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Abstract

Three studies examined the contribution of attachment orientation and perceived partner responsiveness to sexual desire in initial acquaintanceships. In all studies, participants discussed a recent negative event with an unfamiliar, opposite-sex partner and then rated how responsive this partner had been during the interaction and their desire to have sex with him or her. Study 1 examined the association between perceived partner responsiveness and sexual desire in randomly paired strangers. Studies 2 and 3 experimentally manipulated partner responsiveness by standardized Instant Messages (Study 2) and a confederate's responsive or unresponsive reactions during face-to-face interviews (Study 3). Results indicated that perceiving a partner as responsive was associated with heightened interest in sex with this partner, primarily among less avoidant people. These results are consistent with research showing that secure individuals see sex as a means of becoming close to relationship partners, whereas avoidant individuals tend to approach sex in distancing ways.

Keywords

attachment, attraction, gender differences, sexual desire, responsiveness

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The belief that a relationship partner understands, values, and supports important aspects of the self (i.e., perceived partner responsiveness) is fundamental to the development of intimate relationships (Laurenceau, Barrett, & Rovine, 2005; Reis, 2007; Reis, Clark, & Holmes, 2004). Because sex is an important part of close romantic relationships, and a prominent context in which people value responsiveness (Birnbaum & Reis, 2006; Cooper, Shapiro, & Powers, 1998), it is reasonable to expect that intimacy-related processes may contribute to the desire to have sex with a partner. In line with this reasoning, Baumeister and Bratslavsky (1999) argued that cues of rising intimacy, such as displays of affection, support, and understanding, may stimulate passion and excitement. Indeed, several studies indicate that in established relationships, intimacy relates positively to sexual desire (e.g., Birnbaum, Cohen, & Wertheimer, 2007; Patton & Waring, 1985). Most of this research is correlational and retrospective, however, precluding causal inferences about the connection between intimacy and the desire for sex. Furthermore, past research has focused almost exclusively on the association between intimacy and sexual desire in dating and established couples. Relatively little attention has been given to the contribution of intimacy to sexual desire among new acquaintances.

Attraction to new acquaintances is a key determinant of whether subsequent interaction will or will not take place (Berscheid & Reis, 1998), and sexual desire is one salient form of attraction among young adults (e.g., Regan, 2000). It is therefore important to understand the determinants of sexual desire in initial encounters. In other words, in this stage, intimacy may foster attraction (Baumeister & Bratslavsky, 1999), which, in turn, can lead to relationship formation. However, it is not known whether findings about intimacy and sexual desire based on established relationships apply to the initial stage of potential romantic relationships, given that the functional significance of sex may change across different stages of relationship development—for example, in evaluating the suitability and compatibility of a partner in initial acquaintanceships or in enhancing commitment in later stages (Birnbaum & Gillath, 2006; Birnbaum & Reis, 2006).

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It is unclear whether perceiving a new acquaintance as responsive fosters sexual interest. On one hand, a responsive acquaintance may be viewed as a potentially valuable mate, who seems willing to promote one's welfare (Clark & Lemay, 2010; Hazan & Diamond, 2000), and may therefore be perceived as sexually appealing. On the other hand, responsive acquaintances may be less sexually desirable than those who are less responsive and consequently appear "hard to get." Less responsive new acquaintances may be perceived as more selective in their favors, which may increase their desirability (Eastwick, Finkel, Mochon, & Ariely, 2007). Moreover, lesser responsiveness may create uncertainty about one's intentions, leading people to attend more closely to responsive acquaintances, thereby stimulating interest (Whitchurch, Wilson, & Gilbert, 2011). Moreover, not all people react to responsive new acquaintances in the same way; people who pursue intimacy goals may find responsive acquaintances sexually appealing, whereas people who experience discomfort with closeness may find responsive partners threatening and therefore less sexually desirable. Our research attempts to fill this void by adopting an attachment-theoretical perspective to predict whether and for whom perceived partner responsiveness, the linchpin of the intimacy process (Reis et al., 2004), affects sexual desire in the initial stage of potential romantic relationships.

Attachment, Attraction, and the Functional Significance of Sex

According to Bowlby's (1969/1982, 1973) attachment theory, the attachment behavioral system evolved to increase the individual's survival chances and future reproductive success by aiming to maintain proximity to supportive figures. The quality of repeated interactions with these figures in times of need gradually shapes chronic patterns of relational cognitions and goals. Interactions with attachment figures who are available and responsive to one's bids for proximity, support, and care facilitate optimal functioning of the attachment system, promote a sense of attachment security—confidence that one is worthy and lovable and that others will be available and supportive when needed (Mikulincer & Shaver, 2007)—and lead to the consolidation of interpersonal goals aimed at forming and maintaining nurturant intimate relationships.

In contrast, recurrent failure to attain the primary goal of "felt security" results in the adoption of alternative regulatory strategies for dealing with insecurity: hyperactivation and deactivation of the attachment system (Mikulincer & Shaver, 2007). Hyperactivation strategies, characterizing anxious attachment, are intended to motivate attachment figures, perceived as insufficiently available and responsive, to pay attention and provide relief from stress. Conversely, deactivation strategies, characterizing avoidant attachment, are intended to promote emotional distance and self-reliance in close relationships (Main, 1990). These early-developing

strategies are theorized to guide interpersonal interactions over the life span and affect desired levels of intimacy and independence with adult romantic partners. As such, they shape the regulatory functioning of the later-developing sexual mating system (Shaver, Hazan, & Bradshaw, 1988).

