



The magnetism that holds us together: sexuality and relationship maintenance across relationship development

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The sexual system evolved to motivate reproductive acts. As such, its manifestations (e.g., sexual desire and behavior) are not necessarily related to emotional attachments. Still, within romantic relationships, sexual desire can motivate the attachment bonding process and lead to intensely meaningful experiences that affect the quality of a relationship and its fate. In this article, we review published evidence indicating that sex promotes enduring bonds between sexual partners. We then introduce a relationship stage model that delineates the functional significance of sexual desire in relationship development. This model suggests that although sexual desire influences the initiation, development, and maintenance of attachment bonds, the contribution that it makes varies over the course of relationship development and across individuals and circumstances.

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The sexual behavioral system evolved to pass genes to the next generation by arousing sexual desire [1]. As such, its basic existence is not dependent on attachment processes [2*,3,4]. Indeed, sexual urges are not necessarily related to emotional attachments, and people frequently ‘mate without bonding’ or ‘bond without mating’ [5]. Still, when it comes to romantic relationships, intimates typically function as both attachment figures and sexual partners [6,7]. Hence, within this context, sexual desire can motivate the attachment bonding process and lead to intensely meaningful experiences that affect the quality of a relationship and its fate [6,8**]. In this article, we review published evidence indicating that sex can help to promote enduring bonds between sexual partners. We then introduce a relationship stage model that delineates the functional significance of sexual desire in relationship

development. This model suggests that although sexual desire influences the initiation, development, and maintenance of attachment bonds, the contribution that it makes varies over the course of relationship development and across individuals and circumstances.

Sex and the promotion of attachment bonds

Although the sexual behavioral system can motivate reproductive acts, impregnation is not sufficient for the survival of human offspring, whose prolonged altriciality has long rendered biparental caregiving an adaptive reproductive strategy. In particular, selection pressures have produced mechanisms that keep human sexual partners attached to each other so that they can jointly care for their offspring, thereby improving the chances that their offspring will survive and, ultimately, reproduce [3,7,9,10,11*]. Several characteristics of human sexuality suggest that sexual needs and the resulting behavior act as such a mechanism [7,8**,12]. Humans, for example, tend to have sex in private and to sleep together afterwards [13]. Humans also frequently have sex in the ‘missionary position’ [13,14], which, by contrast to the typical sex positions of most mammals (e.g., canines), allows partners to maintain face-to-face contact during sexual intercourse. Such behavioral tendencies increase the likelihood of experiencing extended intimate contact and may thus promote enduring attachment bonds between sexual partners [7,8**].

Neuroimaging research offers additional support for the relationship promoting function of sex. Specifically, it shows that similar brain regions (e.g., the caudate, insula, putamen) are activated during experiences of sexual desire and romantic love [15*,16], hinting at a neurobiological pathway through which sexual desire can affect the experience of love and attachment (and vice versa). Indeed, the neuropeptides oxytocin and vasopressin, which are secreted during sexual activity [17–20] facilitate bonding behaviors among both humans and other mammals [21*,22*,23,24*]. Because humans, unlike most mammals, have sex throughout the menstrual cycle rather than just on those days surrounding ovulation, these neuropeptides are secreted in a more distributed manner throughout the cycle and are probably to produce long-lasting effects that further reinforce attachment processes [25].

More direct evidence for the theorized sex-attachment linkage comes from phenomenological accounts of sexual experiences. In describing their beliefs about sexual

activity with a romantic partner, both men and women often indicate that sex fosters closeness between partners and nurtures their emotional connection [9,26,27]. Similarly, in describing their reasons for engaging in sex, both men and women frequently quote attachment-based motives, such as the desire for emotional intimacy and relationship intensification [28]. Although such accounts indicate that people associate sex with emotional bonding, they do not provide causal evidence for the hypothesized pathway from activation of the sexual system to the development of attachment bonds. Such evidence derives from experimental research that reveals that subliminal exposure to sexually arousing stimuli (versus neutral stimuli) increases tendencies to initiate new relationships (e.g., disclosing intimate information to a prospective partner) or to strengthen existing ones (e.g., sacrificing for the relationship) [29]. These findings suggest that sexual arousal makes people more inclined to employ strategies that allow them to get closer to a potential new partner or to maintain a relationship with a current partner.

