



Sexual Desire is not Partner-Specific

Evidence for a Positive Association Between Desire for One's Romantic Partner and Desire for Alternative Partners

Sierra D. Peters¹ · Jon K. Maner¹ · Andrea L. Meltzer¹

Accepted: 28 August 2024

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Abstract

One longitudinal study of married couples and one experiment tested the hypothesis that the experience of sexual desire for an alternative sexual partner might heighten feelings of desire for one's long-term romantic partner, and conversely, sexual desire for one's long-term partner might heighten desire for alternative partners. A daily-diary study of newlywed couples revealed that (a) on days people reported heightened interest in alternative partners, they also reported increased desire to have sex with their partner and (b) on days people reported heightened desire to have sex with their partner, they also reported increased interest in alternative partners. An experimental study of partnered individuals revealed that people primed with sexual desire for an alternative partner reported increased sexual desire for their romantic partner (relative to a control condition). People primed with sexual desire for their romantic partner, however, did not report increased sexual desire for alternatives. Taken together, these findings support evolutionary perspectives on the function of sexual desire. Findings are consistent with the broader hypothesis that sexual desire is not partner-specific.

Keywords Sexual desire · Romantic relationships · Human mating · Evolutionary psychology

Among sexual reproducing species, including humans, mating is the engine that drives reproductive success. Success in mating is underpinned by the experience of sexual motivation and the affective state of sexual desire (Fisher et al., 2002). From

✉ Sierra D. Peters
speters@psy.fsu.edu

¹ Department of Psychology, Florida State University, 1107 W. Call Street, Tallahassee, FL 32306, USA

an evolutionary perspective, sexual desire causes people to seek out and procure potential partners and to prioritize reproductively beneficial traits likely to increase reproductive success (Buss & Schmitt, 1993).

Traditional relationship-science perspectives (e.g., Birnbaum, 2018) suggest that sexual desire functions to assess one's compatibility with potential long-term partners and help maintain long-term relationships once they have begun by, for example, reducing people's interest in alternatives to their current partner. Thus, from a traditional relationship-science perspective, the function of sexual desire is to enhance the success of a long-term relationship with one committed partner. Evolutionary perspectives, in contrast, suggest that because the sexual behavior system evolved to promote sexual union with partners who possess qualities that confer high levels of reproductive success (Fisher, 1998; Kenrick et al., 2010; Roney, 2009), and because the sexual behavior system evolved prior to the evolution of pair bonding in humans (Eastwick, 2009), this system and corresponding feelings of sexual desire can be activated not only by a potential long-term partner, but also by any fertile, genetically beneficial, or sexually available partners (see Maner, 2019). Thus, from an evolutionary perspective, sexual desire might not be partner-specific in the sense that, even among people involved in long-term relationships, sexual desire can be directed toward any number of potential partners.

In the current work, we explore both traditional relationship-science perspectives and evolutionary perspectives on the function of sexual desire. Traditional relationship-science perspectives suggest that sexual desire for one's romantic partner should predict *less* sexual desire for alternative partners (and vice versa). Evolutionary perspectives, in contrast, propose that, once activated, sexual desire might increase interest in any reproductively beneficial partners; this suggests that desire for one's long-term partner and other potential partners may be *positively* related. Below we outline the logic underlying these competing predictions.

Traditional Relationship Science Perspectives on Sexual Desire

Traditional relationship science (e.g., Berscheid & Reis, 1998; Birnbaum, 2018; Birnbaum & Finkel, 2015; Regan, 2000) posits that sexual desire functions to promote attachment bonds and relationship-maintenance processes. For example, according to the relationship development model (Birnbaum, 2018; Birnbaum & Finkel, 2015), sexual desire serves a gatekeeper in relationship development such that if two partners experience sexual desire for one another, they pass through the "gate" and deepen their emotional bond. This perspective is consistent with evidence that, during sexual intercourse, hormones such as oxytocin and vasopressin are released, and those hormones promote bonding in humans (Carter, 1998, 2014) and other species (Winslow et al., 1993; Young et al., 2014).

As the relationship becomes more interdependent, sexual desire is posited to promote continued relationship maintenance. This view is consistent with evidence that stronger sexual desire for one's partner is associated with reporting fewer thoughts about terminating the relationship, initiating a new relationship, attraction to alternative partners, and infidelity (Regan, 2000). Moreover, when sexual desire is experi-

mentally activated, people engage in relationship-promoting behaviors such as self-disclosure (Birnbau et al., 2017), indicate greater willingness to sacrifice for a partner, and report a preference for more positive problem-solving strategies (Gillath et al., 2008). Finally, sexual desire is associated with heightened sexual satisfaction (Muisse et al., 2013), and people who are more (versus less) sexually satisfied report elevated marital satisfaction (Peters & Meltzer, 2021), and less steep declines in satisfaction over time (McNulty et al., 2016; Yeh et al., 2006; Zhao et al., 2022).

Relationship-science theories (Kelley & Thibaut, 1978; Rusbult, 1980) and corresponding empirical evidence (e.g., McNulty et al., 2018; Rodrigues et al., 2017; Zoppolat et al., 2022) suggest that sexual desire for alternative (i.e., extra-dyadic) partners undermines long-term relationships. For example, according to interdependence theory (Kelley & Thibaut, 1978), the presence of alternatives who are perceived to be more attractive than the current relationship threatens the stability of the relationship. Consistent with this perspective, one study demonstrated that people who experience more (versus less) desire for attractive alternative partners reported feeling more ambivalent about their current relationship partner, and consequently, were less satisfied with their relationship and reported greater thoughts about ending the relationship (Zoppolat et al., 2022; see also McNulty et al., 2018).

Taken together, this body of work suggests sexual desire for one's current romantic partner should enhance the relationship and reduce desire for alternative partners. In contrast, sexual desire for alternative partners should undermine the relationship and reduce desire for one's romantic partner. This logic suggests the presence of an inverse relationship between desire for one's long-term partner and potential alternative partners.