Past research has shown that attachment-related differences in interpersonal goals help to explain variations in the functional significance of sex within romantic relationships (see reviews by Birnbaum, 2010; Mikulincer & Shaver, 2007) as well as variations in the perceived value of potential romantic partners (see review by Holmes & Johnson, 2009). People who are anxious with respect to attachment use sex as a means for earning security and achieving intimacy, approval, and reassurance (e.g., Davis, Shaver, & Vernon, 2004; Impett, Gordon, & Strachman, 2008). Accordingly, they tend to be attracted to partners who share their desire for intimacy (i.e., either secure or similarly anxious partners; Holmes & Johnson, 2009) and who seem ready and willing to provide the sense of reassurance that they crave (Wei, Mallinckrodt, Larson, & Zakalik, 2005). In addition, they prefer the affectionate aspects of sex (e.g., holding, cuddling, kissing) rather than sex *per se* (Hazan, Zeifman, & Middleton, 1994). This subordination of sexual activity to the attachment system may strengthen the link between sexuality and relationship quality among more anxiously attached people and account for their tendency to conflate sexual desire and intimacy.

More avoidant individuals, in contrast, feel uncomfortable with the demand for closeness implied by sexual interactions and, therefore, are likely to isolate sexual activity from psychological intimacy (Birnbaum, 2010). This detached stance may account for diverse avoidance-related sexual motives and experiences, such as downplaying sexual motives associated with emotional closeness and emphasizing relationship-irrelevant sexual motives (e.g., self-enhancement; see Cooper et al., 2006; Mikulincer & Shaver, 2007, for reviews), experiencing hostility themes and limited expressions of affection and intimacy in their fantasies (Birnbaum, 2007b; Birnbaum, Mikulincer, & Gillath, 2011), and experiencing relatively strong feelings of estrangement and alienation during sexual intercourse (Birnbaum, 2007a; Birnbaum & Reis, 2006; Birnbaum, Reis, Mikulincer, Gillath, & Orpaz, 2006). This use of distancing strategies may also explain highly avoidant people's initial attraction to partners with similar needs for independence (i.e., either secure or similarly avoidant partners; Holmes & Johnson, 2009).

The Present Research

As outlined above, it is currently unknown whether and for whom perceiving a new acquaintance as responsive contributes to sexual interest in a new acquaintance. The present study uses attachment theory as a conceptual framework to better understand the impact of perceived partner responsiveness on sexual desire in initial acquaintanceships. Attachment-related goals have been found to be especially

influential in gauging behavior and guiding emotional reactions in ambiguous interpersonal situations, such as those occurring at the onset of relationships, in which little is known about the other person (Pietromonaco & Feldman Barrett, 2000). In these situations, anxiously attached people tend to interpret trivial communal behaviors as a sign of potential closeness and to use these overtures to diagnose relationship potential (Bartz & Lydon, 2006), whereas avoidant people downplay relational motives for a potential partner's communal behavior (e.g., desire for closeness, caring about one's needs) and experience negative emotions and reduced attraction (Bartz & Lydon, 2006; Beck, & Clark, 2010).

Based on attachment theory and research, we hypothesized that perceptions of a potential partner's responsiveness would strengthen sexual desire toward this person among more anxiously attached people, because they are particularly likely to see sex as a means of becoming close to partners and to seek intimacy in their sexual encounters (e.g., Impett et al., 2008). That is, when anxiously attached people perceive that a potential partner understands, validates, and supports them, they are likely to feel sexually attracted in order to encourage interactions that help create more positive, intimate experience with such a responsive partner. Conversely, we hypothesized that perceptions of a potential partner's responsiveness would decrease sexual desire toward this person among more avoidantly attached individuals. Highly avoidant people pursue control and distance in their interactions (Birnbaum, 2010; Mikulincer & Shaver, 2007) and therefore prefer partners who pursue similar relationship goals during initial attraction (Holmes & Johnson, 2009). Accordingly, perceiving a new acquaintance as responsive may threaten avoidant people's desire to minimize emotional interdependence and closeness, thereby leading them to view this person as less sexually desirable.

We also examined the main and interactive effects of gender. We hypothesized that perceiving a new acquaintance as responsive would increase the desire to have sex with this responsive person in men and decrease the desire to have sex in women. This hypothesis is based on research suggesting that men are relatively more motivated than women to be sure that they do not overlook mating opportunities (e.g., Haselton & Nettle, 2006). Because women are typically the ones who decide whether or not to have sex, men tend to pay attention to a woman's receptivity cues and to overestimate a woman's sexual interest so as not to miss a sexual opportunity (e.g., Abbey, 1982; Haselton & Buss, 2000). Men may therefore be more likely to confuse responsiveness with sexual interest and be sexually interested in a new acquaintance who appears receptive to their potential advances.

Women, by comparison, are more discriminating than men in their choice of sexual partners (e.g., Baumeister, Catanese, & Vohs, 2001; Sadalla, Kenrick, & Vershure, 1987) and thus tend to underestimate men's commitment intentions (e.g., Haselton & Nettle, 2006). Accordingly, they may perceive a responsive opposite-sex stranger as either inappropriately

nice or as less dominant and consequently as less sexually desirable. Indeed, a recent study has shown that women were least attracted to smiling, happy opposite-sex strangers, preferring men who looked proud and powerful (Tracy & Beall, 2011). We made no prediction regarding other effects of gender because even though attachment insecurities have shown some gender-differentiated effects in the domain of sexuality (e.g., Birnbaum, 2007b; Cooper et al., 2006), attachment research has revealed few interactions between gender and attachment orientations in reactions to responsiveness.

We conducted three studies examining the contribution of attachment orientation and perceived partner responsiveness to sexual desire in initial acquaintanceships. In all studies, participants discussed a recent negative event with an unfamiliar, opposite-sex partner and then rated how responsive this partner had been during the interaction and their desire to have sex with him or her. In Study 1, we examined the association between perceived partner responsiveness and sexual desire in randomly paired strangers during face-to-face conversations, while allowing interactions to unfold in a natural, spontaneous way. Studies 2 and 3 were experiments, manipulating partner responsiveness to examine the effect of perceived partner responsiveness on sexual desire. In Study 2, participants exchanged Instant Messages with a confederate who sent them either responsive or unresponsive standardized messages. In Study 3, participants interacted face-to-face with either a responsive or an unresponsive confederate interviewer.