The relationship stage model of sexual desire

The literature reviewed above suggests that sex contributes to attachment formation and maintenance. However, this research area lacks an integrative framework that incorporates information about how relationships normatively change over time and how these changes affect the functional significance of sexual desire vis-à-vis attachment processes. The relationship stage model of sexual desire [8,30*] offers such an overarching framework, and the most recent iteration of this model [31] organizes the present analysis. This model postulates that sexual desire

functions as a visceral gauge of romantic compatibility (i.e., the belief that two partners can function together harmoniously to create a mutually meaningful, fulfilling, and satisfactory relationship), with higher (versus lower) sexual desire motivating greater exertions toward the deepening of romantic relationships. The model also suggests that the functional implications of experiencing sexual desire differ across relationship stages, circumstances, and individuals. Specifically, sexual desire is especially important to relationship persistence in those people for whom, and at those stages (and in those circumstances) where, the relationship is highly vulnerable or precarious — when, for example, the relationship is just beginning, is under threat, or consists of partners who have certain negative characteristics. In such cases, the desire to experience physical and emotional proximity is especially prominent [32], and the intimacy inherent in sexual contact may assuage attachment insecurities.

When considering how the function of sexual desire on relationship dynamics varies across relationship stages, the relationship stage model demarcates five distinct stages. Table 1 presents these five stages, along with examples illustrating these stages, and the relational implications of sexual desire across the stages. In the *unilateral awareness* stage, A is aware of, and forms some evaluative impressions of, B, but the two of them have not interacted. In the *surface contact* stage, A and B have interacted, but their level of interdependence is minimal. In the *emerging relationship* stage, A's behaviors and experiences are becoming influenced by B's behaviors and experiences (and vice versa). In the *established relationship* stage, A's behaviors and experiences have become strongly influenced by B's behaviors and experiences (and vice versa). In the *fiery limbo* stage, A's behaviors and experiences have become strongly

Table 1

The relationship stage model of sexual desire.

Stage no.	Stage name	Definition	Contextual example	Implications of sexual desire
1	Unilateral awareness	A is aware of, and forms some evaluative impressions of, B, but they have not interacted	A has seen B's online dating profile	Increases the likelihood that A exerts effort to meet B (e.g., sending a first-contact email)
2	Surface contact	A and B have interacted, but their level of interdependence is minimal	A and B have met up for a coffee date	Increases the likelihood that, following a first meeting, A exerts effort to start pursuing a relationship with B (e.g., asking for a follow-up date)
3	Emerging relationship	A's behaviors and experiences are becoming influenced by B's behaviors and experiences (and vice versa)	A and B have started spending several nights a week together	Increases the likelihood that A exerts effort to build a deeply intimate relationship (e.g., spending more time together)
4	Established relationship	A's behaviors and experiences have become strongly influenced by B's behaviors and experiences (and vice versa)	A and B have purchased a condo and adopted a puppy together	Increases the likelihood that A exerts effort to sustain/maintain the relationship with B, even in light of the inevitable new challenges that arise once interdependence is high (e.g., pursuing intimacy-building behavior following conflict)
5	Fiery Limbo	A & B have broken up, but they continue to experience sexual desire for each other	A & B have broken up and live in separate residences, but they remain attracted to each other	Increases the likelihood that A exerts effort to continue experiencing intimate contact with B despite the breakup (e.g., making a late-night booty call)

influenced by B's behaviors and experiences (and vice versa). In the *fiery limbo* stage, A and B have broken up, but they continue to experience sexual desire for each other.

The relationship stage model asserts that sexual desire functions as a crucial gatekeeper in the relationship development processes — as a central determinant of whether A seeks to deepen or sustain the relationship with B versus to end that relationship. Furthermore, in all stages, sexual desire may promote a range of relationship maintenance mechanisms that increase the likelihood that A and B will sustain their relationship over time. For example, to the extent that A feels more (versus less) sexual desire for B, A is less probably to feel attracted to alternative mates and to think about ending the current relationship [33]. Hence, regardless of stage, sexual desire carries the potential to operate as a relationship-promoting device that motivates partners to invest resources in the current relationship. Indeed, sex can produce a relationship environment conducive to the formation of genuine intimacy [34] and thereby reduce the negative implications of attachment insecurities [35,36].