Evolutionary Perspectives on Sexual Desire

Evolutionary perspectives of human mating such as dual systems theory (Maner, 2019) and motivational priorities theory (Roney, 2018) provide an alternative way of conceptualizing the function of sexual desire. Such perspectives and corresponding evidence suggest the existence of two functionally distinct psychological systems involved in mating—one aimed at solving challenges associated with pair bonding (henceforth referred to as the *pair-bonding system*) and another involved in solving challenges associated with finding and procuring sexual partners (henceforth referred to as the *sexual behavior system*; Diamond, 2004; Fisher, 1998; Gonzaga et al., 2006; Hendrickson et al., 2024; Kenrick et al., 2010; Maner, 2019). The pair-bonding system functions to increase reproductive success by facilitating a lasting partnership with a single partner. This system is characterized by romantic love and emotional bonding, and promotes processes such as biparental care, shared resource management, and support provisioning (Eastwick, 2009; Fletcher et al., 2015; Gonzaga et al., 2001). In contrast, the sexual behavior system increases reproductive success by motivating sexual encounters that can result in offspring. This system is underpinned by the affective state of sexual desire (Fisher et al., 2002), and it is sensitive to cues of fertility, sexual availability, and high genetic quality in potential partners (Buss & Schmitt, 1993). The existence of functionally distinct pair-bonding and sexual behav-

ior systems is supported by evidence that they (a) rely on different neuroanatomical systems (Fisher, 1998; Fisher et al., 2002), (b) are characterized by the release of different hormones (Carter, 2014; Fisher et al., 2002; Roney & Simmons, 2013; Sherwin, 1988), and (c) are sensitive to different traits in potential partners (Buss & Schmitt, 1993; Li et al., 2002). Indeed, ample research in humans and other species demonstrates that organisms frequently mate without bonding and bond without mating (Carter, 1998; Diamond, 2003; Fisher, 1998).

Importantly, unlike the pair-bonding system, the sexual behavior system is not hypothesized to be partner-specific, meaning that (a) any number of potential sexual partners can activate the system (Gangestad & Dinh, 2022; Maner, 2019), and/or (b) once internally activated, such desire can be directed toward one's romantic partner, extra-pair partners, or both depending on the individual's circumstances (e.g., available partners in the current environment; Roney & Simmons, 2016; Roney, 2018). Consistent with these ideas, women's in-pair and extra-pair sexual desire covary together across the ovulatory cycle (Arslan et al., 2021; Roney & Simmons, 2016). Moreover, there is evidence that the same hormones regulate in-pair and extra-pair desire (e.g., high estrogen, low progesterone; Roney & Simmons, 2013, 2016; but see Grebe et al., 2016). Nevertheless, this work examined female desire only, leaving it unclear the extent to which naturally occurring fluctuations men's and women's sexual desire for one partner (or potential partner) are associated with higher daily desire for other partners. Likewise, people who view pornography depicting other hypothetical sexual partners with their romantic partner report increased sexual desire, sexual satisfaction, and frequency of sex with their partner, though there is mixed evidence for sex differences in these associations (Burian Lexová & Weiss, 2023; Kohut et al., 2021; Vaillancourt-Morel et al., 2020). Despite this suggestive correlational evidence, the targets in pornography do not represent real potential sexual partners, and thus, our key question—that sexual desire directed toward one sexual partner might increase sexual desire directed toward other partners—remains largely untested.

One notable exception comes from Birnbaum and colleagues (2019) who found that participants who fantasized about someone other than their romantic partner did not show any increased desire for their long-term partner. Their sample size, however, was quite small: 102 participants split across four experimental conditions. Moreover, their study did not examine whether fantasizing about one's long-term partner might increase desire for alternative partners. Thus, the present research aims to provide a well-powered test of the bidirectional association between sexual desire for one's long-term romantic partner and sexual desire for alternative partners by drawing upon data from both daily diary and experimental designs.

The Current Research

The current research tested associations between sexual desire for one's current long-term partner and desire for alternative partners. Inconsistent with relationship science but consistent with evolutionary perspectives, we hypothesized that desire for one's partner and desire for alternative partners would be positively associated. Indeed, theory and empirical evidence suggest the existence of a single sexual desire system

that regulates both in-pair and extra-pair desire (Fisher, 1998; Maner, 2019; Roney & Simmons, 2016). Although it is certainly the case that people who experience stronger (versus weaker) sexual desire for their partner likely possess strong relationship-maintenance mechanisms such as explicit derogation of alternatives (Lydon et al., 2003), theories of affective primacy (e.g., Zajonc, 1980) posit that sexual desire temporally precedes any such cognitive evaluations. Thus, we predict that initial feelings of sexual desire can be directed toward both romantic partners and extra-pair partners (though we acknowledge those feelings may be subsequently overridden by relationship-maintenance processes). Crucially, it is the covariation of sexual desire toward romantic partners and alternative partners that is the focus of the present work.

To test these predictions, Study 1 drew upon a well-powered, daily-diary study of newlywed couples to examine the within-person associations between daily desire for one's partner and daily interest in alternatives. Study 2 advanced the investigation by experimentally priming sexual desire for one's romantic partner versus sexual desire for an alternative partner (each relative to a control condition) and the measuring self-reported sexual desire for each type of target. We report how we determined our sample size, data exclusions, manipulations, and measures in these studies. The analysis code, codebook, and data for all analyses are available on the Open Science Framework (https://osf.io/ngc5b/?view_only=70190c49999f4871bdd7bb6a997a3380). Data were analyzed using SPSS Version 29. These studies and analyses were not pre-registered.

Study 1

Study 1 drew upon a high-powered, daily-diary study of newlywed couples that combined three waves of 14-day diary assessments spanning the first two years of marriage. We examined the within-person associations between people's daily sexual desire for their partner and their daily interest in alternative partners. We hypothesized that (a) on days people experienced heightened desire for their romantic partner, they would report greater interest in alternative partners and (b) on days people experienced heightened interest in alternative partners, they would report greater sexual desire for their romantic partner.

Method

Participants

Participants in Study 1 were 208 newlyweds (comprising 99 heterosexual couples and 5 same-sex female couples) recruited from northern Florida beginning in 2016. We recruited participants using Facebook advertisements and flyers posted around the community. Eligibility was based on the broader study goals and required that all participants (a) were married for less than four months, (b) were at least 18 years of age, and (c) spoke English (to ensure comprehension of the questionnaires). Of these 208 newlyweds, we excluded two participants who failed to complete at least

two diary assessments of the key variables and 10 participants involved in same-sex relationships;¹ thus, our final sample consisted of 196 individuals comprising 98 couples who provided a total of 5,842 reports of desire for their partner and 5,801 reports of interest in alternatives. Across all three waves of 14-day diaries (for a total of 42 assessments), participants completed an average of 30 daily assessments, though there was substantial variability in the number of assessments each participant completed (range=3–42). These participants were on average 31.40 ($SD=10.72$) years old and reported being together for 3.92 ($SD=3.20$) years on average prior to marriage. Most participants (77%) self-identified as Caucasian; 12% self-identified as African American, 5% self-identified as Hispanic or Latinx, 1% self-identified as Asian, 4% self-identified as more than one race, and 1% did not report their race.