Study 1

Study 1 used a live interaction paradigm to examine the association between perceived partner responsiveness and sexual desire and the possible moderating role of attachment orientations in pairs of previously unacquainted participants ("partners"). Participants were randomly paired with another opposite-sex participant and were randomly assigned to the role of discloser and responder. Participants were then asked to discuss a personal negative event that had happened to one of them (the discloser) recently. Responding participants were asked to respond to or talk about as much or as little as he or she would under normal circumstances. Following the discussion, disclosing participants rated how understood, validated, and cared for they felt during the interaction (i.e., perceived responder's responsiveness; Reis et al., 2004) and their desire to engage in sexual activity with him or her. Our specific predictions were the following:

1. Perceptions of responsiveness will be more positively associated with the desire to engage in sex with the responder among more anxiously attached individuals than among less anxiously attached individuals.
2. Perceptions of responsiveness will be more negatively associated with the desire to engage in sex with

the responder among more avoidantly attached individuals than among less avoidantly attached individuals.

3. Perceptions of responsiveness will be positively associated with the desire to engage in sex with the responder among men and negatively associated with the desire to engage in sex among women.

Method

Participants. Seventy-two undergraduate students (36 women, 36 men) from a university in central Israel volunteered for the study without compensation. All participants were heterosexual and were not currently involved in a romantic relationship. Participants were paired with another opposite-sex participant whom they did not know. One member of each pair was randomly designated as “discloser” and the partner was designated as “responder.” The participant of interest in this study was the person in the role of discloser (17 women and 19 men). Disclosers ranged in age from 21 to 31 years ($M = 24.92$, $SD = 2.31$). Responders ranged in age from 22 to 29 years ($M = 24.29$, $SD = 1.79$).

Measures and procedure. Participants who agreed to participate in a study on personality, sexuality, and dating activities were randomly paired with another unfamiliar opposite-sex participant and were scheduled for a single half-hour laboratory session. Before the session, at home each participant completed the Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998), which assesses romantic 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, using a 7-point “*strongly disagree*” (1) to “*strongly agree*” (7) scale. Eighteen items tapped anxiety (e.g., “I worry about being abandoned”) and 18 items tapped 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’s alphas were high for anxiety items (.85) and avoidance (.88). Higher scores indicated greater avoidance or anxiety. The two scores were not significantly correlated ($r = -.06$, ns). In addition, participants made a global sexuality rating (“Rate yourself as a sexual man/woman”; Andersen & Cyranowski, 1994), using a 5-point scale, with 1 being “*not at all*” and 5 being “*extremely*.”

When each dyad arrived at the laboratory, they were greeted by a research assistant who asked them to get acquainted with each other for 5 min. Following this, the research assistant explained that the study involved discussing a recent personal negative event and randomly assigned participants to the role of discloser or responder by flipping a coin. The research assistant then asked disclosers to discuss a recent personal negative event (e.g., failing an examination)

of their choosing and instructed responders to respond to, add to, or talk about as much or as little as they would have under normal circumstances. Instructions for this session followed procedures for studying supportive responses to personal event disclosures (Gable, Gonzaga, & Strachman, 2006). All discussions lasted between 5 and 7 min.

After the discussion, participants were led into separate rooms to ensure confidentiality. Disclosing participants completed the Hebrew version of a measure of how responsive the responding participants had been during the interaction, adapted from Reis’s (2003) General Responsiveness Scale to reflect new acquaintance. Two bilingual psychologists (the first author and a colleague) translated this scale into Hebrew, using the forward-backward translation technique. The current version assessed perceptions of how understood, validated, and cared for the discloser felt when interacting with the responder. Participants rated nine statements, such as “The responding participant was aware of what I am thinking and feeling” or “The responding participant really listened to me.” Items were rated on a 5-point scale from 1 (*not at all*) to 5 (*very much*). This scale is factorally unidimensional and internally consistent (Cronbach’s $\alpha = .92$) in our sample. Higher scores indicated greater perceived responsiveness.

Disclosing participants then completed three items assessing their desire to engage in various presexual and sexual activities (kissing, fooling around, and having sexual intercourse) with the responding participants (e.g., “To what extent would you be interested in having sex with the responding participant?”; “To what extent would you be interested in kissing the responding participant?”). These items were used in a similar manner by Birnbaum, Hirschberger, and Goldenberg (2011). Ratings were made on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). The three items were internally reliable ($\alpha = .97$) and were thus averaged to form a global sexual desire index. Finally, participants were asked to provide demographic information and then fully debriefed. Participants were not allowed to leave until the research assistant was convinced that they felt good about their experience in the study.

Results and Brief Discussion

We used a three-step hierarchical regression testing unique and interactive effects of perceived partner responsiveness, attachment-related anxiety, attachment-related avoidance, and gender on sexual desire¹. In the first step, we tested main effects for perceived partner responsiveness, attachment-related anxiety and avoidance (entered as standardized scores), and gender—a dummy-coded variable comparing women (1) with men (0). The two-way interactions (e.g., Perceived Partner Responsiveness \times Attachment; Perceived Partner Responsiveness \times Gender) were entered in the second step, and the three-way interactions (e.g., Perceived Partner Responsiveness \times Attachment \times Gender) were added in the third step. Table 1 presents standardized regression

Table 1. Beta Coefficients for Predicting Sexual Desire From Partner Responsiveness, Attachment Orientations, and Gender and Meta-Analytic Results of Studies 1 to 3

Sexual desire	Study 1	Study 2	Study 3	Z
Step 1				
Partner responsiveness	.45**	.05	.10	2.55*
Anxiety	.04	.22	.02	1.24
Avoidance	-.22	-.15	-.01	-1.47
Gender ^a	-.11	-.68***	-.76***	-9.03***
Step 2				
Responsiveness × Anxiety	.07	.23	.33*	2.05*
Responsiveness × Avoidance	-.34*	-.48*	-.28*	-3.53***
Responsiveness × Gender	.16	-.71***	-.32**	5.14***
Step 3				
Responsiveness × Anxiety × Gender	.01	-.03	-.06	-0.01
Responsiveness × Avoidance × Gender	-.04	.65	-.26	-0.36

^aA dummy-coded variable compared women (1) to men (0).

