and women, whereas conscious processing of sexual stimuli is different for each gender (Gillath, Mikulincer, Birnbaum, & Shaver, 2007).

Based on these findings, we anticipated that the sexual fantasy effects of insecurity priming would be moderated by dispositional attachment anxiety and gender for explicit priming, but not for implicit priming. Specifically, anxiously attached individuals are strongly motivated to avoid the pain of rejection (Mikulincer & Shaver, 2007a), and they may therefore prioritize self-protection goals over connectedness goals in response to

perceived rejection (Murray et al., 2006, 2008). We predicted that the tendency of highly anxious people to self-protect would be manifested in their fantasies and would be especially marked in men, because they are more likely than women to respond to distressing interactions from a relatively individualistic perspective and to use compensatory self-enhancement, both in the real world (e.g., Berman & Frazier, 2005; Gagné & Lydon, 2003) and in the fantasy realm (Birnbaum et al., 2008).

Three studies tested these predictions. In all studies, participants described a sexual fantasy following a security or an insecurity priming. In Study 1, participants were supraliminally primed with representations of either a security-enhancing relationship or an anxiety-enhancing relationship (via conscious visualization of a particular interpersonal relationship) and then described a sexual fantasy narratively. To address the methodological limitations of supraliminal priming and to explore the more automatic, nonconscious effects of activated attachment insecurity on sexual fantasies, an implicit (subliminal) priming paradigm was employed in Study 2. Specifically, participants were subliminally exposed to either a security or an insecurity picture prime (pictorial representations of either maternal caring or maternal rejection), after which they described a sexual fantasy narratively. Study 3 employed the same implicit priming technique used in Study 2, but assessed sexual themes with a less intrusive methodology in which participants completed a sexual fantasy checklist.

Study 1

In Study 1, we examined the contribution of both chronic attachment orientations and contextually activated (explicitly primed) attachment relationships in predicting the specific content of sexual fantasies. Participants visualized a relationship in which they felt either secure or anxious, and then described a specific sexual fantasy. We tested two hypotheses. First, we hypothesized that participants in the insecurity priming condition would be more likely to report self-protective fantasies that involved self-enhancement themes and perceptions of the self and others as more alienated and as less affectionate than participants in the security priming condition. Second, we hypothesized that attachment anxiety would amplify the effects of activated insecurity on the content of these sexual fantasies. That is, the self-protective effects would be most pronounced in anxiously attached men.

Method

Participants. One hundred and fourteen students (62 women, 52 men) from a university in central Israel volunteered for the study without compensation. Participants ranged from 20 to 40 years of age ($M = 26.82$, $SD = 5.65$). All participants reported heterosexual orientation and had experienced sexual intercourse, either in a current or a past relationship. Approximately 66% of the participants were currently involved in a romantic relationship and 24% were married. Of the participants who were currently involved in a romantic relationship, length of relationship ranged from 1 to 288 months ($M = 49.74$, $SD = 74.54$). No significant differences were found between the experimental conditions for any of these socio-demographic variables.

Measures and procedure. After agreeing to participate in a study on personality, sexuality, and close relationships, participants completed a packet of questionnaires at their own pace. Following this, participants began the relationship visualization task, which was adapted from a procedure developed by Baldwin et al. (1996). Specifically, participants were asked to visualize a past or current romantic relationship (or a specific episode in that relationship) that best fit the description of one of two of Hazan and Shaver's (1987) attachment relationships. This was done to increase the temporary accessibility of either: (a) a secure attachment relationship in which "you found it easy to get close to your partner and were comfortable depending on him or her and having him or her depend on you. You did not worry about being abandoned or about your partner getting too close to you;" or (b) an anxious attachment relationship in which "your partner was reluctant to get as close as you would have liked. You may have worried that your partner did not really love you or did not want to stay with you. You wanted to get close to your partner, and this may have scared him or her."

After visualizing one of these two relationships, participants answered an open-ended probe: "Please describe in detail the specific episode in that relationship and the emotions and thoughts that it arouses in you." Answers to this question served to ensure that each participant had the proper relationship or episode in mind prior to describing a sexual fantasy. Two psychology undergraduate research assistants independently read these answers and found that they all fit into the prime conditions.

We did not include an explicit manipulation check in the main study, because we were concerned that the manipulation check would arouse suspicion about the purpose of the study. Instead, we ran a manipulation check on a separate sample of participants. We recruited 62 undergraduate students and asked them to visualize either a secure or an anxious attachment relationship. Then, instead of describing a sexual fantasy, participants completed a manipulation check question, in which they were asked to rate the extent to which they worried about being abandoned in the episode they described along a 7-point scale (0 = *not at all*, 7 = *very much*). We found that abandonment fears were higher in the anxious prime condition ($M = 5.44$, $SD = 1.25$) than in the secure prime condition ($M = 1.69$, $SD = 1.16$), $t(60) = 12.24$, $p < .001$.

Immediately following these experimental procedures, participants were given the following definition of the term sexual fantasy, adapted from Leitenberg and Henning (1995, p. 470): "Sexual fantasies refer to any mental imagery that is sexually arousing or erotic to the individual. A sexual fantasy can be an elaborate story, or it can be a fleeting thought of some romantic or sexual activity. It can involve bizarre imagery, or it can be quite realistic. It can involve memories of past events, or it can be a completely imaginary experience." Then, participants were given the following instructions: "Please think of a sexual fantasy and write about the first one that comes to mind in the space below. Please describe in detail the specific scene, series of events, the figures, wishes, sensations, feelings, and thoughts that are experienced by you and the other figures in your fantasy. At this point, we wish to note that you are writing anonymously, so feel free to write anything you like."