Procedure and Measures

After enrolling in the study, each participant completed a packet of questionnaires online via Qualtrics.com or through the mail that included a consent form approved by the local human-subjects review board; self-report measures assessing their socio-sexual orientation, relationship length prior to marriage, biological sex, and several measures beyond the scope of the current analyses; and a letter instructing couple members to complete their questionnaires independently of one another. Participants also completed a corresponding laboratory session that is beyond the scope of these analyses. Then, the day following their laboratory session, participants completed a 14-day daily diary. Every evening for 14 evenings, they reported their daily (a) desire to have sex with their partner and (b) interest in alternative partners, as well as additional measures beyond the scope of these analyses. One year and two years after the baseline assessment we re-contacted participants and again asked them to complete a 14-day daily diary assessing the same measures assessed during the baseline diary. They also completed numerous measures and a laboratory session that were beyond the scope of the current analyses. Couples received \$100 (USD) for completing the baseline and annual follow-up questionnaires and corresponding laboratory sessions, as well as \$1 per person per diary completed, and a \$7 bonus if both couple members completed all 14 diaries. Finally, at approximately 4-month intervals during the intervening time between annual assessments, we re-contacted participants to complete shorter questionnaires online that included measures beyond the scope of these analyses; couples received \$25 for completing each of these intervening follow-up questionnaires.

Daily Sexual Desire for Partner. At each daily assessment, we measured participants' daily sexual desire for their partner using a single, face-valid item: "Today, to what extent did you want to have sex with your partner?" on a 7-point scale (1 = Not at all; 7 = Extremely).

Daily Interest in Alternatives. At each daily assessment, we measured participants' daily interest in alternative partners using four items that asked about the extent to which participants (a) had fantasies about, (b) noticed, (c) talked to, and (d) flirted

¹The measure of interest in alternatives asked about people of the opposite-sex, precluding us from examining these associations among participants involved in same-sex relationships.

with people of the opposite sex other than their partner on a 7-point scale (1 = Not at all; 7 = Extremely; across all daily assessments, $\alpha = 0.70$).

Covariates. Associations between sexual desire for one's partner and alternative partners could simply reflect extraneous factors related to sexual desire such as sociosexual orientation, biological sex, and relationship length prior to marriage. Thus, primary analyses focused on within-person variance (i.e., fluctuations from each participant's own average), controlling for between-person variance. Nevertheless, we additionally report analyses that control for between-person individual differences related to sexual desire in follow-up robustness analyses. To assess sociosexual orientation, participants completed a version of the revised Sociosexual Orientation Inventory (Jackson & Kirkpatrick, 2007), which we modified to assess participants' willingness to engage in uncommitted sex prior to marriage. Specifically, we obtained individual difference measures of short-term mating orientation (STMO; 10 items, e.g., "prior to getting married, I could easily imagine myself being comfortable and enjoying 'casual' sex with different partners"; $\alpha = 0.95$) and long-term mating orientation (LTMO; 7 items, e.g., "prior to getting married, I hoped to have a romantic relationship that lasts the rest of my life;" $\alpha = 0.89$) using 9-point Likert scales. We assessed relationship length prior to marriage (in months) and coded biological sex such that -1 = male and 1 = female.

Analytic Approach

To test our hypotheses, we conducted two primary models. The first model examined the within-person association between daily interest in alternatives and sexual desire for one's partner. Given that variability in daily desire for one's partner may be accounted for by both within- and between-person interest in alternatives, and given that we were interested in the within-person association, we followed recommendations by Bolger and Laurenceau (2013; see also Raudenbush & Bryk, 2002) to separately but simultaneously model both sources of variance. That is, we isolated each individual's daily fluctuations in interest in alternatives from between-person differences in interest in alternatives by calculating each participants' average across all 42 daily assessments (i.e., between-person differences) and then subtracting that average from each daily assessment (i.e., within-person differences). One benefit of this approach is that it helped to ensure any associations between daily interest in alternatives and daily sexual desire for one's partner did not merely reflect between-person differences in overall sex drive or unrestricted sociosexual orientation (Simpson & Gangestad, 1991). To examine whether participants' daily within-person fluctuations in interest in alternatives were associated with their daily sexual desire for their partner, we estimated the following two-level cross model in SPSS 29 to account for the fact that both couple members completed all diary assessments at each of the three waves on the same day (see Kenny et al., 2006):

$$\begin{aligned}
 Y_{ti} & \text{ (Daily Desire for Partner)} \\
 & = \pi_{0ti} \text{ (Intercept)} + \pi_{1ti} \text{ (Day)} + \pi_{2ti} \text{ (Wave)} \\
 & + b_{3i}^B \text{ (Between – Person Interest in Alternatives)} \\
 & + \pi_{4ti}^W \text{ (Within – Person Interest in Alternatives)} + e_{ti} + r_i
 \end{aligned} \tag{1}$$

where (a) Between-Person Interest in Alternatives represents each participant's interest in alternatives averaged across all assessments, (b) Within-Person Interest in Alternatives was person-centered on participants' average such that positive scores indicate greater interest in alternatives than usual, scores of zero indicate average interest in alternatives, and negative scores indicate less interest in alternatives than usual, (c) we controlled for Day (mean-centered) and Wave (mean-centered), and (d) we allowed the Intercept and Wave estimates to vary randomly across people (direct tests confirmed this was the best-fitting model; see Matuschek et al., 2017).

The second model examined the within-person association between daily sexual desire for one's partner and interest in alternatives. We again separately but simultaneously modeled both within- and between-person variance by person-centering each individual's daily fluctuations in desire for their partner (i.e., within-person differences) on their average across all daily assessments (i.e., between-person differences). We then re-estimated Eq. 1, replacing (a) Daily Sexual Desire for Partner with Daily Interest in Alternatives, (b) Between-Person Interest in Alternatives with Between-Person Desire for Partner, and (c) Within-Person Interest in Alternatives with Within-Person Desire for Partner.

