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# The affective shift hypothesis: The functions of emotional changes following sexual intercourse

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MARTIE G. HASELTON<sup>a</sup> AND DAVID M. BUSS<sup>b</sup>

<sup>a</sup>*University of California, Los Angeles* and <sup>b</sup>*University of Texas, Austin*

## Abstract

This article develops the *Affective Shift Hypothesis*, which suggests that women experience positive affective shifts following first-time intercourse as a means to facilitate a longer-term, more committed relationship. The hypothesis predicts a negative affective shift in men who pursue a short-term mating strategy; this shift is hypothesized to function to curtail commitment by motivating the man to terminate the relationship. Study 1 ( $N = 177$ ) documented sex differences predicted by the affective shift hypothesis. Study 2 ( $N = 203$ ), using a somewhat different methodology involving reports of presex and postsex feelings, found that men with high numbers of sex partners, but not men with low numbers of partners, experienced a decrease in their partner's physical and sexual attractiveness following first-time sexual intercourse. In contrast, women, more than men, experienced increases in feelings of love and commitment following first-time sex.

Parental investment theory (Trivers, 1972) proposes that sex differences in minimum obligatory parental investment have shaped sex differences in mating strategies. The sex that invests more in offspring is predicted to evolve greater selectiveness in choosing a mate. The sex that invests less is predicted to evolve lower thresholds for seeking sex and to be more competitive for access to the higher investing sex. In humans, like most sexually reproducing species, females have a far greater obligatory reproductive investment in producing offspring (Trivers, 1972). Women must invest large stores of calories during a 9-month pregnancy, incur significant pregnancy-related health risks (e.g. Haig, 1996), and forgo further reproduction for as long as 4 years during the energy-

intensive process of lactation (Ellison, 1995). Although some men, of course, do invest heavily in parenting, their minimum reproductive investment can be limited to a single act of copulation.

Parental investment theory predicts sex differences in humans that have been supported in dozens of studies (see Buss, 1994; Geary, 1998; Mealey, 2000; Symons, 1979). Because of their high obligatory investment, women have evolved highly selective preferences for high quality mates who would help them to produce and raise attractive and healthy offspring. Women use tactics such as instituting long precopulatory courtship periods to assess potential mates (Buss, 1994; Buss & Schmitt, 1993). Women also exercise a preference for mates who are willing to help shoulder some of the parental burden by providing time and resource investment before sex and afterward (Buss, 1994; Buss & Schmitt, 1993).

Because of their lower level of obligatory investment, the ceiling on male reproductive output is imposed primarily by the number of fertile sex partners attainable.

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The authors thank Steve Gangestad, Don Symons, Rob Kurzban, Michael Mitchell, and an anonymous reviewer for helpful suggestions on this article.

Address correspondence to Martie G. Haselton, Communication Studies, 334 Kinsey Hall, UCLA, Los Angeles, CA, 90095-1538. E-mail: haselton@ucla.edu or to David M. Buss, e-mail: dbuss@psy.utexas.edu.

As parental investment theory predicts, men consent to sex earlier in courtship (Buss & Schmitt, 1993), have lower minimum standards for sex partners (Kenrick, Sadalla, Groth, & Trost, 1990), and desire a larger number of sex partners over a lifetime (Buss & Schmitt, 1993; Schmitt et al., in press; Symons, 1979).

### *Sexual strategies theory*

According to Sexual Strategies Theory (Buss & Schmitt, 1993), a middle-level theory within evolutionary psychology, men and women both have evolved context-sensitive long-term and short-term mating strategies, sometimes used in combination (e.g., one long-term mate, with an occasional short-term opportunistic mating). A psychology of short-term, low-risk mating presumably evolved in men because of the direct reproductive benefits achieved as a result of successfully mating with a variety of fertile women.

Although the selective impetus for women's short-term mating has only recently come under scientific scrutiny, there are several plausible hypotheses for its evolution (see Greiling & Buss, 2000, for a review). One hypothesis proposes that women may trade off long-term investment for access to exceptionally high quality or "sexy" genes (Gangestad & Thornhill, 1997, 1998). Women who engage in this strategy may do so covertly while attempting to maintain a long-term relationship (Baker & Bellis, 1995; Smith, 1984). Another hypothesis suggests that women engage in short-term mating for immediate access to resources (Buss & Schmitt, 1993; Symons, 1979). An additional set of hypotheses proposes that women engage in short-term mating as part of a long-term strategy to switch mates or cultivate a back-up relationship as "insurance" (Fisher, 1992; Greiling & Buss, 2000; Smith, 1984; Symons, 1979). It remains an open question whether a purely short-term mating strategy could have evolved in women. The most promising hypotheses about women's short-term mating suggest that short-term mating strategies may have

evolved in women as part of a long-term mating strategy—women engage in short-term mating "on-the-side" in exchange for genetic benefits, material benefits, or as a mechanism to switch mates (Buss, 2000; Gangestad & Thornhill, 1997; Symons, 1979).