Two judges (psychology graduate research assistants), who were blind to the experimental manipulation, used a fantasy checklist to analyze the contents of each reported sexual fantasy. The 25-item fantasy checklist was developed by Birnbaum

(2007b) and was based on the Core Conflictual Relationship Theme (CCRT) measure (Luborsky, 1977; Luborsky & Crits-Christoph, 1998), a system applied for identifying the central patterns of interpersonal relationships in both dreams and waking narratives. Fantasies were evaluated according to three categories of relationship schemas: (a) six wishes expressed in the sexual fantasy (W); (b) nine responses from others to the participant (RO); and (c) 10 responses of the self to others (RS). The two judges, who were trained to perform the coding, used this checklist to score fantasies for the different W, RO, and RS items. These judges independently rated the extent to which each item described the expressed wishes and representations of the self and others in each sexual fantasy on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*). The inter-rater reliability for the W, RO, and RS items was high (ICC values ranged from .88 to .94). Accordingly, we averaged the scores of the two judges.

In the present study, we used six scores as the main outcome variables in the statistical analyses. A common factor analysis with Varimax rotation (assuming independence of factors) performed on these six scores yielded two main factors (eigenvalue > 1) that explained 81.08% of the total variance. The first factor (64.13% of explained variance) included the three scores (loading > .40) that represented the characteristic wishes and models of the self and others of chronically anxiously attached people: (1) anxiety-related wishes: judges' rating of the item "desire for intimacy and closeness" in the sexual fantasy; (2) anxiety-related self-representation: an average of three RS items representing the self as affectionate and pleasing (i.e., perceptions of the self as affectionate, pleasing, and supportive in the sexual fantasy; Cronbach $\alpha = .82$), and (3) anxiety-related representation of others: an average of three RO items representing others as affectionate and pleasing (i.e., perceptions of the object(s) of the fantasy as affectionate, pleasing, and supportive; Cronbach $\alpha = .91$).

The second factor (16.95% of explained variance) included the remaining three scores (loading > .40) that represented the characteristic wishes and models of the self and others of chronically avoidant people: (1) avoidance-related wishes: judges' rating of the item "desire to be irresistibly desired" in the sexual fantasy. This item reflects self-enhancement needs; (2) avoidance-related self-representation: an average of three RS items representing the self as aggressive and alienated (i.e., perceptions of the self as aggressive, abusive, and alienated; Cronbach $\alpha = .74$); and (3) avoidance-related representation of others: an average of three RO items representing others as aggressive and alienated (i.e., perceptions of the object(s) of the fantasy as aggressive, abusive, and alienated; Cronbach $\alpha = .81$). The choice of these six scores was based on previous theoretical descriptions of wishes and models of the self and others that characterize anxiously attached and avoidantly attached people in romantic and sexual relationships (Birnbau, 2010; Mikulincer & Shaver, 2007a).

After a 30-minute break, participants completed a Hebrew version of the Experiences in Close Relationships Scale (ECR) (Brennan, Clark, & Shaver, 1998), which assesses dispositional (chronic) attachment orientations. This self-report scale consists of 36 items tapping the dimensions of attachment anxiety and avoidance. Participants rated the extent to which each item described their feelings in close relationships on a seven-point scale ranging from "strongly disagree" (1) to "strongly agree" (7). Eighteen items tapped attachment anxiety (e.g., "I worry about being abandoned"), and 18 items tapped attachment avoidance (e.g., "I get

uncomfortable when a romantic partner wants to be very close”). The ECR was translated into Hebrew by Mikulincer and Florian (2000), who also validated its two-factor structure on an Israeli sample. In the current sample, Cronbach α s were high for the 18 anxiety items (.92) and the 18 avoidance items (.89). Higher scores indicated greater attachment-related avoidance or anxiety. Attachment anxiety and attachment avoidance scores were not significantly different between prime conditions, $t_s(112) = -.96$ and 1.14 , respectively, *ns*. Participants also provided demographic and relationship information, including age, current relationship status, and length of current relationship.

Results and brief discussion

Data were analyzed using a series of three-step hierarchical regressions testing the unique and interactive effects of the security vs. insecurity primes, chronic attachment anxiety, chronic attachment avoidance, and gender on the content of participants' sexual fantasies. The dependent variables were the anxiety-related and the avoidance-related wishes and representations of the self and others expressed in the sexual fantasies. In the first step of each analysis, we tested the main effects of the security vs. insecurity primes (which was a dummy-coded variable comparing the insecurity prime condition (1) to the security prime condition (0)), chronic attachment anxiety and avoidance (both entered as standardized scores), and gender (which was a dummy-coded variable comparing women (1) to men (0)). All two-way interactions were entered in the second step of each analysis, and the three-way interactions were then entered in the final step. Tables 1 and 2 present the standardized regression coefficients (β s) for each effect at the step at which it was entered into the regression equation. These analyses revealed no meaningful interactions between chronic attachment avoidance and anxiety; hence, they are not reported. For simplicity, only the significant effects involving the security vs. insecurity primes are described.

Anxiety-related wishes and representations of the self and others in sexual fantasies. The regression analyses revealed that the security vs. insecurity prime significantly predicted representations of the self and others as affectionate and pleasing, with representations of the self and others as being less affectionate and pleasing for the insecurity prime than for the security prime (see Table 1). This main effect was qualified by a significant three-way Security vs. Insecurity Prime x Chronic Attachment Anxiety x Gender interaction. This three-way interaction was also significant for the desire for intimacy. Using Aiken and West's (1991) procedure, we found that the insecurity prime led men to desire less intimacy and to represent the self and others as less affectionate and pleasing when their chronic attachment anxiety was high (1 SD above the mean), β s of $-.50$, $-.66$, and $-.62$, respectively, $ps < .01$, $.001$, and $.001$, respectively, but not when it was low (1 SD below the mean), β s of $.14$, $.20$, and $.28$, respectively, *ns*. The security vs. insecurity prime had no significant effects on women's desire for intimacy and their representations of self and others as affectionate and pleasing, regardless of whether their chronic attachment anxiety was high, β s of $.31$, $.10$, and $.19$, respectively, *ns*, or low, β s of $-.14$, $-.18$, and $-.24$, respectively, *ns*.

