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# Emotional Responses to Sexual and Emotional Infidelity: Constants and Differences Across Genders, Samples, and Methods

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*In three studies (total N = 619), the authors tested an evolutionary hypothesis: Men are more bothered by sexual than emotional infidelity, whereas the reverse is true of women. More diverse samples (in age) and measures than is typical were used. In Study 1, the authors found across gender, sample, and method that sexual infidelity was associated with anger and blame, but emotional infidelity was associated with hurt feelings. The evolutionary effect was replicated with undergraduates but not with the nonstudent sample. In Study 2, narrative scenarios were used; it was found that nonstudent men and women were more hurt and upset by emotional infidelity but were made angrier by sexual infidelity. In Study 3, using Likert-type scales, scenarios, and a nonstudent sample, it was found that both genders were more upset, hurt, and angrier about sexual than emotional transgressions when rating one kind without hearing the opposite type. The implications for how emotional responses evolved are discussed.*

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**Keywords:** gender; jealousy; evolution; emotion

**T**he most prominent contribution of evolutionary psychology to the study of emotion so far is the idea developed by Buss (e.g., Buss, 2000; Buss, Larsen, Westen, & Semmelroth, 1992) that men and women differ, at least to some degree, in what triggers their jealousy. Specifically, Buss and his collaborators have claimed that because of uncertainty of paternity, but certainty of maternity, men are likely to become more jealous because of a mate's sexual infidelity than because of a mate's emotional infidelity. Sexual infidelity could lead to cuckolding and the evolutionary cost of bringing up another man's offspring. Women, on the other hand, face the threat that their mates will withdraw resources from their offspring and, hence, are more likely to

become upset by signs of resource withdrawal than by signs of sexual infidelity.

This hypothesis has been operationalized by Buss (and others) in several publications in the form of a particular forced-choice question about whether emotional or sexual infidelity would be more upsetting or distressing (Buss et al., 1992, 1999; Buunk, Angleitner, Oubaid, & Buss, 1996). Typically, studies find that a small majority of men find sexual infidelity more distressing than emotional infidelity, whereas a large majority of women find emotional infidelity more distressing than sexual infidelity (see Harris, 2000, 2003, for reviews). Most, but not all, of the research has used this dependent variable.<sup>1</sup>

Results consistent with this claim, hereafter called the *jealousy as a specific innate module* (JSIM) effect (following Harris, 2003), have been found repeatedly (see Table 1). The phenomenon has been replicated in at least 23 samples, although not in every sample (e.g., see Harris, 2000, although she too found at least partial support on the forced-choice item). Our research too is aimed at investigating gender differences in response to sexual versus emotional infidelity, and we too ask participants how distressed or upset they would be at the two kinds of infidelity. But we did not rely on that single item measure of

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**TABLE 1: Characteristics of Jealousy Studies (Buss Replications)**

<i>Citation</i>	<i>No. of Samples</i>	<i>Nationality</i>	<i>Undergraduate</i>	<i>Replicated</i>
Bailey, Gaulin, Agyei, & Gladue (1994)	1	USA	No	Yes
Buss, Larson, Westen, & Semmelroth (1992)	3	USA	Yes	Yes
Buss et al. (1999)	4	USA, Korea, Japan	Yes	Yes
Buunk, Angleitner, Oubaid, & Buss (1996)	3	Netherlands, Germany, USA	Netherlands, USA = Yes; Germany = No	Yes
DeSteno, Bartlett, Braverman, & Salovey (2002)	2	USA	Yes	Yes, in "no load" condition
DeSteno & Salovey (1996)	2	USA	One sample	Yes
Geary, Rumsey, Bow-Thomas, & Hoard (1995)	2	USA, China	Yes	Yes
Harris (2002)	3	USA	Yes	Partial
Harris & Christenfeld (1996)	1	USA	Yes	Yes
Pietrzak, Laird, Stevens, & Thompson (2002)	1	USA	Yes	Yes
Shackelford, Buss, & Bennett (2002)	1	USA	Yes	Yes
Voracek, Stieger, & Gindl (2001)	1	Austria	Yes	Yes
Wiederman & Allgeier (1993)	1	USA	Yes	Yes
Wiederman & Kendall (1999)	1	Sweden	Yes	Yes