In follow-up robustness analyses, we ran both models again controlling for participants' biological sex, relationship length prior to marriage, STMO, and LTMO. Finally, we explored possible sex differences in the key within-person associations. A sensitivity analysis determined that we were equipped with 0.80 power to detect very small effects (i.e., $r = .01$).

Results

Descriptive statistics and bivariate correlations are available in Table 1 (we report the average across assessments for variables that were assessed daily). A few preliminary results are worth highlighting. First, on average, participants reported daily desire for sex with their partner that was significantly higher than the midpoint (4) of the scale, $t(195) = 12.71$, $p < .001$, $d = 0.53$. Unsurprisingly, given that participants were all newly married, they reported on average daily interest in alternative partners that was significantly lower than the scale's midpoint, $t(195) = -47.03$, $p < .001$, $d = -2.33$. Nevertheless, 60% of daily reports included interest in alternatives greater than zero, and only seven participants reported no interest in alternatives across all diary assessments. Finally, we did not detect a significant bivariate correlation between participants' average daily desire for sex with their partner and their average daily interest in alternatives. However, these bivariate correlations collapse across within- and between-person variance in each variable, and the key test of our hypotheses involves isolating such variance.

Table 1 Bivariate correlations and descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Desire for Partner ^a	—					
(2) Interest in Alternatives ^a	-0.14	—				
(3) STMO	-0.06	0.19*	—			
(4) LTMO	-0.06	0.04	-0.23**	—		
(5) Biological Sex	-0.35***	-0.15	-0.17*	0.11	—	
(6) Relationship Length	-0.07	0.19*	0.05	-0.07	-0.00	—
<i>M</i>	5.19	1.67	4.55	7.78	0.00	47.04
<i>SE</i>	0.09	0.06	0.21	0.13	1.00	3.84
<i>N</i>	196	196	194	194	196	194

Biological sex is coded: -1=male; 1=female. Relationship length prior to marriage is displayed in months. To determine significance levels of these bivariate correlations (given the nested nature of the data), we estimated the “effective sample size,” adjusted for dependent observations, and the corresponding Z-test (see Griffin & Gonzalez, 1995). Because our descriptive statistics are drawn from mixed modeling, we report *SEs*

^a This variable was assessed daily for 42 days and thus its descriptive statistics and correlations are based on participants’ average across all days

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

Table 2 Associations between daily desire for one’s partner and daily interest in alternative partners

	b	CI _{95%}	t	df	<i>p</i>	Effect size <i>r</i>
Desire for Partner						
Intercept	4.57	[4.31:4.82]	—	261.48	—	—
Day	-0.01	[-0.02:0.00]	-1.86	1093.72	0.063	0.04
Wave	-0.36	[-0.46:-0.27]	-7.75	61.74	< 0.001	0.27
Between Interest in Alternatives	0.32	[0.22:0.42]	6.34	2601.61	< 0.001	0.14
Within Interest in Alternatives	0.10	[0.04:0.16]	3.26	4060.69	0.001	0.03
Interest in Alternatives						
Intercept	1.20	[1.02:1.39]	—	304.82	—	—
Day	-0.01	[-0.02:-0.01]	-5.74	1030.83	< 0.001	0.06
Wave	0.01	[-0.11:0.13]	0.16	75.13	0.874	0.07
Between Desire for Partner	0.10	[0.07:0.12]	7.44	2980.79	< 0.001	0.15
Within Desire for Partner	0.02	[0.01:0.03]	3.19	3763.49	0.001	0.06

We report unstandardized coefficients. Between =between-person association and Within =within-person association. We used a formula recommended by Snijders and Bosker (2012) for estimating effect-sizes from multilevel models,

$$r = \sqrt{1 - \frac{\sigma^2_{\tau} + \tau^2}{\sigma^2_{\tau} + \tau^2 + \frac{\sigma^2_{\epsilon}}{E}}}$$

Are Daily Within-Person Changes in Interest in Alternative Partners Associated with Daily Sexual Desire for One’s Partner?

Results of the model examining whether participants’ daily within-person fluctuations in interest in alternative partners are associated with their daily sexual desire for their partner are presented in the top half of Table 2. Consistent with predictions, participants’ within-person changes in interest in alternative partners were posi-

tively associated with their daily sexual desire for their partner. That is, participants reported greater sexual desire for their partner on days when they were experiencing greater interest in alternative partners than usual. Of note, between-person interest in alternatives was also positively associated with daily sexual desire for one's partner, suggesting that people who, on average, experience greater daily interest in alternatives also experience stronger daily sexual desire for their partners. Consistent with the argument that between-person differences reflect individual differences in sexual desire more generally and supporting our decision to control for biological sex, relationship length, STMO, and LTMO, the between-person association was reduced to non-significance when these covariates were included in the model (see the top half of Table 3). Notably, and consistent with predictions, the within-person association between interest in alternatives and daily desire for one's partner continued to emerge when controlling for covariates. Finally, there were no sex differences in the association between participants' within-person changes in interest in alternatives and daily sexual desire for their partner, $p = .691$,

Table 3 Associations between daily desire for one's partner and daily interest in alternative partners, controlling for covariates

	b	CI _{95%}	t	df	p	Effect size r
Desire for Partner						
Intercept	4.91	[4.44:5.37]	—	762.59	—	—
Day	-0.01	[-0.02:0.00]	-1.88	1086.75	0.060	0.03
Wave	-0.36	[-0.45:-0.27]	-7.82	62.45	< 0.001	0.25
Participant Sex	-0.49	[-0.54:-0.45]	-22.92	3065.57	< 0.001	0.32
Relationship Length	0.01	[0.00:0.01]	3.01	166.65	0.003	0.13
STMO	-0.08	[-0.11:-0.05]	-5.32	2503.60	< 0.001	0.08
LTMO	0.02	[-0.02:0.07]	1.01	2402.99	0.311	0.04
Between Interest in Alternatives	-0.00	[-0.10:0.10]	-0.00	2517.43	0.999	0.02
Within Interest in Alternatives	0.10	[0.05:0.16]	3.54	4248.04	< 0.001	0.04
Interest in Alternatives						
Intercept	0.92	[0.61:1.23]	—	1246.27	—	—
Day	-0.01	[-0.02:-0.01]	-5.55	1018.15	< 0.001	0.06
Wave	0.01	[-0.11:0.12]	0.11	75.79	0.916	0.06
Participant Sex	-0.11	[-0.14:-0.09]	-8.10	2952.70	< 0.001	0.14
Relationship Length	0.00	[-0.00:0.00]	0.30	233.20	0.766	0.04
STMO	0.04	[0.03:0.06]	5.37	2688.73	< 0.001	0.06
LTMO	0.06	[0.04:0.09]	4.89	2822.79	< 0.001	0.04
Between Desire for Partner	0.02	[-0.01:0.05]	1.41	2756.11	0.159	0.07
Within Desire for Partner	0.02	[0.01:0.04]	3.33	3796.40	< 0.001	0.06