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

coefficients (β s) for each effect at the step in which it was entered into the regression equation. These analyses revealed no meaningful interactions between attachment-related avoidance and anxiety; hence, they are not reported. For simplicity, only the significant effects involving perceived partner responsiveness are described.

Perceived partner responsiveness significantly predicted sexual desire, such that higher responsiveness was associated with greater desire for the responding partner (see Table 1). However, this effect was qualified by a significant perceived partner responsiveness \times attachment-related avoidance interaction. Using Aiken and West's (1991) procedure, we found that perceived partner responsiveness was associated with desiring the responding participant when attachment-related avoidance was low (1 *SD* below the mean), $\beta = .79$, $p < .001$, but not when attachment-related avoidance was high (1 *SD* above the mean), $\beta = .11$, *ns*.

Overall, the findings indicate that, as expected, perceiving a new acquaintance as responsive was associated with heightened sexual interest in this responsive person, primarily among less avoidant people (a category that includes both secure and anxiously attached individuals). These findings suggest that the effects of responsiveness on sexual desire in initial acquaintanceships are not necessarily invariant; they may depend on the meaning a person attaches to sex (e.g., as an expression of intimacy vs. an emotionless act of conquest). Perceiving a new acquaintance as responsive may facilitate sexual desire mainly among people who pursue intimacy in their interactions and are therefore likely to view sexual activity as a viable means of promoting closeness with a responsive partner. The facilitatory effect of responsiveness on sexual desire was apparently less pronounced among individuals whose discomfort with closeness leads them to avoid intimacy. These results are consistent with

research showing that secure and anxiously attached individuals see sex as a means of becoming close to relationship partners, whereas avoidant individuals tend to approach sex in distancing ways (e.g., Birnbaum, 2010; Mikulincer & Shaver, 2007). This finding is discussed further in the general discussion. Contrary to our hypotheses, no gender effects were found. This may be due to low power or to not having controls over the partners' characteristics—for example, their behavior during the discussion or their physical attractiveness. These issues are addressed in Studies 2 and 3.

Study 2

Study 1 indicated that under relatively naturalistic conditions, perceiving a new acquaintance as responsive was positively associated with sexual desire for this new responsive acquaintance among less avoidant people. Nevertheless, Study 1's correlational nature precludes conclusions about causal connections between perceptions of responsiveness and the desire to engage in sex with a new acquaintance. In particular, Study 1 did not control or independently assess the partner's actual responsiveness; we relied on the participants' own impressions, because perceived partner responsiveness is necessarily in the eye of the beholder. Study 2 addressed this limitation by using an experimental design that examined the effects of partner responsiveness on sexual desire in initial acquaintanceships during online chats, using experimentally manipulated responses. Our design thereby controlled for both verbal content of the responsive message as well as other cues that are visible when people interact face-to-face (e.g., smiling, physical attractiveness). Participants discussed with an opposite-sex confederate partner over Instant Messenger a recent personal negative event. The confederate responded to this disclosure by sending

either responsive or unresponsive standardized messages. Following this online discussion, participants rated their perceptions of the confederate's responsiveness and their desire to engage in sexual activity with him or her. Our hypotheses were the same as in Study 1.

Method

Participants. Fifty-two undergraduate students (33 women, 19 men) from a university in central Israel volunteered for the study without compensation. Participants ranged from 21 to 30 years of age ($M = 23.88$, $SD = 2.13$). All participants were heterosexual and not currently involved in a romantic relationship. No significant differences were found between the experimental conditions for any of the sociodemographic variables.

Measures and procedure. Participants who agreed to participate in a study on personality and online intimate interactions were individually scheduled to attend a single half-hour laboratory session. Before the session, at home each participant completed a demographic questionnaire, the Global Sexuality Rating Scale (Andersen & Cyranowski, 1994), and the ECR (Brennan et al., 1998), described in Study 1. In the current sample, Cronbach's alphas were high for anxiety (.89) and avoidance (.83). The correlation between the two scales was low, $r = .25$, albeit significant, $p < .05$. Prior to each session, participants were randomly assigned to interact with either a responsive or an unresponsive confederate.

Upon arrival at the laboratory, participants were led to believe that they would be participating in an online chat with another participant who was ostensibly responding in a different room. All participants were assigned an opposite-sex confederate. Then, participants had their picture taken, which they were told was to be shown to the other participant (the confederate). Next, participants were asked to view the other participant's photo. In reality, all participants were shown the same photo of an opposite-sex individual, which pilot tests had established as moderately attractive. The male and female versions were similar in physical attractiveness. Participants were then instructed to communicate with the confederate partner over Instant Messenger for 5 min and thereby to get to know each other.