jealousy; reliance on it is particularly troublesome since DeSteno, Bartlett, Braverman, and Salovey (2002) have argued that the JSIM result is an artifact of the forced-choice method. (However, see Geary, Rumsey, Bow-Thomas, & Hoard, 1995; Pietrzak, Laird, Stevens, & Thompson, 2002, who found convergent results with Likert measures; and Sabini & Silver, 2003, who did *not* replicate the JSIM effect using scenarios and Likert-type scales.) Furthermore, "upset" and "distressed" are vague terms and they may not mean the same thing to every participant or to every sample of participants. We selected other, more specific emotion terms to use in addition to upset and distress based on an alternative theory of jealousy. We expected greater variability across samples and genders in ratings of upset and distressed than in these more specific terms.

#### *An Alternative View*

Harris (2003) has proposed an alternative to JSIM, one she calls the social-cognitive theory (SCT). According to SCT, jealousy is not a simple module but is instead composed of several different feelings, each triggered by a different aspect of the jealousy-provoking situation. This general, componential conception of jealousy has been advanced by many theorists (Ekman, 1999; Hupka, 1984; Parrott & Smith, 1993; Solomon, 1976; White & Mullen, 1989). Our aim here is to specify components and triggers more specifically. What are the components of jealousy?

White and Mullen (1989) review the literature on proposals about the components of jealousy and note that the lists various theorists have drawn up are not the same. Nonetheless, every theorist includes anger as one component (as did DeSteno et al., 2002; Parrott & Smith, 1993).

Anger often has been thought of as a response to another's behavior, behavior for which the other person is responsible (see Averill, 1982; Baumeister, Stillwell, & Wotman, 1990; Pastore, 1952; Sabini & Silver, 1982; Shaver, Schwartz, Kirson, & O'Connor, 1987; Weiner, 1995).<sup>2</sup> We believed that our participants would see their partner as more to blame for their sexual infidelity than for their emotional infidelity; we thought it part of individuals' intuitive theorizing that people are to blame for their sexual behavior (if not their sexual feelings) but that they are less to blame for their emotions. Emotions, we believe, are thought to be spontaneous and come upon us unbidden (Ekman, 1992, 1999; Peters, 1972; Sabini & Silver, 1998a, 1998b). We expected that because participants would blame their partners more for sexual than emotional infidelity, they also would be angrier about sexual than emotional infidelity. To verify both of these hypotheses, we measured the degree to which participants assigned blame to their partners and we asked them about their anger in response to sexual or emotional infidelity.

We also looked for a term that captured the pain of jealousy but, unlike anger, did not depend as much on the belief that one's partner was to blame for being the cause of the pain. Parrott and Smith (1993) as well as DeSteno et al. (2002) listed "hurt," as in hurt feelings, among their components of jealousy. Leary and his collaborators (Leary & Springer, 2001; Leary, Springer, Negel, Ansell, & Evans, 1998; also see Jones, Moore, Schratte, & Negel, 2001) have argued, and gathered evidence for the claim, that having hurt feelings is a matter of pain triggered by "relationship devaluation." We reasoned that although both sexual infidelity and emotional infidelity "devalued" relationships, emotional infi-

delity constituted a more profound devaluation. We therefore hypothesized that both men and women would (a) anticipate that their partners would be more likely to leave them if the partners were involved in an emotional infidelity than in a sexual infidelity and (b) report feeling more "hurt" by emotional than sexual infidelity.

We expected, then, that whether participants reacted more strongly to an emotional or sexual infidelity would depend on which component of the emotion one asked about. We expected that participants would blame their partners more for their sexual transgressions and would be angrier about them (than about emotional infidelity) but we expected participants to blame their partners less, but be more hurt, by emotional than sexual straying. We did not expect gender differences in these patterns. If these hypotheses are correct, they might provide the basis for an alternative account of the JSIM effect: If men think of distress as anger and women think of distress as feeling hurt, and if anger is tied to sex and hurt to emotion, then men will report more distress and upset to sex than emotion and vice versa for women even though the two genders do not have sexually dimorphic emotional responses, or emotional modules.