Note We report unstandardized coefficients. Between = between-person association and within = within-person association. We used a formula recommended by Snijders and Bosker (2012) for estimating effect-sizes from multilevel models,

$$r = \sqrt{1 - \frac{\sigma^2_{\tau} + \tau^2}{\sigma^2_{\tau} + \tau^2}}$$

Are Daily Within-Person Changes in Sexual Desire for One's Partner Associated with Daily Interest in Alternative Partners?

Results of the model examining whether participants' daily within-person fluctuations in sexual desire for their partner are associated with their daily interest in alternative partners are presented in the bottom half of Table 2. Again, consistent with predictions, participants' within-person changes in sexual desire for their partner were positively associated with their daily interest in alternative partners. That is, participants reported greater interest in alternative partners on days when they were experiencing stronger sexual desire for their partner than usual. Of note, participants' between-person sexual desire for their partner was also positively associated with their daily interest in alternatives, suggesting that people who, on average, experience higher daily levels of sexual desire for their partner also experience greater daily interest in alternatives. When controlling for covariates, the between-person association was again reduced to nonsignificance. However, consistent with predictions, the within-person association was robust to the inclusion of covariates. Finally, there were no sex differences in the association between participants' within-person changes in desire for their partner and daily interest in alternatives, $p = .400$.

Discussion

Results from Study 1 uncovered positive associations between sexual desire for a long-term partner and alternatives to that partner, supporting evolutionary (rather than relationship science) accounts of sexual desire. Specifically, on days when people experienced greater interest in alternative partners than usual, they reported greater desire for their partner; likewise, on days when people experienced greater desire for their partner than usual, they reported greater interest in alternative partners. Of note, these within-person associations continued to emerge when controlling for individual differences related to chronic sexual desire such as biological sex, relationship length prior to marriage, and sociosexuality. Nevertheless, Study 1 stopped short of providing causal evidence.

Study 2

Study 2 advanced the investigation by using experimental methods to test the causal links between sexual desire for one's romantic partner and sexual desire for alternative partners. Consistent with evolutionary perspectives and the findings from Study 1, we hypothesized that (a) participants who were primed with sexual desire for an alternative partner would report increased sexual desire for their romantic partner (relative to participants in the control condition) and (b) participants who were primed with sexual desire for their romantic partner would report increased sexual desire for alternative partners (relative to participants in the control condition).

Method

Participants

Participants in Study 2 were 468 people recruited from Amazon's Cloud Research who were in a long-term relationship for at least six months, and we compensated them \$0.75 (USD) for their participation. We excluded from analyses 23 participants who failed at least one of two attention checks and 40 participants who failed to follow instructions (e.g., pasted random text from the internet); our final sample was comprised of 405 participants. These participants were on average 42.79 ($SD=11.83$) years old and reported being in a relationship for 13.02 ($SD=10.92$) years on average. Most participants (65%) were married, 5% were engaged, and 29% were unmarried, but in a committed relationship. Most participants (81%) self-identified as Caucasian; 8% self-identified as African American, 4% self-identified as Hispanic or Latinx, 4% self-identified as Asian, and 3% self-identified another race.

Procedures & Measures

After providing informed consent and demographic information, participants completed a modified version of a priming task used in previous research (Maner et al., 2007). Participants were randomly assigned to write about an experience that made them feel (a) strong feelings of sexual desire for their partner (partner prime condition; $n=125$), (b) strong feelings of sexual desire for someone they are attracted to other than their relationship partner (alternative prime condition; $n=157$), or (c) happy and excited (control condition; $n=123$).

Specifically, participants in the partner prime condition were told "please take a moment to think about your relationship partner. Really try to visualize them in your mind. Now, please write their initials below. Now, in the following numbered blanks below, please list five activities you've done or experiences you've had with your relationship partner that made you feel strong feelings of sexual desire toward your partner. Some examples include passionate kissing, sexual touching, oral sex, and sexual intercourse. Now, in the space below, please write in detail about a time you did an activity or had an experience that made you feel very strong feelings of sexual desire toward your relationship partner."

Participants in the alternative prime condition were told "Research studies show that most people in romantic relationships know at least one other person in their life (aside from their current relationship partner) who they are attracted to and could envision having a sexual or romantic relationship with if they were single, such as a friend, coworker, or acquaintance. Please take a moment to think about a person you know whom you are attracted to (other than your current partner). Really try to visualize them in your mind. Now, please write their initials below. Now, in the following numbered blanks below, please list five activities you could do or experiences you could have with this person that would make you feel strong feelings of sexual desire toward them. Some examples include passionate kissing, sexual touching, oral sex, and sexual intercourse. Now, in the space below, please write in detail about an

activity or experience you could do with this person that would make you feel very strong feelings of sexual desire toward them.”

Participants in the control condition were told “In the following numbered blanks below, please list five non-sexual activities you’ve done or experiences you’ve had that made you feel happy and excited. Some examples include attending a sporting event, going on a trip, going to your favorite restaurant, riding a rollercoaster, exploring a new city, or engaging in your favorite hobby. Now, in the space below, please write in detail about a time you did an activity or had an experience that made you feel very happy and excited.” We chose this control condition because it was important for all experimental conditions to involve a high-arousal, positive experience, thus maximizing internal validity and providing a conservative comparison of the three conditions. Notably, none of the participants in the control condition wrote about sexual experiences.

We asked all participants to take approximately 5–8 min to write their responses and to write at least 800 characters. We encouraged participants to re-live the experience in their mind as vividly as possible and to write about the situation in a detailed way by describing what they did, the emotions they experienced, and the sensations they felt in that moment. Following the experimental manipulation, participants completed a manipulation check. Then, participants reported their current sexual desire for their partner and for alternative partners; the order of those questions was counterbalanced. Finally, participants completed individual-difference measures of sociosexuality and sexual satisfaction (the latter of which is beyond the scope of the current analyses).