### *Adaptive problems and sexual strategies*

The successful enactment of a short-term sexual strategy requires solving a range of adaptive problems (Buss & Schmitt, 1993). For men, these include motivational problems (e.g., mechanisms to impel behavioral action), sexual accessibility problems (e.g., mechanisms to identify which women are potentially available), and risk-assessment problems (e.g., mechanisms to identify low-cost contexts for short-term mating). Empirical evidence suggests that men have evolved a strong desire for sexual variety as a solution to the motivational problem. Men, substantially more than women, desire a larger number of sex partners over intervals ranging from a month to a lifetime (Buss & Schmitt, 1993; Schmitt et al., in press); have twice as many sexual fantasies (Ellis & Symons, 1990); do more partner-switching during the course of a single fantasy episode (Ellis & Symons, 1990); let less time elapse before seeking sexual intercourse (Buss & Schmitt, 1993); are more sexually attracted to their opposite-sex friends (Bleske & Buss, 2000); have more favorable attitudes toward casual sex (Oliver & Hyde, 1993); show a greater desire for, and more frequently engage in, extramarital affairs (Buss, 2000); are more receptive to sex with total strangers (Clark, 1990); use prostitutes with dramatically greater frequency (Symons, 1979); and lower their standards substantially to increase the range of potential short-term mates (Kenrick et al., 1990). The motivational problem, in short, appears to have been solved.

Far less research has been devoted to possible evolved solutions to the other adaptive problems required for the successful enactment of a short-term mating strategy. For example, men may have evolved

assessment mechanisms to identify which women are more or less likely to be sexually receptive. Little empirical work has been devoted to exploring this idea, although there is some evidence that men pursuing short-term mating, in contrast to men pursuing long-term mating, prefer women who have sexual experience and avoid women who appear prudish or low in sex drive (Buss & Schmitt, 1993). Men also may have evolved to assess risk to avoid the costs of retaliation that might be imposed by a jealous partner of the woman with whom a man seeks short-term sex, but again, no research, to our knowledge, has yet been conducted on this issue.

Another critical adaptive problem that must be solved by men pursuing a short-term mating strategy is the problem of avoiding commitment and investment (Buss & Schmitt, 1993). The larger the investment in a particular mating, the fewer the number of sexual partners a given man can pursue. Buss and Schmitt (1993) hypothesized, and provided some preliminary evidence, that one solution to the commitment-avoidance problem might be found in men's short-term mate preferences—preferentially seeking women who appear to require minimal commitment while avoiding women who appear to require substantial investment.

### *Affective shifts*

The idea of sex differences in intercourse-related affective change was anticipated by Symons (1979), who noted that “lust and ejaculation can have profound effects on men's perceptions . . . it is adaptive for males to be able to be ‘blinded’ by lust” (p. 212). He further explains, “it would generally be maladaptive for women to be ‘blinded’ by lust, and it would certainly be maladaptive to lust for men without regard to their attractiveness simply because the effort and risk involved in copulation were slight. Thus one might predict that lust and orgasm may affect female and male perceptions very differently” (Symons, 1979, p. 213).

In this article, we advance a related hypothesis about emotional changes follow-

ing intercourse as an evolved solution to the commitment-avoidance problem: *The affective shift hypothesis*. According to this hypothesis, men who were able to extract themselves from a relationship after sexual intercourse, but prior to heavy investment, would have been more successful at pursuing a short-term mating strategy than men who failed to extract themselves following a sexual encounter that was intended to be short-term. An affective shift—a negative change in perceptions of the woman's sexual attractiveness—might provide the motivational impetus to promote a relatively hasty postcopulatory departure. This quick departure, in turn, would function primarily to reduce the risks to the man of making unwanted commitments. Secondly, it might also reduce the risks of retaliation from the woman's regular partner if she is already mated. Over evolutionary time, avoiding both costs would have increased the on-average benefits to men of pursuing a short-term mating strategy.