After 5 min, participants were told that one member of the interacting pair would discuss over Instant Messenger a recent personal negative event with the other member. To decide who took the role of the discloser and the responder, the research assistant ostensibly randomly assigned the real participants to be the disclosers by asking them to draw a slip of paper from a basket; all slips read "discloser." Thus, all responders were confederates. A subsequent check on the credibility of this role assignment revealed no instance of suspicion. After role assignment, participants were given the following instructions, adapted from Gable et al. (2006):

We would like you to choose some current problem, concern, or stressor you are facing in your life. This

may be something that happened before but continues to bother you, something going on now, or something you anticipate will happen in the future. Some examples could be a recent argument with a friend or a family member, a grade in class, work or financial problems, or personal illness. Please pick something that has been on your mind recently, no matter how big or small you may think it is. While you are interacting, please feel free to talk about anything related to the personal concern by dividing it into three messages. Some suggestions would be to discuss the circumstances surrounding the concern in your first message, how you feel and what you think about the concern in your second message, and any other details or issues that you think are important, such as the implications of this event for your life, in your third message. The responding participant can reply to each of your messages with a single line.

The participant and the confederate then discussed the participant's negative event for up to 10 min. We experimentally manipulated the responder's responsiveness by having the confederate copy standardized responsive (e.g., "You must have gone through a very difficult time"; "I completely understand what you have been through") or unresponsive messages (e.g., "Doesn't sound so bad to me"; "Are you sure that's the worst thing you can think of?"). This set of standardized responses had been pilot tested to fit the experimental condition.

After the discussion, participants completed the measure of perceived partner responsiveness described in Study 1. This measure obtained an internal consistency of .91 (Cronbach's α) and served as a manipulation check. Participants also completed items assessing their desire to engage in various presexual and sexual activities with the responders, described in Study 1. In the current sample, Cronbach's alpha for these items was high (.92). Participants were then carefully debriefed. No participant left until the research assistant was convinced that he or she felt good about his or her experience in the study.

Results and Discussion

Manipulation check. A t test on perceived partner responsiveness yielded the expected effect, $t(50) = 4.18$, $p < .001$. Perceived partner responsiveness was higher in the responsive confederate condition ($M = 3.32$, $SD = .90$) than in the unresponsive confederate condition ($M = 2.21$, $SD = .73$).

Responsiveness, attachment, and sexual desire. Next, we conducted a three-step hierarchical regression identical to Study 1. Specifically, we tested the effects of perceived partner responsiveness (a dummy-coded variable comparing the responsive confederate [1] to the unresponsive confederate [0]), gender, and the attachment scores of anxiety and avoidance.¹ Table 1 presents standardized regression coefficients

(β s) for each effect at the step in which it entered the regression equation. Regression analyses again revealed no meaningful interactions between attachment-related avoidance and anxiety; hence, they are not reported. For simplicity, only effects involving experimental condition (partner responsiveness) are described.

This analysis revealed a significant interaction between partner responsiveness and attachment-related avoidance (see Table 1). Using Aiken and West's (1991) procedure, we found that perceiving the confederate as responsive increased sexual desire when attachment-related avoidance was low (1 *SD* below the mean), $\beta = .53, p < .01$, and decreased sexual desire when attachment-related avoidance was high (1 *SD* above the mean), $\beta = -.43, p < .05$. In addition, the interaction between perceived partner responsiveness and gender was significant, such that perceiving the confederate as responsive increased sexual desire among men, $\beta = .76, p < .01$, but decreased sexual desire among women, $\beta = -.66, p < .01$.

These findings indicate that, as predicted, and similar to the results of Study 1, perceiving a new acquaintance as responsive increased sexual desire for this person among less avoidant people. In contrast, perceiving a new acquaintance as responsive decreased sexual desire for this person among avoidantly attached people. These findings suggest that avoidantly attached people may perceive the responsive behavior of a new acquaintance as a potential threat to their independence and therefore be relatively less interested in sex. Indeed, findings of previous research imply that avoidant people are more likely to be interested in sex only under circumstances that separate it from intimacy (e.g., a one-night stand, mate poaching in the context of short-term relationships) than under circumstances that imply potential closeness (e.g., affectionate sex with long-term partners; Birnbaum, Hirschberger et al., 2011; Brassard, Shaver, & Lussier, 2007; Schachner & Shaver, 2002).

As originally hypothesized, and unlike Study 1, we found a gender difference in the effect of perceived partner responsiveness on sexual desire, such that responsiveness increased men's desire for sex but decreased women's desire for sex. This points to the possibility that responsiveness conveys different meanings to men and women in the context of initial acquaintanceships (e.g., potential sexual receptivity vs. inappropriate eagerness). Because women are more cautious and selective in choosing sexual partners than men are (Baumeister et al., 2001), they may be more likely than men to be suspicious of a responsive opposite-sex stranger's intentions. For example, they may perceive this person as inappropriately nice or as eager to please, and perhaps even as desperate, and therefore as less sexually appealing. Alternatively, women may perceive a responsive man as vulnerable and less dominant, as noted earlier in Tracy and Beall's (2011) study showing that women rated smiling men as less sexually attractive than men who looked proud and powerful. Men, by comparison, may perceive a responsive opposite-sex stranger as more likely to be receptive to their

advances than an unresponsive stranger and thus be more interested in sex with this responsive stranger.

Study 3

People's impressions of others in face-to-face interactions are based not only on what they say, as in many computer-mediated interactions, but also on a host of nonverbal cues (e.g., posture, gaze, and facial expression). Past research has found that properties of the communication medium, such as the number of communication channels available, may affect interpersonal perceptions (e.g., Robins, Mendelsohn, Connell, & Kwan, 2004). Accordingly, the different paradigms used in Studies 1 and 2 (face-to-face interactions, computer-mediated interactions, respectively) may account for the discrepancies in the findings regarding sex, beyond design differences (correlational vs. experimental). Because nonverbal cues may interact with verbal cues to influence perceptions of sexual interest in cross-sex interactions (Henningsen, Kartch, Orr, & Brown, 2009), the perceptions of partner responsiveness experienced during the face-to-face interactions in Study 1 and their effects on perceptions of partner's sexual desirability may differ somewhat from those experienced during the computer-mediated interactions in Study 2.