Table 1. Beta coefficients for predicting anxiety-related wishes and representations of the self and others from activation of security vs. insecurity, chronic attachment orientations, and gender in Studies 1-2

	Desire for intimacy		Self as affectionate		Others as affectionate	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Step 1:						
Security/Insecurity Priming	-.15	-.46**	-.20*	-.41**	-.18*	-.30*
Step 2:						
Priming x Anxiety	-.07	-.05	-.10	-.06	-.07	.28
Priming x Avoidance	.20	.06	.09	.13	.23	.12
Priming x Gender ^a	.28	.23	.21	.20	.16	-.02
Step 3:						
Priming x Anxiety x Gender	.63***	.09	.61**	-.16	.68***	-.21
Priming x Avoid x Gender	.04	-.01	.04	-.18	.10	-.14

Notes. ^a A dummy-coded variable compared women (1) to men (0).

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

Table 2. Beta coefficients for predicting avoidance-related wishes and representations of the self and others from activation of security vs. insecurity, chronic attachment orientations, and gender in Studies 1-2

	Desire to be desired		Self as aggressive		Others as aggressive	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Step 1:						
Security/Insecurity Priming	.21*	.48***	.15	.47***	.06	.51***
Step 2:						
Priming x Anxiety	-.17	.21	.16	.02	.15	-.27
Priming x Avoidance	.01	-.06	-.10	.20	-.26	.18
Priming x Gender ^a	-.20	-.39	-.06	-.31	-.04	-.05
Step 3:						
Priming x Anxiety x Gender	-.07	-.21	-.84***	-.35	-.71***	.35
Priming x Avoid x Gender	.23	-.36	.13	-.01	-.01	-.26

Notes. ^a A dummy-coded variable compared women (1) to men (0).

* $p < .05$; *** $p < .001$

Avoidance-related wishes and representations of the self and others in sexual fantasies. The regression analyses also revealed that the security vs. insecurity prime significantly affected the desire to be desired in fantasies, with this effect being stronger for the insecurity prime than the security prime (see Table 2). The regression analyses also revealed a significant Security vs. Insecurity Prime x Chronic Attachment Anxiety x Gender interaction for representations of the self as aggressive and alienated in fantasies. The regression coefficients indicated that the Insecurity prime led men to represent the self as more aggressive and alienated in their fantasies when their chronic attachment

anxiety was high (1 SD above the mean), $\beta = .76, p < .001$, but to represent the self as less aggressive and alienated when it was low (1 SD below the mean), $\beta = -.57, p < .01$. The Insecurity prime had no significant effect on women's representations of the self as aggressive and alienated, regardless of whether their chronic attachment anxiety was high or low, β s of $-.16$ and $.25$, respectively, *ns*.

Similarly, a Security vs. Insecurity Prime x Chronic Attachment Anxiety x Gender interaction was significant for representations of others as aggressive and alienated in fantasies (see Table 2). Specifically, the Insecurity prime led men to represent others as more aggressive and alienated when their chronic attachment anxiety was high (1 SD above the mean), $\beta = .53, p < .01$, but to represent others as less aggressive and alienated when it was low (1 SD below the mean), $\beta = -.54, p < .05$. The Insecurity prime had no significant effect on women's representations of others as aggressive and alienated, regardless of whether their chronic attachment anxiety was high or low, β s of $-.20$ and $.22$, respectively, *ns*.

In sum, the findings of Study 1 indicate that contextual activation (priming) of attachment anxiety resulted in sexual fantasies that involved greater interpersonal distance and hostility themes, particularly in anxiously attached men. More specifically, supraliminal anxiety priming led participants to represent both the self and others in more alienated terms during sexual fantasies. The anxiety prime also heightened the desire to be irresistibly desired. These findings suggest that consciously thinking about a prior experience of attachment insecurity may be threatening to one's self-image, eliciting protective responses in fantasies in which the self is perceived as less dependent on a potentially rejecting partner. Highly anxious men are most prone to react in this protective manner, possibly because their heightened rejection sensitivity amplifies their tendency to respond to relational threats in a way that makes them feel better about themselves (see Birnbaum et al., 2008; Gagné & Lydon, 2003).

Study 2

Study 1 used a supraliminal priming technique that activated conscious thoughts about attachment-related experiences. Thus, it could have evoked demand characteristics or other motivational and cognitive biases when participants described their fantasies. To address this potential limitation, Study 2 used a subliminal priming technique in which participants were not aware of the primed representations. Similar procedures have been used in previous studies designed to prime attachment representations (e.g., Mikulincer, Hirschberger, Nachmias, & Gillath, 2001). Specifically, participants in Study 2 were exposed to either a subliminal security picture prime or a subliminal insecurity picture prime (pictorial representations of either maternal caring or maternal rejection) and were then asked to describe a sexual fantasy in narrative form. We predicted that participants exposed to the insecurity prime would be more likely to experience self-protective fantasies that involved self-enhancement themes and perceptions of the self and others as more alienated and less affectionate than participants exposed to the security prime. We also predicted that the effects of subliminal priming of attachment representations would be independent of participants' chronic attachment orientations, as has been found in most previous studies (see Mikulincer & Shaver, 2007b, for a review).

Method

Participants. Sixty Israeli students (31 women, 29 men) volunteered for the study without compensation. Participants ranged from 20 to 33 years of age ($M = 23.88$, $SD = 3.27$). All participants reported heterosexual orientation and had experienced sexual intercourse, either in a current or a past relationship. Approximately 62% of the participants were currently involved in a romantic relationship and 5% were married. Of the participants who were currently involved in a romantic relationship, length of relationship ranged from two to 86 months ($M = 18.52$, $SD = 24.13$). No significant differences were found between the experimental priming conditions for any of the socio-demographic variables.