By this account, women's affective reactions to sexual intercourse should be different. Over the long course of human evolutionary history, women risked heavy investment as a result of intercourse, including 9 months of internal gestation and heavy post-zygotic investment. Women who secured commitment and investment from a man would have been more reproductively successful than women who were sexually exploited without securing investment. Furthermore, some women may use what appears on the surface to be a casual sexual encounter as one strategy to secure long-term investing mates (Buss & Schmitt, 1993). If this reasoning is correct, women should be more likely than men to experience positive affective shifts following intercourse, which would provide the motivation to pursue a longer-term, more committed relationship. Based on the premise that men and women have evolved different adaptations because, over human evolutionary history, they have recurrently confronted different commitment and commitment-avoidance problems in the pursuit of sexual strategies, the affective shift hypoth-

esis applied to men and women yields the following predictions:

1. *Sex Difference in Perceptions of Partner's Attractiveness.* According to the affective shift hypothesis for men, a negative shift in perceptions of a partner's attractiveness after sex may help prevent long-term entanglements in what was intended to be a short-term sexual relationship. Because the benefits of acquiring multiple mates is greater for men than for women, more men should report experiencing a negative shift in perceptions of their partners' attractiveness after sex.
2. *Sex Difference in Perceptions of One's Own Commitment.* According to the affective shift hypothesis for women, a woman who experiences an increase in feelings of commitment and love for a partner after sex will be motivated to pursue a long-term relationship with him in which she can gain access to resources and paternal care for her offspring. Because the benefits of maintaining a long-term relationship after sex are greater for women than for men, on average, women should be more likely than men to experience a positive shift in perceptions of commitment and love for a partner after sex.
3. *Differences in Perceptions of Partner Attractiveness Within-Sex.* Some men are better able to pursue a short-term mating strategy than are others. Such men may be more sexually attractive to women (Gangestad & Thornhill, 1997), possess more resources or status (Buss, 1994), or they may simply use more effective tactics of seduction. According to the affective shift hypothesis, these men are able to avoid long-term, committed relationships with some women, in part because of negative shifts in perceptions of their partners after sex. Successful short-term sexual strategists, as indicated by relatively high overall numbers of sexual partners, are predicted to be more likely to experience a negative affective shift

following sexual intercourse than long-term sexual strategists. The benefits to women of short-term mating differ from those for men. Whereas men engage in short-term mating to increase their overall number of partners, which historically had the consequence of directly affecting their reproductive output, women are hypothesized to engage in short-term mating often as part of a long-term mating strategy or as a byproduct of strategic trade-offs, not to increase partner number per se. Thus there is little reason to suggest that that partner number will be related to the negative affective shift in women. In summary, men with many past sex partners should be more likely to experience a negative affective shift than men with relatively few partners. The same should not hold true for women. Women with many sex partners should be equally as likely as women with few sex partners to experience the negative shift.

## Study 1

### *Post-coitus affective shifts: Do the sexes differ?*

Study 1 was designed to assess sex-differentiated affective change after sexual intercourse by asking participants about their experiences in their past sexual relationships and by asking about their last sex partner.

### *Method*

#### *Participants*

Participants were 109 women and 79 men. The participants were undergraduate students attending a large university in Texas who had at least one past sex partner with whom they had sexual intercourse. Participation in this study partially fulfilled a course requirement.

Sexual orientation was assessed by asking participants to check the category on the study questionnaire that best described them. These categories were "heterosexual," "homosexual," "bisexual," and "un-

sure." Three women checked bisexual and two checked homosexual. The remaining women (95%) checked the heterosexual category. Two men checked homosexual and one checked unsure. The remaining men (96%) checked the heterosexual category. Because the test items referred to sexual experiences with the opposite sex, none of the exclusively homosexual participants completed them. One of the bisexual women completed the items, but noted in the margin of her questionnaire that her responses reflected experiences with women and with men. Because of the uncertainty of her responses, they were eliminated from all subsequent analyses. Three additional women provided incomplete or illegible responses. The total number of participants remaining was 101 women (mean age = 19.35,  $SD = 1.47$ ) and 76 men (mean age = 19.34,  $SD = 1.29$ ).

### Materials

Participants completed a five-item questionnaire. Three items assessed general impressions of past partners. These items were preceded by brief instructions: "Using the following scale, please indicate the extent to which you agree or disagree with the following statements by placing the appropriate number in the space provided." The accompanying 9-point scale had three anchored points ("1" = "I strongly disagree," "5" = "neutral," "9" = "I strongly agree"). The items read as follows: (1) "In general, the first time I have sexual intercourse with someone is the best"; (2) "I tend to lose sexual interest in a sex partner after a few months of regular sexual intercourse"; and (3) "Typically, having sexual intercourse leads to greater emotional involvement in my relationships."

Two items assessed affective change in participants' most recent relationship. These items read as follows: (1) "Think of your present sex partner, or if you are not presently involved in a sexual relationship, think of the last person you had sex with. Did you become *more* or *less* committed to your relationship with your partner after

you *first* had sex with her (him)?"; and (2) "Immediately after sexual intercourse, my partner looks . . ." Participants responded using 9-point rating scales with 3 anchored points. For the first item, "1" = "extremely less committed," "5" = "no change," "9" = "very much more committed." For the second, "1" = "far less physically attractive to me," "5" = "no change," "9" = "far more physically attractive to me."