Study 3 was designed to investigate whether the experimental findings of Study 2 would replicate with a different sample and method and would generalize to a communication medium that provides more nonverbal cues than instant messaging. In Study 3, we examined our hypotheses using a mock interview situation, which served as a cover story to mask our interest in sexual desire. Participants were interviewed face-to-face by an opposite-sex confederate interviewer who asked them to disclose a recent personal negative event. The confederate interviewer responded to this personal disclosure either supportively and empathically (a responsive interviewer) or in the most neutral way possible (an unresponsive interviewer). Following this interview, participants reported perceptions of the interviewer's responsiveness and rated their desire to engage in sexual activity with him or her. The hypotheses tested were similar to those of Study 2.

Method

Participants. Seventy-eight undergraduate students (35 women, 43 men) from a university in central Israel volunteered for the study without compensation. Participants ranged from 20 to 32 years of age ($M = 24.73, SD = 2.59$). All participants were heterosexual and were not currently involved in a romantic relationship. No significant differences were found between the experimental conditions for any of the sociodemographic variables.

Measures and procedure. Potential participants were invited to participate in a mock interview situation ostensibly designed to help a fellow student gain experience as part of

an interviewer-skills course. Participants were scheduled individually to attend a single laboratory session that lasted approximately half an hour. Before the session, at home each participant completed demographic questionnaire, the Global Sexuality Rating Scale (Andersen & Cyranowski, 1994), and the ECR (Brennan et al., 1998) described in Study 1. In the current sample, Cronbach's alphas were high for the 18 anxiety items (.91) and the 18 avoidance items (.93). The correlation between the two scales was low, $r = .28, p < .05$. Prior to the session, participants were randomly assigned to one of two conditions: interacting with a responsive confederate interviewer who was trained to respond (a) supportively and empathically or (b) in the most neutral way possible, avoiding any facial expression or intonation.

Upon their arrival, participants were greeted by a research assistant and were led to believe that they would be participating in a mock interview situation to evaluate the interviewer's approach, skills, and attractiveness. In fact, all participants were assigned an opposite-sex confederate interviewer. The research assistant then introduced the confederate interviewer to the participants and left the room. The confederate interviewer started the interview by asking a set of standard questions designed to make the participants feel comfortable. The confederate interviewer then asked participants to disclose a recent personal negative event of their choosing. Participants were given the following instructions, adapted from Gable et al. (2006):

I would like you to choose some current problem, concern, or stressor you are facing in your life. This may be something that happened before but continues to bother you, something going on now, or something you anticipate will happen in the future. Some examples could be a recent argument with a friend or a family member, a grade in class, work or financial problems, or personal illness. Please pick something that has been on your mind recently, no matter how big or small you may think it is. Please feel free to talk about anything related to the personal concern. Some suggestions would be to talk about the circumstances surrounding the concern, how you feel and what you think about the concern, and any other details or issues that you think are important.

We experimentally manipulated the confederate interviewer's responsiveness by having him or her respond either supportively and empathetically (a responsive interviewer) or neutrally (an unresponsive interviewer). All interviews lasted 7 to 10 min.

After the interview, the confederate interviewer left the room, and the research assistant returned to administer the questionnaires designed to evaluate the interviewer. Participants completed the same measures of responsiveness used in Studies 1 and 2. In Study 3, this measure obtained an internal consistency of .91 (Cronbach's α). Participants also completed the

same items assessing their desire to engage in various pre-sexual and sexual activities with the interviewer as used in Studies 1 and 2. These items were embedded within a set of additional items assessing their desire to engage in nonsexual activities with the interviewer (e.g., taking a course together, having future conversations with him or her) so that participants would not be aware of our primary interest in sexual desire and to enhance fit with our cover story. In the current sample, Cronbach's alpha was high for these items (.96). Participants were then carefully debriefed. No participant left until the research assistant was convinced that he or she felt good about his or her experience in the study.

Results and Brief Discussion

Manipulation check. A t test on the measure of perceived partner responsiveness yielded the expected effect, $t(76) = 5.75, p < .001$. Perceived partner responsiveness was higher in the responsive interviewer condition ($M = 3.86, SD = .70$) than in the unresponsive interviewer condition ($M = 2.80, SD = .91$).

Responsiveness, attachment, and sexual desire. We conducted a three-step hierarchical regression similar to that described in Study 2. Specifically, we tested the effects of perceived partner responsiveness (a dummy-coded variable comparing the responsive confederate [1] to the unresponsive confederate [0]), gender, and the attachment scores of anxiety and avoidance on sexual desire.¹ Table 1 presents standardized regression coefficients (β s) for each effect at the step in which it entered the regression equation. Regression analyses revealed no significant interactions between attachment-related avoidance and anxiety; hence, they are not reported. For simplicity, only the effects involving experimental condition (partner responsiveness) are described.

Once again the interaction between partner responsiveness and attachment-related avoidance was significant (see Table 1). Using Aiken and West's (1991) procedure, we found that perceiving the confederate as responsive increased sexual desire when attachment-related avoidance was low (1 SD below the mean), $\beta = .35, p < .05$, and decreased sexual desire when attachment-related avoidance was high (1 SD above the mean), $\beta = -.29, p < .05$. In addition, and unlike the results in Studies 1 and 2, the interaction between partner responsiveness and attachment-related anxiety was significant, such that perceiving the confederate as responsive increased sexual desire when attachment-related anxiety was high (1 SD above the mean), $\beta = .37, p < .05$, and decreased sexual desire when attachment-related anxiety was low (1 SD below the mean), $\beta = -.31, p < .05$. Finally, the interaction between partner responsiveness and gender was significant, such that perceiving the confederate as responsive increased sexual desire among men, $\beta = .38, p < .05$, but decreased sexual desire among women, $\beta = -.32, p < .05$. This result is consistent with our hypotheses and the results of Study 2.