Measures and Procedure. Participants, who agreed to participate in a study on personality, decision-making, and sexuality, attended a single laboratory session. Prior to coming to the laboratory, participants were randomly assigned to one of two experimental conditions: (a) being exposed to a subliminal insecurity picture prime (a black-and-white sketch depicting a mother turning away from her crying baby) or (b) being exposed to a subliminal security picture prime (a black-and-white sketch depicting a mother holding and looking at her baby). The pictures primes were adopted from Mikulincer et al. (2001). We did not include a manipulation check in the main study, because of the subliminal nature of the primes. Nevertheless, a separate sample of participants confirmed that the picture depicting a mother turning away from her crying baby reflects maternal rejection.

At the laboratory, participants were told they would perform some computerized tasks and fill out paper-and-pencil questionnaires. In the first part of the procedure, participants were asked to rate 20 pairs of pieces of furniture (e.g., a table and a chair) according to how similar or associated they were. Before seeing each pair of objects, participants were exposed to either the insecurity or the security prime, which was presented subliminally (for 30 ms). The presentation of the prime was followed by a mask presented for 500 ms (a visual “noise” pattern that minimized conscious awareness of the primes by eliminating their afterimages on the fovea) and then by the pair of furniture names, separated by a hyphen (e.g., cabinet-chair). Participants received the following instructions:

“On each trial of the next task, you will see on the screen the names of two pieces of furniture (e.g., table-television). Your task will be to decide how similar or associated the two are (using any sense of “similar” or “associated” that comes to mind when you see the pair of words). You should indicate your response by pressing a number between 1 and 7 on the keyboard number pad, with 1 indicating that the two pieces of furniture are not similar or associated at all, and 7 indicating that they are highly similar or associated. (The numbers in between, 2 through 6, indicate degrees of similarity or association). Each trial will begin with an X in the center of the screen, followed by a brief flash, and then a pair of furniture words. As soon as you press a number key to indicate your similarity or association judgment, the next trial will begin.”

The “brief flash” was actually the subliminal prime. The task was programmed using SuperLab Pro 2.0, based on a similar procedure used in previous studies (e.g., Gillath et

al., 2007; Gillath, Mikulincer, Birnbaum, & Shaver, 2008), and run on an IBM PC Pentium III computer with an SVGA color monitor. Brightness and contrast were set low and the primes as well as the pairs of furniture words were displayed in shades of gray over a white background in the center of the screen.

In the second part of the procedure, immediately after the priming trials, participants were asked to describe in narrative form a sexual fantasy. The instructions were identical to those of Study 1. As in Study 1, two judges (the same psychology graduate research assistants as in Study 1), who were blind to the experimental condition that preceded the particular fantasy, used a fantasy checklist to analyze the sexual fantasies by their content. The inter-rater reliability for the W, RO, and RS items was high (ICC values ranged from .82 to .90). Accordingly, we averaged the two judges' scores.

Alpha reliabilities were adequate for the two factors of the RO component (.85 for Others as Affectionate and Pleasing, and .71 for Others as Aggressive and Alienated) and for the two factors of the RS component (.90 for Self as Affectionate and Pleasing, and .86 for Self as Aggressive and Alienated). Thus, we computed four scores by averaging items loading on each factor.

Following a 30-minute break, participants completed the ECR Scale (Brennan et al., 1998) described in Study 1. In the current sample, Cronbach α s were high for the 18 anxiety items (.91) and for the 18 avoidance items (.91). Therefore, two scores were computed by averaging items on each subscale. Attachment anxiety and attachment avoidance scores were not significantly different between prime conditions, $t_s(58) = 1.10$ and 1.13 , respectively, *ns*. At the end of the task, participants were fully debriefed. No participants reported awareness that pictures had been presented subliminally.

Results and brief discussion

We conducted a series of three-step hierarchical regressions identical to those described in Study 1. Specifically, we tested the effects of security vs. insecurity priming (a dummy-coded variable, with the insecurity prime condition coded 1 and the security prime condition coded 0), gender, and the two chronic attachment scores on the content of participants' sexual fantasies. Tables 1 and 2 present the standardized regression coefficients (β s) for each effect at the step at which it was entered into the regression equation. Regression analyses once again revealed no meaningful interactions between chronic attachment avoidance and anxiety; hence, they are not reported. For simplicity, only the effects involving the experimental conditions are described.

Anxiety-related wishes and representations of the self and others in sexual fantasies. The regression analyses revealed that the insecurity prime significantly predicted the desire for intimacy in sexual fantasies, with lower levels of desire for intimacy following the insecurity prime than the security prime. The insecurity prime also significantly predicted representations of the self and others as affectionate and pleasing in sexual fantasies, with representations of the self and others as being less affectionate and pleasing following the insecurity prime than the security prime. The regression analyses

revealed no meaningful interactions between the security vs. insecurity prime and chronic attachment orientations (see Table 1).

Avoidance-related wishes and representations of the self and others in sexual fantasies. The regression analyses revealed that the security vs. insecurity prime significantly predicted the desire to be desired in sexual fantasies, such that it increased the desire to be desired compared with the security prime. The security vs. insecurity prime also significantly predicted representations of the self and others as aggressive and alienated in sexual fantasies, with representations of the self and others as being more aggressive and alienated for the insecurity prime than for the security prime. The regression analyses revealed no meaningful interactions between the security vs. insecurity prime and chronic attachment orientations (see Table 2).

As hypothesized, we also found that, regardless of participants' chronic attachment orientations, subliminally activated attachment insecurity (i.e., rejection concerns) produced fantasies that involved more self-enhancement themes and views of the self and others as more alienated and hostile. Activated attachment insecurity also inhibited relationship-promotion themes (e.g., representations of the self and others as affectionate and pleasing). These findings imply that activated attachment insecurity leads people to experience avoidant fantasies that may protect them from further personal loss of self-esteem. Previous research has already shown that relationship threat can nonconsciously heighten global avoidance motivation (Cavallo, Fitzsimons, & Holmes, 2010). Our results add to this evidence and suggest that the general motivation to avoid negative outcomes elicited by threat may drive self-protective fantasy responses (e.g., compensatory self-enhancement, distancing oneself from others). These fantasmatic expressions of attachment insecurity resemble the typical thematic content of highly avoidant people's sexual fantasies (Birnbaum, 2007b; Birnbaum et al., 2011).