### Results

To compare the sexes, two-tailed independent samples *t*-tests were conducted on each item. Effect size was estimated by calculating *d* statistics corresponding to each sex difference.

#### *Perceptions of past relationships*

On average, men reported greater agreement with the statement that the first-time sex is the best ( $M = 4.24$ ,  $SD = 2.31$ ) than did women ( $M = 3.37$ ,  $SD = 2.22$ ;  $t(174) = -2.54$ ,  $p = .012$ ;  $d = .38$ ). Relative to women ( $M = 2.68$ ,  $SD = 1.89$ ), men also reported greater agreement that they tend to lose interest in a partner after a few months of regular sex ( $M = 4.08$ ,  $SD = 2.18$ ;  $t(175) = -4.55$ ,  $p < .001$ ,  $d = .69$ ). These results indicate that men are more likely than are women to experience a loss of interest or attraction to a partner after sexual intercourse, supporting prediction 1.

Both sexes indicated that sex leads to greater emotional involvement in their relationships (women  $M = 7.22$ ,  $SD = 2.06$ ; men  $M = 7.01$ ,  $SD = 1.65$ ;  $t(175) = .71$ ,  $p = .48$ ,  $d = .11$ ). Although nonsignificant, the difference between responses was in the predicted direction. This nonsignificant result failed to support the prediction that women would experience a greater increase in emotional involvement after sex than would men.

#### *Shifts in perceptions of most recent partner*

Women and men reported increased commitment to partners after sex, but, as

hypothesized, women's change in commitment was greater ( $M = 7.22, SD = 1.82$ ) than was men's ( $M = 6.42, SD = 2.16; t(175) = 2.66, p < .01; d = .40$ ). On average, women reported increased perceptions of their partner's physical attractiveness after sex ( $M = 6.54, SD = 1.51$ ), whereas men's average perception of their partner's attractiveness was only slightly above the neutral ("no change") point ( $M = 5.74, SD = 1.70; t(170) = 3.27, p = .001; d = .50$ ). This suggests that the sexes differ in their feelings of attraction and commitment following sexual intercourse, with women tending to experience a greater increase in feelings of commitment and attraction, and, based on the variation around the mean, more men than women experiencing a decrease in attraction after sex.<sup>1</sup>

### Discussion

The results suggest that men and women experience somewhat different affective reactions following intercourse. Men are more likely than women to lose sexual interest after a few months. Men are more likely than women to report that the first time that they had sex with a partner was the best. Women, in contrast, are more likely than men to report increases in both attraction and commitment following the first time that they had sexual intercourse with their current or most recent partner. These results support predictions 1 and 2.

There is a possible alternative explanation for the fact that men rate first-time sex more highly than do women. Whereas men,

particularly those in young college-aged samples, are virtually guaranteed an orgasm during each sexual encounter, women may be less likely to experience orgasm during a first sexual encounter as compared with later encounters with the same partner. Over the course of a relationship, men may acquire more skill in pleasing their partners and, relative to first-time sexual encounters, somewhat attenuated sexual excitement in men may permit greater sexual stimulation in women.

Although these results suggest that the sexes differ affectively in certain respects following sexual intercourse, Study 1 contains several limitations. One limitation is the lack of assessments of affective reactions prior to sexual intercourse. Obtaining such assessments would provide a baseline from which to compare affective responses following intercourse. A second limitation is that the study contains an unknown mixture of people who are pursuing short-term and long-term mating strategies. The affective shift for men is predicted to occur primarily in the short-term mating context. Study 2 was conducted to obtain both pre-intercourse and post-intercourse assessments and to examine the individual differences within sex to test prediction 3.

### Study 2

Study 2 tested the two affective shift hypotheses by assessing perceptions of a sex partner immediately before first-time sex and immediately afterward. Study 2 also tested the hypothesis that men who pursue a short-term mating strategy will be more likely to experience the negative affective shift than men who pursue a long-term mating strategy.

### Method

#### Participants

Participants were volunteers recruited from a large university campus in Texas. Invited to participate on a voluntary basis were 187 women and 164 men. These par-

1. Some responses to these items were intercorrelated. Responses to the commitment and emotional involvement items were positively correlated for men,  $r(76) = .45, p > .001$ , and for women,  $r(100) = .33, p < .01$ . For men, reported increases in commitment after sex was positively associated with increasing perceptions of their last partners' attractiveness after sex,  $r(72) = .27, p < .05$ . For women, a loss of interest after a few months of sex was negatively associated with increased emotional involvement after sex  $r(101) = -.22, p = .05$  and negatively associated with increasing perceptions of their last partner's attractiveness after sex  $r(100) = -.26, p < .01$ .

ticipants each were given a consent form, short questionnaire, and a plain brown confidentiality envelope in which to place their completed questionnaires. The instructions on the questionnaire indicated that the survey contained questions about past sexual encounters and those participants who had never had sexual intercourse should not complete the remaining questions; instead they should simply place their questionnaire in the brown envelope and hand it back to the experimenter at their convenience. Forty-six of the women (25%) and 30 of the men (18%) handed back incomplete questionnaires after checking a blank indicating that they had no previous sexual partners.