On the whole, these findings replicated Study 2, indicating that in both online and face-to-face interaction, perceiving a new acquaintance as responsive decreased the desire to engage in sex with this responsive person among avoidant people and women, and increased the desire to engage in sex among men and less avoidant people (i.e., secure and anxiously attached individuals). In addition, perceived partner responsiveness increased sexual desire among anxiously attached people. This finding is consistent with our hypotheses. Past studies have documented that anxiously attached people show heightened interest in sex when faced with relational threats (e.g., Davis, Shaver, & Vernon, 2003). The present findings add to this literature by demonstrating the contribution of positive processes (intimacy, understanding, validation, and support) to sexual desire. Distinct mechanisms may underlie the desire to engage in sex under positive and negative relationship circumstances.

Meta-analysis of Studies 1 to 3. To examine overall patterns in the effects found, we combined the results of Studies 1 to 3 meta-analytically, using the method of adding *ts* (Rosenthal, 1984). Table 1 displays these results, which revealed that perceived responsiveness was a significant predictor of sexual desire. In addition, the Responsiveness \times Attachment Anxiety, the Responsiveness \times Attachment Avoidance, and the Responsiveness \times Gender interactions were significant overall for the desire to engage in sex. Thus, although there was not sufficient power in Studies 1 and 2 to illuminate some of the interactive effects of responsiveness, combining the data from the three studies indicated that these effects can be considered reliable.

General Discussion

The present research sheds light on the nature of the intimacy-desire linkage in the context of relationship initiation by examining the contribution of perceived partner responsiveness to sexual desire, in particular the moderating role of attachment orientations and gender. Responsiveness is a key intimacy-building behavior (Reis et al., 2004) that may convey warm, caring intentions during initial encounters between new acquaintances (e.g., willingness to be supportive and to satisfy security needs; Birnbaum & Reis, 2006; Canevello & Crocker, 2010; Clark & Lemay, 2010). Perceiving an opposite-sex stranger as responsive may therefore stimulate sexual interest in this potentially benevolent partner. Not all people, however, react to a stranger's expressions of intimacy in the same way. Some people may perceive a responsive stranger as a potentially desirable mate, who is likely to invest resources in the relationship. Others may feel uncomfortable about a new acquaintance who seems to want to be close, and such feelings may impair their sexual attraction to this person. Thus, the effects of responsiveness on sexual desire in initial acquaintanceships may depend on individual differences.

Three studies demonstrated that sexual interest in a new acquaintance was influenced by perceptions of his or her

responsiveness, and delineate for whom sexual interest in this responsive acquaintance will increase or decrease. Study 1 revealed that under relatively naturalistic conditions (i.e., live face-to-face, spontaneous interactions), perceiving a new acquaintance as responsive was associated with heightened sexual interest, primarily among less avoidant people (i.e., both secure and anxiously attached individuals). Studies 2 and 3 experimentally manipulated partner responsiveness while employing different communication paradigms (computer-mediated interactions, face-to-face interactions, respectively). These studies found that, as expected, perceiving a new acquaintance as responsive increased the desire for sex among men and less avoidant people. In contrast, perceiving a new acquaintance as responsive decreased sexual desire among women and avoidantly attached people.

Overall, these findings suggest that responsiveness may play a key role not only in fostering the development of an emotional bond between romantic partners, as shown by previous studies (e.g., Laurenceau et al., 2005; Reis et al., 2004), but also in attracting them to each other in the first place. During initial encounters, people evaluate the suitability and compatibility of newly met potential partners (e.g., Clark & Lemay, 2010), and these evaluations include sexual desire. In this context, sexual responses to a new acquaintance may serve as a diagnostic test of his or her mate value and suitability. It is important to recognize that our experimental situations were designed to foster relatively intimate self-disclosures, relative to most "get acquainted" conversations, making responsiveness or nonresponsiveness salient. If passion (which includes sexual attraction) is a function of the rate of change in intimacy (Baumeister & Bratslavsky, 1999), then responsiveness would seem likely to foster rises in sexual desire. In this context, increased sexual desire may signify suitability and is therefore likely to motivate people to pursue this partner, whereas a lack of sexual desire may signal relationship incompatibility and therefore would likely motivate people's withdrawal from future interactions with this person (Birnbaum & Reis, 2006). Because responsiveness is geared toward promoting a partner's welfare, it is likely to be particularly valued in a potential long-term relationship partner (Clark & Lemay, 2010). It is thus reasonable that perceived responsiveness affects the results of this sexual attraction "test" (i.e., the desirability of a potential partner), as indicated by our findings.

What may seem surprising is that responsiveness, an apparently desirable trait in a potential partner, did not necessarily enhance sexual interest in partners, but for some people, it led to a decrease in sexual interest. As our results show, whether responsiveness increases or decreases sexual interest in a potential partner varies across individuals and may depend on the nature of the person's interpersonal goals. The findings that responsiveness increased sexual desire in less avoidant people (i.e., securely and anxiously attached individuals) imply that responsiveness is valued as an asset in a potential partner by people who typically pursue intimacy

goals. However, some people, such as those high in attachment avoidance, are more likely to pursue goals related to independence rather than intimacy both in and outside the bedroom (e.g., Birnbaum, 2010; Mikulincer & Shaver, 2007). For them, responsiveness may be threatening because it suggests emotional closeness as well as the possibility of revealing vulnerability and dependence upon others, which they seek to avoid. Thus, rather than reacting to a responsive acquaintance by drawing closer, avoidant individuals may distance from this person by inhibiting their sexual response to draw closer. Whether this pattern is a manifestation of self-protective defensive processes that mask the desire for responsiveness or authentic sexual disinterest in responsive partners is a question for future research.