Study 3

Study 2 employed an open-ended methodology in which participants described a sexual fantasy narratively. Using this methodology, participants may have felt reluctant to write lengthy sexual themes and might have been more susceptible to social desirability bias than if they simply responded to items on a checklist (Leitenberg & Henning, 1995). In Study 3, therefore, we attempted to replicate the findings of Study 2, while assessing sexual themes with a different methodology that did not have these limitations. Specifically, participants were exposed to either a subliminal security picture prime or an insecurity picture prime and then completed a sexual fantasy checklist. The predictions were identical to those of Study 2.

Method

Participants. Fifty Israeli students (22 women, 28 men) volunteered for the study without compensation. Participants ranged from 19 to 34 years of age ($M = 24.15$, $SD = 3.49$). All participants reported heterosexual orientation and had experienced sexual intercourse, either in a current or a past relationship. Approximately 59% of the participants

were currently involved in a romantic relationship and 11% were married. Of the participants who were currently involved in a romantic relationship, length of relationship ranged from two to 162 months ($M = 20.38$, $SD = 31.62$). No significant differences were found between the experimental prime conditions for any of the socio-demographic variables.

Measures and procedure. The first part of the procedure, in which participants were subliminally primed with either a security or an insecurity picture, was similar to Study 2. In the second part of the procedure, which occurred immediately after the implicit priming trials, participants were given the definition of *sexual fantasy* described in Study 1. Following this, they read the following instructions:

“Please think of a sexual fantasy (the first one that comes to mind). Please imagine in detail the *specific scene, series of events, the figures*, wishes, sensations, feelings, and thoughts that are experienced by you and the other figures in your fantasy.”

After imagining the fantasy, participants completed a sexual fantasy checklist adapted from Birnbaum (2007b). This checklist consists of 10 sexual fantasy items reflecting commonly reported sexual themes relevant to attachment processes. The adapted scale assessed two major sexual themes: Romance (four items; “Feeling affection and emotional connection while having sex”, “Kissing passionately”; $\alpha = .77$) and Emotionless Sex (six items; “Having emotionless sex”; $\alpha = .72$). The choice of these two major sexual themes was based on previous theoretical descriptions of experiences that characterize anxiously attached and avoidantly attached people, respectively, in romantic and sexual relationships (Birnbaum, 2010; Mikulincer & Shaver, 2007a).

Participants rated the extent to which each item described their sexual fantasy on a 5-point Likert-type scale ranging from “not at all” (1) to “very much” (5). Then, after a 30-minute break, participants completed the ECR Scale (Brennan et al., 1998). In the current sample, Cronbach α s were high for both the 18 anxiety items (.94) and the 18 avoidance items (.90). Therefore, two scores were computed by averaging items on each subscale. Attachment anxiety and attachment avoidance scores were not significantly different between prime conditions, $t_s(48) = 1.09$ and 1.32, respectively, *ns*. Following the task, participants were fully debriefed. No participants reported awareness that pictures had been presented subliminally.

Results and brief discussion

We conducted a series of three-step hierarchical regression analyses identical to those described in Study 1. Specifically, we tested the effects of the security vs. insecurity priming (with the insecurity prime coded (1) and the security prime coded 0), gender, and chronic attachment anxiety and avoidance on themes of romance and emotionless sex. Table 3 presents the standardized regression coefficients (β s) for each effect at the step at which it was entered into the regression equation. Regression analyses once again revealed no meaningful interactions between chronic attachment avoidance and anxiety, so they are not reported further. For simplicity, only the effects involving the experimental priming conditions are described.

Table 3. Beta coefficients for predicting sexual fantasies themes from activation of security vs. insecurity, chronic attachment orientations, and gender in study 3

	Romance	Emotionless sex
Step 1:		
Security/Insecurity Priming	-.54***	.62***
Step 2:		
Priming x Anxiety	-.02	.06
Priming x Avoidance	.01	.01
Priming x Gender ^a	.32	-.03
Step 3:		
Priming x Anxiety x Gender	.04	.07
Priming x Avoid x Gender	.04	.05

Notes. ^a A dummy-coded variable compared women (1) to men (0).

*** $p < .001$

The regression analyses revealed that the security vs. insecurity prime significantly predicted both emotionless and romantic sexual themes, such that the insecurity prime led to fantasies that involved more emotionless sexual themes and less romantic sexual themes compared to the security prime. These findings replicate those of Study 2, indicating that implicit activation of attachment insecurity (i.e., rejection concerns) inhibited fantasy expressions of affection and intimacy. This apparent usage of distancing strategies may serve self-protection goals by directing the self away from the potential source of distress. As in Study 2, and consistent with previous research (e.g., Mikulincer & Shaver, 2007b; Mikulincer et al., 2011), the effects of subliminal priming of attachment were independent of chronic attachment orientations, suggesting the involvement of unconscious processes in which attachment insecurity automatically activates self-protection goals while inhibiting relationship-promotion ones (i.e., romantic sexual themes).

General discussion

The present research sheds light on the functional significance of sexual fantasies by demonstrating the contribution of sexual fantasies to regulating reactions to attachment-related stressful events (e.g., situations that involve threats to feelings of security and heightened rejection concerns). Sexual fantasies are an integral component of adult life that is experienced privately in a virtual world; thus, they provide a unique insight into a person's most intimate desires and mental processes. It is therefore hardly surprising that the unique nature of sexual fantasies has sparked a debate about their underlying functions. Freud (1908/1962), for example, famously argued that sexual fantasies are typically motivated by unsatisfied wishes and, as such, they serve a compensatory function. Others, however, have claimed that fantasies reflect historical or current relational concerns along with habitual coping mechanisms and defensive strategies (Greenwald & Harder, 1995, 2003; Leitenberg & Henning, 1995). Surprisingly little is known, however, about

the factors that affect the *content* of sexual fantasies, which can elucidate their underlying psychological mechanisms.