The strength of the effect of sexual desire on relationship outcomes varies across stages

The relationship stage model postulates that although sexual desire influences the initiation, development, and maintenance of attachment bonds, the contribution that it makes varies over the course of relationship development. Specifically, the presence of sexual desire is especially influential in assessing relationship compatibility at the early stages, when the absence of desire frequently yields relationship termination [37,38]. Similarly, sexual desire is generally most important as a relationship-promoter in earlier stages. In these stages, other aspects of the relationship, such as intimacy and commitment, are relatively low and their influence on the fate of the relationship is modest. Sexual desire may also be particularly important to sustaining the relationship during the *fiery limbo* stage, which is inherently characterized by relationship insecurity. In this stage, the likelihood of returning to an established relationship may be higher to the extent that partners' sexual desire for each other is strong rather than weak; indeed, desire for one's partner is known to interfere with the detachment process [39–41].

By contrast, in the established relationship stage, once the affectional bonding between partners has been consolidated, sexual desire may lose some of its importance as a binding force as other nonsexual processes, such as love and commitment, become more influential [42–44]. Nevertheless, if such nonsexual factors fail to sustain the relationship, the importance of sexual desire for relationship promotion may become apparent even in later stages of relationship development. Indeed, frequent sexual activity can buffer against the detrimental relational

implications of destructive personality traits of romantic partners (e.g., neuroticism) [45] or deficits in nonsexual relational dimensions (e.g., poor communication) [46]. In such cases, sex may provide a compensatory route for satisfying the otherwise unmet attachment needs for reassurance, security, and love.

Corroborating this conclusion, sex-related cognitions may serve attachment-related goals, primarily under relationship threatening circumstances, which call for distress regulation and proximity seeking. For example, in two series of experiments, participants underwent a relationship threat manipulation and then rated or described their desire to have sex, reasons for engaging in sexual behavior [47], and sexual fantasies [48]. The findings indicated that relationship threat prompted pro-relationship motives (e.g., engaging in sex to nurture one's partner) and attachment-related themes (e.g., perceiving the self and the objects of one's fantasies as affectionate and pleasing), implying that people use sex to repair mental representations of a threatened relationship.

Yet there are cases in which relationship restoration seems less feasible (e.g., an intractable conflict), and doubts about the long-term suitability of one's partner arise. In these cases, sexual feelings about one's partner (e.g., loss of sexual interest) may serve as a diagnostic marker of relational incompatibility and motivate the individual to seek resolution of these interpersonal problems, either with the current partner or by looking for a more suitable one [9]. The relationship stage model indicates when and for whom a relationship becomes more vulnerable to outside influences. For example, partners are more probably to grow apart, and seek alternative partners, when their desire for each other is low and there is nothing left in the relationship to compensate for this deficiency and keep them together. If the relationship is strong, other relational aspects will sustain it, even as desire declines [34]. In fact, in such cases, sexual desire declines less sharply [49,50], which is not surprising, given that sexual desire serves to assess relationship compatibility.

Conclusions

The evidence reviewed here supports the idea that the sexual system has been 'exploited' by evolutionary processes to promote enduring bonds between romantic partners [12]. Building on this evidence, the relationship stage model outlines the functional significance of sexual desire in attachment processes, clarifying for whom, under which circumstances, and at which relationship stage desire affects relationship development. Future studies should further specify the aversive and appetitive processes (e.g., reduction of uncertainty, instilling security) through which sex influences emotional bonding in each stage of relationship development, as some relationship-promoting mechanisms are probably to be stage-specific.

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For example, sexual desire (and the resulting sexual experiences) is more probably to reduce attachment insecurities, and thereby contribute to intimacy development, during the uncertainty stage of dating than during later relationship stages, when certainty about partners' commitment intentions is relatively high. More research is also needed to delineate the conditions that encourage the pursuit of the seemingly conflicting goals of relationship maintenance and pursuit of alternative sexual partners.

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