Sexual Desire for Partner. We measured the strength of participants’ sexual desire for their romantic partner using three items: “if you were with your partner right now, how strong would your desire to (1) flirt with them, (2) passionately kiss them, and (3) have sex with them be?” on a 7-point scale (1=Very weak; 7=Very strong). We averaged responses to these items to form a composite; internal reliability was high, $\alpha=0.93$.

Sexual Desire for Alternatives. We measured the strength of participants’ sexual desire for alternative partners using three items: “if you were to meet a stranger you found attractive right now, how strong would your desire to (1) flirt with them, (2) passionately kiss them, and (3) have sex with them be?” on a 7-point scale (1=Very weak; 7=Very strong). We averaged responses to these items to form a composite; internal reliability was high, $\alpha=0.93$.

Manipulation Check. To ensure that participants reported feeling more sexual desire in the priming conditions relative to the control condition, we asked participants to indicate how strongly they were feeling various emotions (i.e., sexual desire, happiness, sleepiness, compassion, liveliness, sadness, and guilt) on a 7-point scale (1=Very little; 7=Quite a lot). We embedded sexual desire in a list of other emotions to reduce demand characteristics.

Covariates. As in Study 1, we assessed and controlled for participants’ biological sex (coded -1 =male; 1 =female), relationship length (in months), STMO ($\alpha=0.94$), and LTMO ($\alpha=0.89$; Jackson & Kirkpatrick, 2007).²

² In Study 2, STMO and LTMO were assessed using 7-point scales instead of 9-point scales.

Analytic Approach

Prior to conducting primary analyses, we first confirmed that participants in both the partner prime condition and alternative prime condition reported feeling higher levels of sexual desire compared to those in the control condition. Specifically, we used dummy coding within a regression framework to compare specific pairs of conditions within the three-condition experimental design. We used regression to maintain analytic consistency with Study 1; results for all analyses are the same when using one-way ANOVA.

To test our primary hypothesis and assess whether participants primed with sexual desire for an alternative partner reported increased sexual desire for their romantic partner (relative to participants in the control condition), we regressed desire for their romantic partner onto the partner prime and alternative prime dummy codes (both of which coded the control condition as 0). To examine whether participants primed with sexual desire for their romantic partner reported increased sexual desire for alternative partners (relative to participants in the control condition), we regressed desire for alternatives onto the same partner prime and alternative prime dummy codes. In follow-up robustness analyses, we re-ran both primary analyses including biological sex, relationship length, STMO, and LTMO as covariates. Finally, we explored possible sex differences in the effects of the experimental primes on participants' self-reported desire for their partner and alternatives. A sensitivity analysis determined that we were equipped with 0.80 power to detect effects as small as $r = .14$.

Results

Descriptive statistics and bivariate correlations are available in Table 4. It is worth noting that participants reported sexual desire for their partner that was higher than the midpoint of the scale (4) in the partner condition, $t(124) = 9.50$, $p < .001$, $d = 0.85$, and the alternative condition, $t(156) = 9.50$, $p < .001$, $d = 0.76$, but not different from the midpoint in the control condition, $t(122) = 0.10$, $p = .923$, $d = 0.01$. Moreover,

Table 4 Bivariate correlations and descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Desire for Partner	—					
(2) Desire for Alternatives	-0.02	—				
(3) STMO	-0.04	0.58***	—			
(4) LTMO	0.15**	-0.36***	-0.33***	—		
(5) Biological Sex	-0.15**	-0.26***	-0.28***	0.19***	—	
(6) Relationship Length	-0.17***	0.00	-0.08	0.10	0.03	—
<i>M</i>	4.91	2.55	3.24	6.43	0.18	161.79
<i>SD</i>	1.80	1.71	1.74	0.85	0.98	174.03
<i>N</i>	405	405	405	405	405	397

Biological sex is coded: -1 = male; 1 = female. Relationship length is displayed in months. Correlations among variables represent the averages across experimental condition

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

unsurprisingly given that participants were in long-term relationships, participants across conditions reported levels of sexual desire for alternatives that fell below the scale's midpoint (control condition: $t(122)=-13.41$, $p<.001$, $d=-1.21$; partner condition: $t(124)=-11.04$, $p<.001$, $d=-0.99$; alternative condition: $t(156)=-6.92$, $p<.001$, $d=-0.55$).

The manipulation check confirmed that participants in the alternative prime condition ($M=5.38$, $SD=1.57$), $b=2.72$, $CI_{95\%}$ [2.32:3.12], $t(404)=13.41$, $p<.001$, semi-partial $r=.54$, and participants in the partner prime condition ($M=5.10$, $SD=1.71$), $b=2.44$, $CI_{95\%}$ [2.02:2.86], $t(404)=11.38$, $p<.001$, semi-partial $r=.46$, reported significantly higher current levels of sexual desire compared to participants in the control condition ($M=2.66$, $SD=1.81$). Participants in the two priming conditions did not differ from one another, $b=0.29$, $CI_{95\%}$ [-0.11:0.68], $t(404)=1.42$, $p=.158$, semi-partial $r=.06$.

Did Participants Primed with Sexual Desire for an Alternative Partner Report Increased Sexual Desire for Their Romantic Partner?

We tested whether participants primed with sexual desire for an alternative partner reported heightened desire for their romantic partner; see Fig. 1 and the top half of Table 5. Consistent with our hypothesis, participants primed with sexual desire for