#### *Effects on Relationship*

Emotional reactions to a romantic betrayal are in part due to expectations about the effect that betrayal will have on the future of the relationship. Infidelity may evoke fear that a partner will leave (and thus withdraw resources from the relationship and/or offspring) or, alternatively, a desire to end the relationship and leave the partner. Most previous work has not investigated the effect of sexual versus emotional infidelity on these behavioral outcomes (but see Shackelford, Buss, & Bennett, 2002). However, implicit in the JSIM argument is the hypothesis that women will believe that men who are emotionally involved with another woman are more likely to withdraw resources than are men who are sexually involved with another woman. We also test this claim.

#### *Diversity of Samples*

The JSIM results have, indeed, been replicated in multiple samples. These samples are strikingly diverse in terms of culture; most participants came from the United States but there are also participants from China, Germany, Japan, Korea, the Netherlands, and Sweden. But in another way, the samples are not that diverse. All but 3 of the 25 samples are of undergraduates. The exceptions (which used older participants) are Bailey, Gaulin, Agyei, and Gladue (1994); one sample in Buunk et al. (1996) from Germany, in which the expected effects were found but were weaker than in the other

samples; and one sample in DeSteno and Salovey (1996), which used older students enrolled in a continuing education program.

Sears (1986), among others, has highlighted problems with relying exclusively on undergraduate samples. In addition to the unique characteristics highlighted by Sears (such as higher cognitive skills and less stable peer group relationships than older adults), there are at least two other problems with using undergraduates to test evolutionary hypotheses about infidelity. First, experience with relationships may matter, and undergraduates, particularly the freshmen and sophomores that make up much of psychology participant pools, may be relatively inexperienced in these ways. This lack of experience may make it more difficult for students to imagine their reaction to different types of infidelity, and thus, their responses may be based more on societal expectations, inaccurate simulations, or other cognitive processes that would not reflect real reactions to actual situations (e.g., Harris, 2000).

Second, evolved tendencies are likely to be sensitive to situational factors. Emotional responses to mate infidelity may differ depending on the life stage and reproductive strategies of the individual. Undergraduate students, for example, are typically actively seeking romantic partners, have not necessarily committed to a single mate, and are unlikely to be raising children. Issues of certainty of paternity and resource accrual may not be pressing (consciously or unconsciously) at this stage of their lives. These and other life stage variables may influence responses to infidelity. Therefore, an additional aim of the research reported here will be to extend this research paradigm to a noncollege sample.

#### STUDY 1

The aim of Study 1 was to extend the JSIM research paradigm in two ways: First, we asked about feelings of anger and hurt in addition to upset or distressed and we asked about how much the participants would blame their partners for a sexual or emotional affair. We also asked how likely they thought they would be to leave their partners and how likely they thought their partners would be to leave them. And second, we wanted to compare undergraduate samples with a sample of nonstudent adults.

We did not know whether we would see the JSIM effect in all samples but we did expect that in all samples and for both genders, hurt feelings would be more connected to emotional infidelity than to sexual infidelity, whereas anger and blame would be more connected to sexual infidelity. We expected less variability in these connections than in the JSIM effect across samples.