Our research adopted a person by situation perspective wherein individual differences in chronic attachment orientations and gender in combination with contextual variables (i.e., attachment-relevant primes) were posited to exert a powerful influence on the content of sexual fantasies. The findings support this perspective, indicating that contextual activation of attachment representations influences the thematic content of fantasies, and also delineate for whom the effects are strongest. In Study 1, explicit insecurity primes (i.e., consciously thinking about past experiences of insecurity) produced fantasies that involved greater interpersonal distance and hostility themes, such as perceiving the self and others as alienated and hostile. Explicit insecurity primes also inhibited relationship-promotion themes, such as perceiving the self and others as more affectionate and pleasing, and heightened the desire to be desired. This pattern was particularly marked in anxiously attached men. In Studies 2 and 3, implicit insecurity primes (i.e., subliminal exposure to pictorial representations of maternal rejection) enhanced interpersonal distance and hostility themes and inhibited relationship-promotion themes, regardless of a person's chronic attachment orientation.

Considered together, these findings indicate that activated attachment insecurity and rejection concerns elicit avoidant sexual fantasies that involve self-enhancement desires along with negative views of the self and others as being more distant and alienated. Past studies have already documented that events that activate a sense of attachment insecurity and heighten attachment-based worries tend to threaten one's perceptions of self-worth and, therefore, promote avoidance motivation and self-protection goals (e.g., Bartz & Lydon, 2004; Cavallo et al., 2010). These goals foster reliance on distancing strategies that decrease dependence on the potentially rejecting partner(s), thereby protecting the self from further pain (e.g., Murray et al., 2006, 2008). The present findings add to this literature by showing that the fantasmatic expressions of activated attachment insecurity resemble the typical fantasy patterns of highly avoidant people (Birnbaum, 2007b), possibly reflecting defensive attachment strategies. These results suggest that, in times of attachment related-stress when attachment-based goals, concerns, and worries are salient, sexual mental imagery may be routinely used to cope with distress.

The relatively uniform effects of the implicit insecurity primes described above point to the involvement of normative self-protection processes, which are part of the sexual system. Interestingly, the fantasy effects of explicit insecurity primes were less uniform and reflected more individual variations in the parameters of the attachment system. In particular, consciously thinking about a relationship in which one feels insecure about being loved induced self-protective fantasy responses in anxiously attached men. Growing empirical evidence indicates that anxiously attached people are more likely than less anxious people to distance themselves from their partners following interactions that pose a threat to their relationships (e.g., Campbell, Simpson, Boldry, & Kashy, 2005; Simpson, Rholes, & Phillips, 1996). As our results insinuate, these self-protective proclivities appear to combine with men's tendency to emphasize sexual conquering and prowess in the fantasy realm under relationship-threatening conditions (Birnbaum et al., 2008), generating highly avoidant fantasies. Whether such negatively colored fantasies enhance sexual enjoyment or impair sexual desire is a question for future research.

The present findings also suggest that sexual fantasies may serve self-protection goals primarily in situations in which rejection concerns are activated and felt security is being threatened. Sexual fantasies are private and typically isolated from the outside world. Nevertheless, fantasies do not usually occur in a psychological and contextual vacuum; reminders of the real world may invade fantasies, coloring their content and changing their underlying function. In everyday situations, sexual fantasies may be used to promote sexual arousal or merely reflect floating thoughts and pleasurable sensations (Birnbbaum et al., 2011; Leitenberg & Henning, 1995). In relationship-threatening situations, they may be employed to cope with stressful events (e.g., Birnbbaum et al., 2008) and, therefore, may have relatively negative overtones (e.g., in the form of negative representations of the self and others). In this sense, fantasies are similar to other components of the sexual system, which also serve attachment-related goals in situations that call for distress regulation (Birnbbaum, 2010; Davis et al., 2004). Ironically, in comparison to sexual behaviors, sexual fantasies may also be limited by the imposed constraints of the fantasizer's attachment-based underlying motivational dynamics and cognitive structures, as our findings indicate. Future research should examine whether activated rejection concerns lead to sexual rather than non-sexual fantasies and whether non-sexual and sexual fantasies would show similar relational themes following rejection primes.

Limitations and conclusion

Our results are consistent with the hypothesis that attachment representations color how individuals construe their imaginary sexual interactions. However, we included a rejection prime rather than both types of insecurity primes: An avoidance prime (e.g., consistent exposure to a rejecting mother image) and an anxiety prime (e.g., exposing participants to a rejecting mother image on half their trials and to the caring image on the other half). Thus, we do not know whether or how the content of sexual fantasies differs following an anxiety prime versus an avoidance prime. Furthermore, because we did not measure the emotional consequences of experiencing sexual fantasies, we cannot draw unqualified conclusions about their self-protection role. It is possible that the negative fantasy representations of the self and others merely reflect the negative mood generated by activated attachment insecurity. Future studies should examine whether the fantasy expressions of contextually activated attachment insecurity alleviate the distress initially evoked by induced representations of insecurity. Additionally, the present research did not take into consideration relational variables known to affect sexual fantasizing, such as quality of couple interactions (Birnbbaum et al., 2011; Trudel, 2002). Accordingly, the effects of insecurity on sexual fantasies could reflect unmeasured variations in relationship quality. For example, negative couple interactions may particularly increase negative self-representations in anxiously attached people (Birnbbaum et al., 2011). Relationship quality may, therefore, partially explain why anxiously attached men are most likely to use distancing strategies in their fantasies when confronted with explicitly activated insecurity.