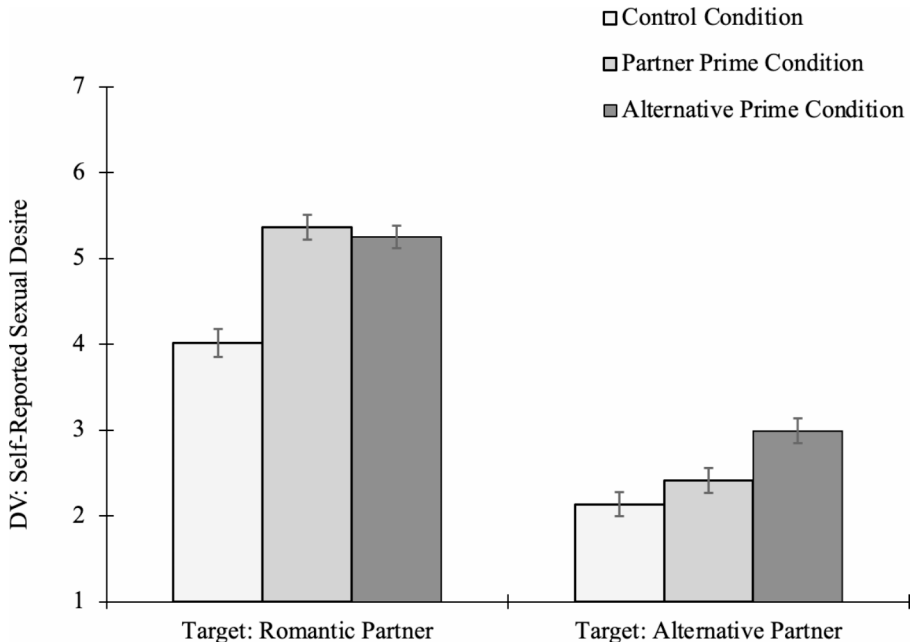


Fig. 1 Effect of priming condition on self-reported sexual desire for one's partner and alternatives. Error bars represent standard errors. The degree of self-reported sexual desire participants felt following the priming manipulation is presented on the y-axis and the target of that desire (i.e., one's romantic partner or an alternative partner) is presented on the x-axis. Bars for the three priming conditions are represented in the legend and are displayed for both target types

Table 5 Effects of experimental condition on sexual desire for one's partner and for alternative partners (unstandardized coefficients)

	b	CI _{95%}	t	p	Semi-partial r
Desire for Partner					
Intercept	4.02	[3.71:4.32]	—	—	—
Partner Prime (vs. Control)	1.35	[0.92:1.77]	6.24	< 0.001	0.29
Alternative Prime (vs. Control)	1.24	[0.83:1.64]	6.03	< 0.001	0.28
Desire for Alternatives					
Intercept	2.14	[1.84:2.43]	—	—	—
Partner Prime (vs. Control)	0.28	[-0.14:0.70]	1.32	0.189	0.06
Alternative Prime (vs. Control)	0.86	[0.46:1.25]	4.24	< 0.001	0.21

an alternative partner reported significantly higher levels of sexual desire for their romantic partner, relative to participants in the control condition; crucially, they reported similar levels of sexual desire for their romantic partner relative to those in the partner prime condition, $p = .845$. These results remained unchanged controlling for covariates (see the top half of Table 6). Finally, men and women primed with desire for an alternative did not significantly differ in their sexual desire for their partner, $p = .095$.

Did Participants Primed with Sexual Desire for Their Romantic Partner Report Increased Sexual Desire for Alternative Partners?

We next tested whether participants primed with sexual desire for their romantic partner reported heightened desire for an alternative partner; see Fig. 1 and the bottom half of Table 5. Although participants primed with sexual desire for their romantic partner reported descriptively higher levels of sexual desire for alternative partners relative to participants in the control condition (see Fig. 1), this effect did not reach the threshold of significance. These results remained unchanged controlling for covariates (see the bottom half of Table 6). Finally, men and women primed with desire for their partner did not significantly differ in their sexual desire for alternatives, $p = .802$.

Discussion

Consistent with our hypothesis, experimentally activating people's feelings of sexual desire for an alternative partner heightened their sexual desire for their current long-term partner, and this effect was independent of participants' sex, relationship length, and individual differences in sociosexuality. However, inconsistent our hypothesis, the opposite effect did not reach statistical significance: experimentally activating people's feelings of sexual desire for their romantic partner did not significantly

Table 6 Effects of experimental condition on sexual desire for one's partner and for alternative partners controlling for covariates (unstandardized coefficients)

	b	CI _{95%}	t	p	Semi-partial r
Desire for Partner					
Intercept	2.18	[0.73:3.62]	—	—	—
Biological Sex	-0.34	[-0.51:-0.17]	-3.93	< 0.001	0.18
Relationship Length	-0.00	[-0.003:-0.001]	-3.39	< 0.001	0.15
STMO	-0.06	[-0.16:0.04]	-1.15	0.250	0.05
LTMO	0.37	[0.17:0.57]	3.61	< 0.001	0.17
Partner Prime (vs. Control)	1.28	[0.87:1.70]	6.10	< 0.001	0.28
Alternative Prime (vs. Control)	1.17	[0.78:1.56]	5.86	< 0.001	0.27
Desire for Alternatives					
Intercept	2.90	[1.74:4.07]	—	—	—
Biological Sex	-0.16	[-0.30:-0.02]	-2.27	0.034	0.09
Relationship Length	0.00	[0.001:0.002]	1.95	0.052	0.08
STMO	0.48	[0.40:0.56]	11.49	< 0.001	0.45
LTMO	-0.36	[-0.53:-0.20]	-4.36	< 0.001	0.17
Partner Prime (vs. Control)	0.23	[-0.11:0.56]	1.33	0.183	0.05
Alternative Prime (vs. Control)	0.67	[0.35:0.98]	4.14	< 0.001	0.16

heighten their sexual desire for alternative partners. Notably, however, the effect was descriptively in the predicted direction, and opposite of what would be predicted based on a traditional relationship-science perspective, wherein feelings of sexual desire toward one's partner would be expected to *reduce* one's interest in relationship alternatives.

General Discussion

Relationship science and evolutionary psychology outline competing predictions regarding the function and consequences of sexual desire. Relationship-science per-

spectives suggest that (1) sexual desire for one's romantic partner should promote relationship maintenance and, thus, decrease desire for alternative partners, and (2) sexual desire for alternative partners should undermine relationship maintenance and, thus, reduce desire for one's romantic partner. This suggests a negative relationship between sexual desire for a long-term partner and potential relationship alternatives. In contrast, evolutionary perspectives posit that sexual desire functions to promote sexual intercourse with reproductively beneficial partners, and thus, is not focused on a single partner. Once activated, feelings of desire might be directed toward any number of potential partners. It follows that, even in the context of a long-term relationship, sexual desire felt for one's romantic partner may increase sexual desire felt for alternative partners; likewise, sexual desire for alternative partners may increase sexual desire for one's current partner. This view suggests a positive association between sexual desire for a long-term partner and potential relationship alternatives.

The present findings advance evolutionary theories of mating by providing support for an evolutionary account of sexual desire. Evidence from two studies suggests that sexual desire activated by alternative partners is associated with greater desire for one's current romantic partner. We observed inconsistent evidence that sexual desire activated by one's romantic partner is associated with greater interest in alternatives.