**TABLE 2: Percentage of Participants Reporting That Emotional Betrayal Is Worse Than Sexual by Gender, Sample, and Type of Effect in Study 1**

	Men			Women			Sex Difference	
	%	$\chi^2$	p	%	$\chi^2$	p	$\chi^2$	p
Private university sample								
Upset	61.5	2.77	.096	90.6	63.38	< .0005	18.11	< .0005
Hurt	67.9	6.81	.009	89.8	62.08	< .0005	11.21	.001
Angry	20.4	18.13	< .0005	33.7	10.45	.001	2.78	.095
Blame	16.4	23.11	< .0005	29.3	16.98	< .0005	2.79	.095
Partner leave	89.1	31.72	< .0005	90.7	64.24	< .0005	0.16	.69
You leave	54.7	0.31	> .1	75.8	26.27	< .0005	7.55	.006
State university sample								
Upset	45.5	0.21	> .1	75.7	9.76	.002	7.05	.008
Hurt	70.2	7.04	.008	86.5	19.70	< .0005	3.33	.068
Angry	26.1	10.52	.001	40.5	1.32	> .1	1.95	> .1
Blame	21.7	14.70	< .0005	8.1	25.97	< .0005	2.88	.089
Partner leave	87.2	25.13	< .0005	89.2	26.27	< .0005	0.96	> .1
You leave	34.8	4.26	> .1	44.4	0.44	> .1	0.79	> .1
Nonstudent								
Upset	75.0	16.00	< .0005	85.5	31.23	< .0005	2.18	> .1
Hurt	70.8	11.21	.001	80.6	23.29	< .0005	1.68	> .1
Angry	38.1	3.57	.059	52.4	0.14	> .1	2.60	> .1
Blame	32.8	7.56	.006	37.7	3.69	.055	0.33	> .1
Partner leave	83.3	29.33	< .0005	82.3	25.81	< .0005	0.03	> .1
You leave	52.4	0.14	> .1	63.3	4.27	.039	1.50	> .1

NOTE: For  $\chi^2$   $df=1$ ;  $N=151$  for private university undergraduates, 82 for state university undergraduates, and 126 for nonstudents.

### Method

**Participants.** Forty-six male and 37 female undergraduates at a large state university participated for course credit, and 99 female and 53 male undergraduates enrolled in an abnormal psychology class at an elite, private university volunteered to take part in this study. The average age of the state sample was 18.99 (range = 18 to 42). Average age of the private university was 19.87 (range = 18 to 32). In terms of ethnicity, 76.5% of the state sample identified themselves as Caucasian, 3.7% reported being Asian, 6.2% reported themselves Hispanic, and 11.1% said they were African American. In the private sample, 62.3% identified themselves as Caucasian, 19.5% as Asian, 4.5% as Hispanic, and 3.9% as African American. Sixty-three female and 66 male volunteers recruited from an Amtrak station also took part in the study. Their average age was 40.08, with a range from 19 to 74. Of these nonstudent, adult participants, 69.8% reported being Caucasian, 5.4% Asian, 17.1% African American, and 3.1% Hispanic.

**Materials.** Participants were given a questionnaire. The instructions and first question were exactly those used by Buss (Buss et al., 1992):

Please think of a serious or committed relationship that you have had in the past, that you currently have, or that you would like to have. Imagine that you discover that

the person with whom you've been seriously involved became interested in someone else. What would distress or upset you more? (Please circle only one option for each question.)

- A. Imagining your partner falling in love and forming a deep emotional attachment to that person
- B. Imagining your partner having sexual intercourse with that person.

The next two questions were identical except that the words "make you more angry" or "make you more hurt" were substituted for "distress or upset you more." We then asked, "What would be more likely to cause your partner to *leave you*?" and "What would be more likely to cause you to *leave your partner*?"

We collected demographic information and, finally, asked participants whether they had ever been in a serious relationship (yes or no).

### Results

Table 2 presents the percentage of participants in each sample of each gender who reported that an emotional involvement by their partner was worse than a sexual one. It also reports the  $\chi^2$  measuring the association between sex versus emotion and the dependent variables. Finally, the table lists the  $\chi^2$  for the gender difference.



*Hurt, anger, and blame.* We hypothesized that participants would report greater feelings of being hurt by emotional than by sexual betrayal. As Table 2 indicates, there are six tests of this hypothesis, and they are all confirmatory and significant. We also hypothesized that anger, on the other hand, would be more associated with sexual transgression than with emotional betrayal. Four of the samples confirmed this association significantly; the data from the state university women were in the right direction but were not significant and there was a slight, nonsignificant reversal among the adult women. We hypothesized that greater blame would accrue to partners who betrayed sexually rather than emotionally, and this was confirmed in all six cases, significantly in five of them and marginally in nonstudent women ( $p = .055$ ).