Finally, the three studies investigated sexual fantasies from the viewpoint of the individual, independent of his or her current romantic partner. Another potential moderator of the effects of activated insecurity on the content of sexual fantasies might be the

attachment orientation or personal qualities of the current partner. An individual may be less likely to represent the self as helpless and needy, for example, if his or her partner is not likely to respond positively to his or her neediness. To be sure, a recent study has revealed that men are unlikely to represent themselves as weak and helpless in their sexual fantasies following negative couple interactions, especially if their partners are insecurely attached and thus are less likely to be responsive to their needs during relationship-distressing events (Birnbaum et al., 2011). Information on the attachment orientations of both partners, therefore, may be useful in enhancing the prediction of the degree to which certain imaginary sexual themes are activated by attachment insecurity primes.

These limitations notwithstanding, the present research is the first to establish a causal link between experimentally activated representations of attachment insecurity and the thematic content of sexual fantasies. Doing so enabled us to confirm that sexual fantasies reveal important features of a person's current and historical concerns and defensive strategies, as well as to demonstrate the involvement of sexual mental imagery in handling attachment-related stressful events. This research raises other questions that might be profitable for future research. For example, does the experience of distancing sexual themes exacerbate feelings of distance between romantic partners? Do avoidant fantasies promote one's self-image? Does "reprogramming" a person's stress-related fantasy responses affect his or her behavioral coping style? Does sexual mental imagery play a mediating role in benefiting from positive couple interactions? More research needs to address these questions and to explore the potential of sexual fantasies to affect personal and interpersonal well-being, either positively or adversely.

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References

- Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage.
- Andersen, S. M., & Chen, S. (2002). The relational self: An interpersonal social-cognitive theory. *Psychological Review*, *109*, 619-645.
- Arndt, W. B., Foehl, J. C., & Good, F. E. (1985). Specific sexual fantasy themes: A multidimensional study. *Journal of Personality and Social Psychology*, *48*, 472-480.
- Baldwin, M. W., Keelan, J. P. R., Fehr, B., Enns, V., & Koh Rangarajoo, E. (1996). Social-cognitive conceptualization of attachment working models: Availability and accessibility effects. *Journal of Personality and Social Psychology*, *71*, 94-109.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*, 226-244.
- Bartz, J. A., & Lydon, J. E. (2004). Close relationships and the working self-concept: Implicit and explicit effects of priming attachment on agency and communion. *Personality and Social Psychology Bulletin*, *30*, 1389-1401.
- Berman, M. I., & Frazier, P. A. (2005). Relationship power and betrayal experience as predictors of reactions to infidelity. *Personality and Social Psychology Bulletin*, *31*, 1617-1627.

- Birnbaum, G. E. (2007a). Attachment orientations, sexual functioning, and relationship satisfaction in a community sample of women. *Journal of Social and Personal Relationships*, 24, 21-35.
- Birnbaum, G. E. (2007b). Beyond the borders of reality: Attachment orientations and sexual fantasies. *Personal Relationships*, 14, 321-342.
- Birnbaum, G. E. (2010). Bound to interact: The divergent goals and complex interplay of attachment and sex within romantic relationships. *Journal of Social and Personal Relationships*, 27, 245-252.
- Birnbaum, G. E., Mikulincer, M., & Gillath, O. (2011). In and out of a daydream: Attachment orientations, daily relationship quality, and sexual fantasies. *Personality and Social Psychology Bulletin*, 37, 1398-1410.
- Birnbaum, G. E., & Reis, H. T. (2006). Women's sexual working models: An evolutionary-attachment perspective. *The Journal of Sex Research*, 43, 328-342.
- Birnbaum, G. E., Reis, H. T., Mikulincer, M., Gillath, O., & Orpaz, A. (2006). When sex is more than just sex: Attachment orientations, sexual experience, and relationship quality. *Journal of Personality and Social Psychology*, 91, 929-943.
- Birnbaum, G. E., Svitelman, N., Bar-Shalom, A., & Porat, O. (2008). The thin line between reality and imagination: Attachment orientations and the effects of relationship threats on sexual fantasies. *Personality and Social Psychology Bulletin*, 34, 1185-1199.
- Birnbaum, G. E., Weisberg, Y. J., & Simpson, J. A. (2011). Desire under attack: Attachment orientations and the effects of relationship threat on sexual motivations. *Journal of Social and Personal Relationships*, 28, 448-468.
- Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). New York, NY: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York, NY: Basic Books.
- Brennan, K. A., Clark, C. L., Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York, NY: Guilford Press.
- Campbell, L., Simpson, J. A., Boldry, J. G., & Kashy, D. (2005). Perceptions of conflict and support in romantic relationships: The role of attachment anxiety. *Journal of Personality and Social Psychology*, 88, 510-531.
- Cavallo, J. V., Fitzsimons, G. M., & Holmes, J. G. (2010). When self-protection overreaches: Relationship-specific threat activates domain-general avoidance motivation. *Journal of Experimental Social Psychology*, 46, 1-8.
- Cozzarelli, C., Karafa, J. A., Collins, N. L., & Tagler, M. J. (2003). Stability and change in adult attachment styles: Associations with personal vulnerabilities, life events, and global construals of self and others. *Journal of Social and Clinical Psychology*, 22, 315-346.
- Creasey, G., & Ladd, A. (2005). Generalized and specific attachment representations: Unique and interactive roles in predicting conflict behaviors in close relationships. *Personality and Social Psychology Bulletin*, 31, 1026-1038.
- Crowell, J., Treboux, D., & Waters, E. (1999). The adult attachment interview and relationship questionnaire: Relations to reports of mothers and partners. *Personal Relationships*, 6, 1-18.
- Davidson, J. K., & Hoffman, L. E. (1986). Sexual fantasies and sexual satisfaction: An empirical analysis of erotic thought. *The Journal of Sex Research*, 22, 184-205.