Our results complement other research (e.g., Birnbaum et al., 2019; Brown & Hart, 1977; Davidson & Hoffman, 1986; Hicks & Leitenberg, 2001) suggesting that among people in long-term relationships, feeling sexual desire for alternative partners is a relatively common experience, with previous studies reporting that between 87% and 99% of participants experienced recent extra-dyadic sexual fantasies. Importantly, such desires are not necessarily harmful for one's relationship because such sexual desire need not translate into extra-dyadic sexual behavior. Indeed, people frequently report sexual desires on which they have no intention of acting (e.g., Critelli & Bivona, 2008; see Leitenberg & Henning, 1995). Moreover, people possess powerful relationship-maintenance mechanisms that inhibit behavioral pursuit of extra-dyadic sexual encounters. Those mechanisms include attending away from attractive alternatives (Maner et al., 2008; McNulty et al., 2018), derogating alternatives (Lydon et al., 2003), and engaging self-regulatory resources that reduce temptation (McIntyre et al., 2015). Thus, for people in long-term relationships, perhaps simply being aware of the possibility that sexual desire is not partner-specific may help couple members engage such relationship-maintenance processes. For example, people could effortfully channel the sexual desire they feel—regardless of who activates it—into sexual activity with their partner, rather than alternative partners. Such efforts may be especially important for people who experience chronically higher levels of sexual desire, such as men or those with an unrestricted sociosexual orientation (French et al., 2019; McNulty et al., 2019). Still, all relationships involve an implicit cost-benefit analysis such that, in some cases, it may be reproductively beneficial to leave one's current partner for a new one (e.g., Buss et al., 2017; Kelley & Thibaut, 1978).

Strengths, Limitations, and Future Directions

Strengths of the current research enhance our confidence in these findings. First, both daily-dairy and experimental designs provided converging evidence that sex-

ual desire activated by one partner (or potential partner) is linked to heightened desire for another target—whether that be daily fluctuations in desire (Study 1) or acutely activated desire (Study 2). Second, these associations emerged above and beyond between-person differences in sexual desire and mating-related individual differences such as biological sex, relationship length, and sociosexuality. Third, we demonstrated a positive association between sexual desire for one's partner and alternative partners in the context of actual long-term relationships; indeed, participants in both studies were involved in committed relationships and thus the outcomes we examined were real and consequential.

These strengths notwithstanding, the present research must be interpreted in light of its limitations, which provide useful directions for future research. First, both studies used explicit, self-report measures of sexual desire for one's partner and alternatives. Given that people are highly motivated to see their relationship partners positively and to protect their relationships (e.g., Bradbury & Fincham, 1990; McNulty et al., 2018; Murray et al., 1996), social desirability concerns likely impacted our results. In particular, people may have inflated their self-reported desire for their partner and/or downplayed their self-reported desire for alternatives. Indeed, an unwillingness to report desire for alternative partners may help explain why we failed to detect the effect of partner-activated sexual desire on desire for alternative partners in Study 2. Future research should thus aim to use implicit measures of sexual desire, which are generally less affected by social desirability bias (see Banaji, 2001).

Second, the present research included people involved in highly established long-term relationships. Indeed, participants in Study 1 were all newly married couples and the majority of participants in Study 2 were married, with an average age of 43 years and a relationship length of 13 years. The bidirectional association between sexual desire for one's romantic partner and alternative partners may have been weaker and more difficult to detect in these samples for at least two reasons. First, sexual desire tends to decline with age (DeLamater & Sill, 2005) and as relationships become more established (primarily for women; McNulty et al., 2019); thus, these participants may experience lower levels of acute and chronic sexual desire than those who are younger and in less interdependent relationships. Consequently, future research may benefit from examining how these processes might operate in individuals who more frequently experience sexual desire, such as dating relationships among college students. Second, given the stigma surrounding extra-dyadic desire, people in highly committed relationships like marriage may be more strongly impacted by social desirability concerns and thus less likely to report such desires, regardless of how strongly they experience them (for a recent review, see King, 2022). Thus, future research may benefit from examining these processes in populations for whom open communication about desires for other partners is normative, such as consensually non-monogamous couples (Mogilski et al., 2017; Moors et al., 2017).

Finally, the present research provided evidence that sexual desire is not partner-specific, but stopped short of examining possible downstream behavioral consequences. As described earlier, people frequently have desires they have no interest in acting on (Critelli & Bivona, 2008); nevertheless, other work (Eisenman, 1982; Birnbaum et al., 2019) suggests that such desires can motivate subsequent behaviors. For example, in one study, sexual fantasy manipulations led to increases in sexual

behaviors one week later (Eisenman, 1982). Thus, future work may thus benefit from examining the possible behavioral implications of these findings.

Conclusion

Sexual desire is a powerful emotion that evolved in humans and other sexually reproducing species to promote sexual union and increase reproductive success. In demonstrating that sexual desire felt toward one target can lead to heightened sexual desire felt toward other targets, the present work joins forces with evolutionary accounts of the ultimate functions of sexual desire. This research also contributes to a more complete understanding of how sexual desire operates in the context of people's long-term romantic relationships.

Data Availability The analysis code, codebook, and data for all analyses are available on the Open Science Framework (https://osf.io/ngc5b/?view_only=70190c49999f4871bdd7bb6a997a3380).

Declarations

Ethical Approval These studies were performed in line with the principles of the Declaration of Helsinki. Informed consent was obtained from all individual participants included in these studies. Studies 1 and 2 were both approved by the Institutional Review Board at Florida State University (Study 1: 12/19/2019, approval #00000676; Study 2: 01/30/2024, approval #00004833).

Conflict of Interest The authors declare that they have no conflicts of interest.

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Sierra D. Peters is a PhD candidate in the Department of Psychology at Florida State University. Her current research draws from social and evolutionary perspectives to examine how the individual differences each couple brings into their relationships influence their relationship processes and outcomes.

Jon K. Maner received his PhD in social psychology from Arizona State University in 2003. He studies motivated social processes from evolutionary and social psychological perspectives.

Andrea L. Meltzer is an associate professor in the Department of Psychology at Florida State University. She received her PhD in social psychology at the University of Tennessee and integrates relationship science and evolutionary psychology to examine the implications of evolved processes for established relationships.