When asked to check the blank that best described their sexual orientation, seven women checked homosexual, eight checked bisexual, and four checked unsure. The remaining women ( $n = 122$ ) checked heterosexual. Five men checked homosexual, one checked bisexual, and one checked unsure. The remaining men ( $n = 127$ ) indicated that they were heterosexual. Because the hypotheses pertained to heterosexual men and women, the questionnaire items referred to experiences with the opposite sex. Many of the nonheterosexual participants skipped the remainder or provided sporadic responses. For this reason, the analyses were limited to heterosexual subjects only.<sup>2</sup> An additional 19 women and 27 men (16% and 21% of the eligible sample, respectively;  $\chi^2(1) = 1.18, p > .05$ ) failed to complete the test items, either because they felt uncomfortable providing information about their sexual experiences, they did not understand the questionnaire, or simply did not wish to participate. The resulting pool of participants consisted of 103 heterosexual women and 100 heterosexual men, each of whom reported having at least one past sexual partner. To help ensure anonymity, no age

data were collected, but student ages on this campus typically range from 17 to 22 years.

### Materials

The first page of the questionnaire included nonidentifying background questions, such as number of past sex partners and sexual orientation. The subsequent pages of the questionnaire differed depending on which of two forms the participant received.

*Form A.* Form A consisted of a single page on which participants reported their perceptions of their last sex partners immediately before and after sex. The instructions read as follows: "Think of your present sex partner, or if you are not presently involved in a sexual relationship, think of your last sex partner. For each of the following items provide *two* responses. First think of your feelings and perceptions *immediately before* you had sex with your partner for the *first time*. Place an *X* over the number corresponding to your response. Second, think of your feelings and perceptions *immediately after* you had sex with your partner for the *first time*. Place an *O* around the number corresponding to your response."

There were six items on the questionnaire, appearing in the following order: (1) "How physically attractive did he [she] look?"; (2) "How strong were your feelings of love for him [her]?"; (3) "How strong was your sexual attraction to him [her]?"; (4) "How emotionally involved with him [her] did you feel?"; (5) "How sexy did he [she] look?"; (6) "How committed did you feel to him [her]?" Each item was followed by a rating scale with three anchored points. The scale ranged from 1 (e.g., "not at all physically attractive," "I had no feelings of love for him [her] at all," etc.) to 9 (e.g., "extremely physically attractive," "I had extremely strong feelings of love for him [her]," etc.) with 5 as a midpoint (e.g., "moderately physically attractive," "I had some feelings of love for him [her]," etc.).

*Form B.* Form B was identical to form A with the exception that participants re-

2. The results of the statistical analyses did not differ substantially when the nonheterosexual participants were included. All hypothesis tests were supported in the all-heterosexual sample as well as the sample including nonheterosexual participants.

ported their perceptions before and after sex on separate pages. The instructions for this form were as follows: "Think of your feelings and perceptions *immediately before [after]* you had sex with your partner for the *first time*. Circle a number on each of the following scales indicating your feelings and perceptions of your partner at that time." The order of presentation of the two pages was counterbalanced such that equal numbers of men and women received each of the two possible orders.

### *Procedure*

Students were approached by same-sex researchers on campus and asked to complete a short, confidential questionnaire. The researcher explained that no identifying information would be requested of them, and that they could choose not to complete the questionnaire if they felt uncomfortable. The researcher explained that the participants should place their completed questionnaires in the unmarked brown envelope they had been given; then they should place their sealed envelopes in the container held by the researcher, which already contained several other sealed brown envelopes. The researcher explained that this procedure was designed to further protect participants' identities.

### *Results*

#### *Data reduction*

Responses to the six partner-perception items were factor analyzed for the purpose of identifying any underlying dimensions that could be used to summarize the data. A separate factor analysis procedure was conducted for the before-sex and after-sex perceptions. Based on the criterion of eigenvalue greater than 1, two factors were extracted in each analysis using a maximum likelihood extraction procedure and varimax rotation. The results for the before-sex and after-sex analyses were very similar. In each case the individual items loaded fairly independently on the two factors producing

a clear factor structure with no ambiguous cross-loadings. Each item had a low loading on the first factor (.33 or less) and a high loading on the second (.79 or greater), or vice-versa (high on the first and low on the second). The love, emotional involvement, and commitment items had high loadings on one factor; the physical attractiveness, sexual attractiveness, and sexiness items loaded highly the other. These sets of three items were arithmetically averaged to form two composite scores for before-sex perceptions and two for after-sex perceptions, for a total of four variables: (1) before-sex perceptions of commitment, (2) after-sex perceptions of commitment, (3) before-sex perceptions of sexual attractiveness, and (4) after-sex perceptions of sexual attractiveness. The alpha reliabilities for each composite computed separately for men and women were high and consistent across the sexes (ranging from .84 to .94).