- Davis, D., Shaver, P. R., & Vernon, M. L. (2004). Attachment style and subjective motivations for sex. *Personality and Social Psychology Bulletin*, *30*, 1076-1090.
- Freud, S. (1908/1962). Creative writers and daydreaming. In J. Strachy (Ed.), *The standard edition of the complete psychological works of Sigmund Freud (Vol. 9, pp. 142-152)*. London: Hogarth.
- Gagné, F., & Lydon, J. (2003). Identification and the commitment shift: Accounting for gender differences in relationship illusions. *Personality and Social Psychology Bulletin*, *29*, 907-919.
- Gillath, O., Mikulincer, M., Birnbau, G. E., & Shaver, P. R. (2007). Does subliminal exposure to sexual stimuli have the same effects on men and women? *The Journal of Sex Research*, *44*, 111-121.
- Gillath, O., Mikulincer, M., Birnbau, G. E., & Shaver, P. R. (2008). When sex primes love: Subliminal sexual priming motivates relational goal pursuit. *Personality and Social Psychology Bulletin*, *34*, 1057-1069.
- Greenwald, D. F., & Harder, D. W. (1995). Sustaining fantasies, daydreams, and psychopathology. *Journal of Clinical Psychology*, *51*, 719-726.
- Greenwald, D. F., & Harder, D. W. (2003). Fantasies, coping behavior, and psychopathology. *Journal of Clinical Psychology*, *59*, 1089-1095.
- Harder, D. W., Zelin, M. L., Jampel, R. M., Heijn, C., Myerson, P. G., & Bernstein, S. B. (1984). Sustaining fantasies and self-concept among college students. *Journal of Clinical Psychology*, *40*, 743-748.
- Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511-524.
- Impett, E. A., Gordon, A. M., & Strachman, A. (2008). Attachment and daily sexual goals: A study of dating couples. *Personal Relationships*, *15*, 375-390.
- Kirkpatrick, L. A., & Hazan, C. (1994). Attachment styles and close relationships: A four year prospective study. *Personal Relationships*, *1*, 123-142.
- Leitenberg, H., & Henning, K. (1995). Sexual fantasy. *Psychological Bulletin*, *117*, 469-496.
- Lentz, S. L., & Zeiss, A. M. (1983). Fantasy and sexual arousal in college women: An empirical investigation. *Imagination, Cognition, and Personality*, *3*, 185-202.
- Luborsky, L. (1977). Measuring a pervasive psychic structure in psychotherapy: The core conflictual relationship theme. In N. Freedman & S. Grand (Eds.), *Communicative structures and psychic structures* (pp. 367-395). New York, NY: Plenum Press.
- Luborsky, L., & Crits-Christoph, P. (1998). *Understanding transference: The core conflictual relationship theme method in research and clinical practice* (2nd ed.). Washington, DC: American Psychological Association.
- Mallinckrodt, B. (2007). A call to broaden and build Mikulincer and Shaver's work on the benefits of priming attachment security. *Psychological Inquiry*, *18*, 168-172.
- Mikulincer, M., & Florian, V. (2000). Exploring individual differences in reactions to mortality salience – Does attachment style regulate terror management mechanisms? *Journal of Personality and Social Psychology*, *79*, 260-273.
- Mikulincer, M., Hirschberger, G., Nachmias, O., & Gillath, O. (2001). The affective component of the secure base schema: Affective priming with representations of attachment security. *Journal of Personality and Social Psychology*, *81*, 305-321.
- Mikulincer, M., & Shaver, P. R. (2007a). *Attachment in adulthood – Structure, dynamics, and change*. New York, NY: Guilford Press.
- Mikulincer, M., & Shaver, P. R. (2007b). Boosting attachment security to promote mental health, prosocial values, and inter-group tolerance. *Psychological Inquiry*, *18*, 139-156.

- Mikulincer, M., Shaver, P. R., Bar-On, N., & Ein-Dor, T. (2010). The pushes and pulls of close relationships: Attachment insecurities and relational ambivalence. *Journal of Personality and Social Psychology, 98*, 450-468.
- Mikulincer, M., Shaver, P. R., & Rom, E. (2011). The effects of implicit and explicit security priming on creative problem solving. *Cognition and Emotion, 25*, 519-531.
- Murray, S. L., Derrick, J. L., Leder, S., & Holmes, J. G. (2008). Balancing connectedness and self-protection goals in close relationships: A levels-of-processing perspective on risk regulation. *Journal of Personality and Social Psychology, 94*, 429-459.
- Murray, S. L., Holmes, J. G., & Collins, N. L. (2006). Optimizing assurance: The risk regulation system in relationships. *Psychological Bulletin, 132*, 641-666.
- Pierce, T. & Lydon, J. (2001). Global and specific relational models in the experience of social interactions. *Journal of Personality and Social Psychology, 80*, 4, 613-631.
- Schachner, D. A., & Shaver, P. R. (2004). Attachment dimensions and motives for sex. *Personal Relationships, 11*, 179-195.
- Shaver, P. R., Hazan, C., & Bradshaw, D. (1988). Love as attachment: The integration of three behavioral systems. In R. J. Sternberg & M. Barnes (Eds.), *The psychology of love* (pp. 68-99). New Haven, CT: Yale University Press.
- Simpson, J. A., & Rholes, W. S. (2002). Fearful-avoidance, disorganization, and multiple working models: Some directions for future theory and research. *Attachment and Human Development, 4*, 223-229.
- Simpson, J. A., Rholes, W. S., & Phillips, D. (1996). Conflict in close relationships: An attachment perspective. *Journal of Personality and Social Psychology, 71*, 899-914.
- Treboux, D., Crowell, J., & Waters, E. (2004). When “new” meets “old”: Configurations of adult attachment representations and their implications for marital functioning. *Developmental Psychology, 40*, 295-314.
- Trudel, G. (2002). Sexuality and marital life: Results of a survey. *Journal of Sex and Marital Therapy, 28*, 229-249.
- Zelin, M. L., Bernstein, S. B., Heijn, C., Jampel, R. M., Myerson, P. G., Adler, G., . . . Rizzuto, A. M. (1983). The sustaining fantasy questionnaire: Measurement of sustaining functions in psychiatric patients. *Journal of Personality Assessment, 47*, 427-439.