Variations in sexual reactions to a responsive opposite-sex stranger also may reflect gender-specific differences in the interpretation of responsiveness. In Studies 2 and 3, we found that responsiveness increased sexual desire in men, whereas it decreased sexual desire in women. In other words, perceived responsiveness may mean different things for men and women in the context of initial acquaintanceships. These gender differences in the meaning attributed to responsiveness may explain why men, and not women, found a new acquaintance more sexually appealing when being responsive to their needs. Specifically, men are more likely than women to be motivated by a quest for sexual gratification and conquest (e.g., Carroll, Volk, & Hyde, 1985) and consequently tend to overestimate a woman's sexual interest during cross-sex interactions (La France, Henningsen, Oates, & Shaw, 2009). Men may thus interpret a woman's responsiveness as a sign of sexual interest and react accordingly with heightened desire for sex.

Women, in contrast, may be more skeptical than men of partners' commitment intentions (e.g., willingness to invest in the relationship), especially during the early phases of courtship (Haselton & Nettle, 2006), and to restrict their sexual expression to established affectionate relationships (Sprecher, McKinney, & Orbach, 1987). Consequently, they may perceive a responsive male acquaintance as inappropriately nice or as manipulative and express less desire for sex with him. Alternatively, responsiveness may reduce uncertainty regarding a man's intentions, such that women may perceive a responsive man as less "hard to get" than a less responsive man (Eastwick et al., 2007). This seemingly contradictory interpretation of responsiveness is also likely to lead women to perceive the responsive stranger as less sexually appealing, but probably for different reasons. Indeed, recent research has found that women were less attracted to men who they knew liked them more than a few alternative partners than to men whose liking for them was uncertain (Whitchurch et al., 2011). Although different, both of these explanations may account for why women, with their emotional-interpersonal orientation to sexuality, were less attracted to a responsive stranger. These gender-specific results are consistent with Buss and Schmitt's (1993) sexual

strategies theory, indicating that men's and women's sexual desire in initial acquaintanceships may be governed by different mechanisms (perceived sexual availability vs. selectivity, respectively). Further research examining these distinct mechanisms would be desirable.

Taken together, our findings suggest that sexual desire is influenced by a potential partner's characteristics in initial encounters, before a relationship exists. In this phase, sexual desire may serve as a gatekeeper, ensuring that only suitable partners will be pursued. Whether a responsive potential partner will be allowed to "pass through the gate" depends on the meaning attached to provision of responsiveness, which is affected by relationship goals and gender-specific mating strategies. To be sure, responsiveness may become more uniformly desired as relationships develop (Clark & Lemay, 2010), suggesting that its effects on sexual desire may vary across relationship phases (Birnbaum & Reis, 2006). Once a relationship is formed, partners often experience relatively strong and spontaneous sexual urges. At later relationship stages, when couples are more likely to experience habituation, sexual desire may reflect general interpersonal circumstances rather than a spontaneous event, thriving on rising intimacy (Basson, 2000; Baumeister & Bratslavsky, 1999). Unfortunately, it is precisely in this stage, when provision of responsiveness may have the greatest potential to affect sexual desire, that many couples express lower levels of intimacy, potentially exacerbating sexual disinterest (Birnbaum et al., 2007). Further research is needed to examine the contribution of intimacy-related processes to sexual desire over time.

Limitations and Conclusion

Our results should be interpreted in the context of several limitations. For one, the relatively small sample size tempered conclusions. In addition, we focused on the contribution of responsiveness to self-reported sexual desire rather than actual sexual response or behavior. An individual may desire sex without acting on this desire or desire to engage in sex without acknowledging it. It is therefore unclear how the findings would apply to actual sexual response following an initial encounter (e.g., flirting, expressing interest in further interaction). For example, as our findings show, women reported decreased interest in sex with a responsive stranger. At the same time, however, women may feel sexual attraction to responsive strangers, but be unwilling to report it after so little interaction due to sex-role norms that restrict expressions of sexuality to committed relationships (e.g., Sprecher et al., 1987). Future research should examine the effect of responsiveness on sexual desire using a diverse set of measures of sexual desire (e.g., behavioral, physiological, indirect, projective).

Relatedly, because we have neither examined whether the new acquaintance was perceived as a potential short-term or long-term partner nor measured possible mediating variables

(e.g., uncertainty reduction, perceived mate value, perceived sexual receptivity), it is not clear what underlying mechanism was involved. Further research is needed to examine the processes underlying the effects of responsiveness on the desire to have sex in the context of potential short-term and long-term relationships. Finally, although participants discussed major problems, they probably held back slightly or did not feel comfortable sharing some of their concerns. Because attachment-related goals are particularly prominent under conditions of high stress, it is possible that deeper conversations will yield stronger attachment effects.

These limitations notwithstanding, the present research is the first to establish a causal link between responsiveness and sexual desire in initial acquaintanceships. Our findings are among the first to link processes involved in developing intimacy and sexual desire in the initial stage of a potential relationship. In particular, our findings suggest that sexual attraction between previously unacquainted people may be influenced by perceived responsiveness, and that this influence may depend on models of self and other, developed from early interpersonal experiences that each person carries forward to adult interactions. These early experiences may determine the kinds of desires that people wish to satisfy, the type of relationship they seek, and what they perceive to be (sexually) attractive in potential partners. These different reactions underlie the motivation to approach or avoid sexual relations when new acquaintances get to know each other. Although the present research is an important step toward shedding light on the elusive nature of sexual desire, more research is needed to elucidate its determinants at different stages of relationship development.

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Note

1. In all studies, we conducted a series of hierarchical regression analyses similar to that described in Study 1, while controlling for global sexuality rating at Step 1. Representations of one's self as a sexual person were controlled for because they may interfere with the effects of responsiveness and attachment orientations on sexual desire. The introduction of global sexuality rating as an additional predictor in the regression analyses

revealed that this variable did not moderate the effects of responsiveness and attachment orientations reported in Table 1.

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