#### *Analysis of form type*

A factorial ANOVA was conducted on each composite score to examine the potential effects of form type (form A order 1 versus form B order 1, etc.) and the potential effect of form type by sex of participant. There were no significant effects of form type ( $ps > .50$ ) nor were there significant form type by sex interactions ( $ps > .50$ ). These data were therefore combined and all subsequent analyses were conducted on the total data set.

#### *Shifts in perceptions after first-time sexual intercourse*

*Data analysis.* We conducted a  $2 \times 2 \times 2$  factorial ANOVA with time (before-sex versus after-sex perceptions) as a within-groups factor, sex of subject as a between-groups factor, and number of sex partners (high versus low) as a between-groups factor. This analysis was conducted separately on the sexual attractiveness and commitment perception composites. When main effects were qualified by significant interactions, the main effects are not reported. With the



exception of planned hypothesis tests, two-way interactions qualified by an interaction with a third factor are also not reported.

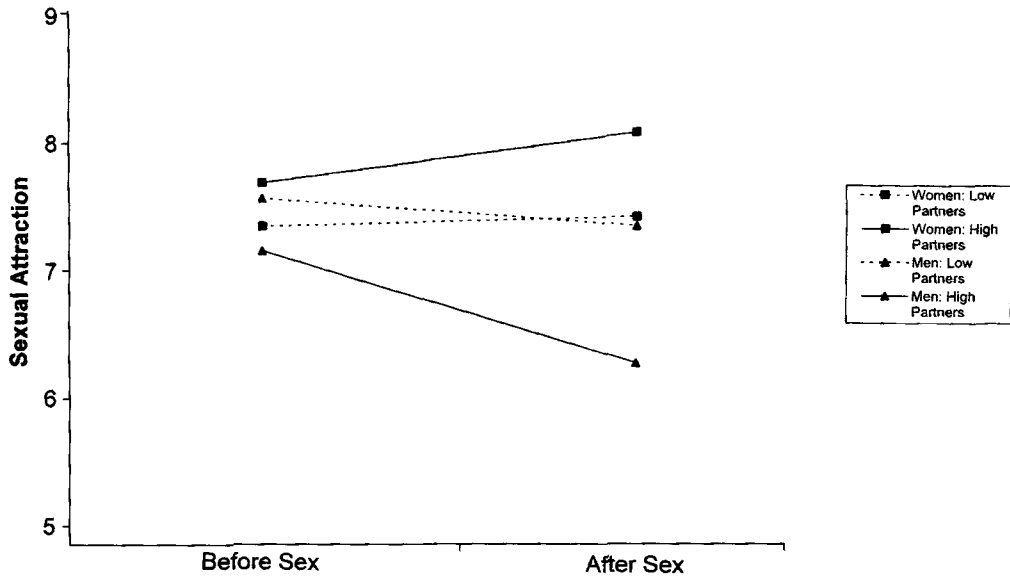
The sex partners variable was dichotomized, rather than entered as a continuous variable, to control for outliers and potential nonlinearity problems. The average number of sex partners for men was about 7 ( $M = 7.07$ ,  $SD = 12.81$ ) and for women more than 5 ( $M = 5.48$ ,  $SD = 10.87$ ;  $t(198) = .95$ ,  $p > .05$ ). These distributions were skewed by a few participants of each sex who reported having 45 or more past sex partners. Participants who reported 5 or fewer sex partners were placed in the low sex partners category; those with 6 or more were placed in the high partners category. This cutoff point was selected based on a fairly precipitous drop-off in the number of participants reporting 6 or more sex partners versus those reporting 5 or fewer partners (the number of participants reporting 6 partners and each subsequently higher interval, 7, 8, 9, and so forth, dropped to the single digits for each sex, whereas for the 5 and lower intervals, with one exception, reports were in the double digits). This cut-off point also maintained the within-cell  $n$ s at a level of  $n = 30$  or higher.

*Changes in sexual attractiveness.* The prediction that men are more likely than are women to experience a postsex decrease in attraction to their partners would be supported by a significant time-by-sex interaction in which men's attraction to their partners decreased after sex, whereas women's attraction did not. Support for the within-sex prediction that this pattern would be stronger for men with many sex partners than for men with fewer partners would be supported by a significant time-by-sex-by-partner number interaction in which the decrease in attraction after sex is steepest in men with many sex partners as compared with men with few sex partners, women with many sex partners, and women with few sex partners.

Each of these interactions was obtained and the predicted pattern confirmed by planned simple effect tests. The time-by-sex

interaction was significant,  $F(1, 196) = 20.78$ ,  $p < .001$ . Women's reported attraction to their partners was fairly high and did not change significantly between time periods (before sex,  $M = 7.47$ ,  $SD = 1.37$ ; after sex,  $M = 7.64$ ,  $SD = 1.18$ ;  $F(1, 196) = 2.54$ ,  $p > .05$ ). Men's attraction was also fairly high, but there was a difference between perceptions of attractiveness before sex ( $M = 7.44$ ,  $SD = 1.45$ ) and after sex ( $M = 7.01$ ,  $SD = 1.78$ ), with perceptions of partner attractiveness decreasing significantly over time ( $F(1, 196) = 14.96$ ,  $p < .001$ ;  $d = .26$ ). As predicted, the three-way interaction of sex-by-time-by-partner number was significant ( $F(1, 196) = 8.78$ ,  $p < .01$ ), qualifying the two-way interaction. This interaction is depicted in Figure 1. Simple interaction tests confirmed the prediction that the time-by-partner number interaction would hold for men ( $F(1, 196) = 4.52$ ,  $p < .05$ ), but not for women ( $F(1, 196) = .10$ ,  $p > .05$ ). As predicted, the difference between perceptions before and after sex was significantly different for men with high numbers of sex partners ( $F(1, 196) = 21.72$ ,  $p < .001$ ;  $d = .43$ ). The difference between perceptions before and after sex did not differ for men with low numbers of sex partners ( $F(1, 196) = 1.72$ ,  $p > .05$ ).

*Changes in commitment.* The affective shift hypothesis would be supported for women by a significant time-by-sex interaction in which women experienced greater increases in commitment after sex than did men. This interaction was obtained ( $F(1, 199) = 8.28$ ,  $p < .01$ ). Follow-up simple effect tests confirmed the predicted pattern for women, with feelings of commitment after sex ( $M = 7.19$ ,  $SD = 1.84$ ) significantly higher than feelings of commitment before sex ( $M = 6.46$ ,  $SD = 1.94$ ;  $F(1, 199) = 45.43$ ,  $p < .001$ ;  $d = .39$ ). Although a smaller difference, the same pattern was observed for men (after sex,  $M = 5.82$ ,  $SD = 2.55$ ; before sex,  $M = 5.52$ ,  $SD = 2.62$ ;  $F(1, 199) = 7.52$ ,  $p < .01$ ;  $d = .12$ ). This difference for men was not predicted. Number of sex partners was not hypothesized to affect these relationships, and



**Figure 1.** Change in perceptions of sexual attractiveness after first-time sexual intercourse as a function of number of past sexual partners and sex of respondent.

no such interaction was found (sex-by-time-by-partner number,  $F(1, 199) = .46, p > .05$ ).

There was also a significant sex-by-partner number interaction,  $F(1, 199) = 4.46, p < .05$ . Men with high numbers of past partners felt less committed to their sex partner ( $M = 4.39, SD = 2.47$ ) than did men with fewer past partners ( $M = 6.42, SD = 2.36, F(1, 199) = 18.82, p < .001; d = .84$ ). Although the difference was smaller, the same pattern was observed for women; those with high numbers of past partners felt less committed ( $M = 6.33, SD = 2.32$ ) than did the women with fewer partners ( $M = 7.00, SD = 1.71, F(1, 199) = 9.66, p < .05; d = .33$ ). Changes in commitment and sexual attraction over time were positively correlated in men ( $r(98) = .23, p < .05$ ) and in women ( $r(102) = .33, p = .001$ ).

## General Discussion

### *Evidence for affective shifts*

Taken together, the results of Studies 1 and 2 support the hypothesis that men and women experience different affective responses to first-time sexual intercourse. Compared with men, women reported ex-

periencing greater feelings of love and commitment following first-time sex. These shifts occurred within women when contrasting their feelings before sex for the first time with feelings after sex for the first time, as well as when comparing analogous feelings reported by men following intercourse for the first time.

Compared with women, men reported experiencing their partners as less physically attractive and sexy following sexual intercourse for the first time (Studies 1 and 2). In Study 2, this decrement in men's affective reactions was driven by the subgroup of men in the sample who have the greatest number of sex partners. These are the men who have presumably had the greatest success in pursuing a short-term mating strategy, thus providing circumstantial support for the hypothesis that a negative affective shift facilitates the pursuit of a short-term strategy.

### *Sex differences in the functions of short-term mating*

Importantly, the interaction with partner number appears to be a sex-specific effect. Women with many sex partners did not dif-

fer significantly from women with few sex partners in affective change after sex. The specificity of this result hints that the functions of short-term mating may differ for the sexes. Short-term mating for men may be designed to increase partner number to directly affect reproductive output. Men may therefore benefit from mechanisms designed to promote a wandering eye. Many women may not originally intend their relationships to be short-term, even if they do last for a very short duration. If women do have such intentions, parental investment theory predicts that women's male partners should not resist as strongly as would women under the same circumstances. Hence the motivational mechanisms hypothesized in men may not be as adaptively useful in women.

### *Limitations*

In summary, the prediction that women experience a positive change in commitment after sex was supported in each study, providing support for the affective shift hypothesis for women. There was also support in each study for the hypothesis that men experience a negative affective shift in perceptions of their partners as part of a short-term sexual strategy. This hypothesis was supported by sex differences in each study and by the predicted within-sex effect in Study 2. Nevertheless, the results of these studies should be viewed with some caution. The magnitudes of some of the effects found in these two studies were small, and they must be interpreted in the context of much similarity between the sexes. It is also possible that the rather distal methodology used—retrospective reports of affective reactions—could have affected our estimates of the actual magnitudes of the shifts, given that they were considerably removed temporally from those reactions.

The evidence for men's affective shift should be viewed with several additional cautions in mind. First, although men reported decreased sexual attraction to their partner following first intercourse, as predicted, they did not experience decreased

emotional involvement; in fact, men's feelings of commitment increased following first-time intercourse, albeit not as dramatically as the analogous shifts among women. Second, although the negative shift was concentrated in the group of men with many prior sex partners (an index of short-term sexual strategy), also as predicted by the affective shift hypothesis, no such relationship was found for the love, emotional involvement, and commitment items.

The affective shift hypothesis as originally formulated (Buss, 1994) focused solely on decreases in physical and sexual attractiveness as the affective impetus for post-copulatory departure. As such, it generated no specific predictions about feelings of emotional involvement, love, or commitment. In addition, the commitment of the men with many prior sex partners was low across the two time intervals. It is therefore possible that a decrease in commitment was not necessary, as commitment was already at a low level. Nonetheless, if the function of the affective shift in men is to reduce the risks of making unwanted commitments, one might logically expect analogous decrements in feelings of emotional involvement and commitment.

The two findings, that sexual attraction decreases for men but overall commitment increases slightly, may not necessarily be as inconsistent as they first appear. One could argue that a man's best reproductive strategy would be to attempt to monopolize the reproductive resources of each new sex partner while still pursuing additional mates. In this scenario, increased feelings of emotional involvement may motivate a man's attempt to jealously control a mate, whereas decreased physical attraction may promote a wandering eye. If a man could pursue this strategy, he would insure his paternity while not restricting his reproductive output to the number of offspring a single woman can bear. Women, of course, would be expected to co-evolve to resist this controlling strategy in men. This explanation is post-hoc and further research is clearly needed to determine whether it holds up to empirical scrutiny.

### *Affective change over time: Directions for future research*

Future research could usefully explore these intriguing sex differences in postsex emotion shifts in greater detail. Future studies could supplement our findings by overcoming some of the limitations of the current research, including (1) obtaining assessments of affective reactions to sexual intercourse that occurs at different temporal points (e.g., first-time versus 100th time); (2) obtaining better assessments of individual differences among participants in the sexual strategies pursued; (3) separately assessing affective reactions to first-time sexual encounters that do and do not develop into committed relationships; and (4) developing methods that circumvent the problems associated with retrospective reporting of affective reactions (albeit a logistically formidable task). Furthermore, future research could explore a prediction not tested in the current research—that men's affective shifts will be most pronounced when their short-term sex partners are lower than they in overall desirability or mate value.

Given these limitations and the preliminary nature of our findings, the current research provides promising evidence for the

general hypothesis that men and women have confronted different adaptive problems in the context of acts of first-time sexual intercourse and have evolved substantially different functionally-patterned emotional reactions to these reproductively relevant events. More generally, this research suggests a new domain of inquiry in social and personal relationships—the investigation of event-related affective shifts over time. Most or all relationships may confront critical events that cause marked shifts in affect. Friendships often endure episodes of hardship or good fortune that are asymmetrically experienced, causing discrepancies in the benefits friends can offer one another (Tooby & Cosmides, 1996). Members of coalitions use information about recent successes and failures to determine who will occupy positions of status and leadership. Long-term mates re-evaluate their relationship commitment when one or both partners encounter attractive alternative mates. Each of these events may trigger emotional changes that alter the course of the relationship. Identification of affective changes associated with critical events may provide important insights for understanding the development and temporal course of relationships.

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