*Direct replication of the JSIM effect.* We turn to the results for the emotion term “upset”; this constitutes an attempt at direct replication of the JSIM effect. First, with regard to the state university undergraduate sample: We found exactly what others have found in undergraduate samples. A substantial majority of women were more upset about emotional than sexual infidelity, but a small majority of men were more upset by sexual infidelity (see Harris, 2000, 2003, for reviews). However, in the private university sample, we did not quite find this. Rather, we found that a majority of men and women were more upset by emotional than sexual infidelity, although, to be sure, the proportion of women more upset by emotion was significantly greater than the proportion of men. As Harris (2000) points out, this pattern of results also has been seen previously. (The two samples were not significantly different in the gender effect, Tarone’s  $\chi^2 = .62, df = 1, p > .1$ .) So, in this sense, we replicated the JSIM effect in our undergraduate samples. But in our nonstudent adults, the gender effect was not significant; rather, a strong majority of both genders was more upset by emotional than by sexual infidelity. Thus, we did not replicate the JSIM effect in this sample.

*Differences between samples.* Table 3 provides the  $\chi^2$  measures of association between sample and dependent variable. One might think of this as a measure of the variability from sample to sample in these measures. As we expected, the chi-square for upset is substantially bigger than for hurt and angry, meaning that, again as we expected, there is more variability from one sample to another in the upset measure than in the concrete emotions that are thought to comprise jealousy.

*Evidence that one’s partner is about to leave.* Strong majorities of both genders and in all three samples picked the emotion case as the one indicating their partner was about to leave them.

*Provocation to leave partner.* A majority of private school men and women reported that they were more likely to

**TABLE 3: Degree of Association and Selection of Emotional Versus Sexual Betrayal as Worse for Upset, Hurt, Angry, Blame, Likelihood Partner Will Leave, and Likelihood One Will Leave Partner in Study 1**

	$\chi^2$	p
Upset	15.15	.001
Hurt	1.99	> .1
Angry	8.91	.012
Blame	10.18	.006
Partner leave you	3.47	> .1
You leave partner	18.90	< .0005

NOTE: For  $\chi^2$   $df = 2$ ;  $N = 357$  to 366.

leave their partner because of an emotional betrayal than a sexual one, and this was especially true for the women. In the state university sample, participants picked the sexual liaison as the one likely to provoke them to leave, and this was especially true for the men, although the gender difference was far from significant. The nonstudent sample also picked the sexual case.

*Serious relationships.* All but two nonstudent men and one nonstudent woman reported having been in a serious relationship, so we were not able to look for effects of this variable in this sample. Among the undergraduates, 22 women and 20 men had not been in serious relationships. We reran the analyses presented above excluding these participants but the results were essentially unchanged.

*Age.* We performed a median split on age for the nonstudent sample (separately for men and women;  $Mdn$  for women = 37, for men = 40.5) and then carried out separate chi-square tests for those above and below the median on each of the dependent variables. None of the Tarone’s tests indicated significant differences in the contingencies across the age groups.

*Discussion*

Majorities of both men and women in all samples reported that they would be more hurt by an emotional than by a sexual straying, although among undergraduates, the majorities were bigger. Significant majorities of both men and women undergraduates reported greater anger about sexual than about emotional infidelity. Among the nonstudent sample, there was an almost significant trend for men to report more anger over sexual infidelity than emotional infidelity, although there was a nonsignificant reversal among women. Consistent with the anger result, majorities of both men and women in all samples blamed their partner more for the sexual than the emotional infidelity, and this tendency was significant in all samples except for the female, nonstudent sample, where it was a nonsignificant trend. If one were

looking for universals in our data, one would do better to look at the linkages between sexual infidelity, blame, and anger, and emotional infidelity and feeling hurt (on which there were no sex differences) than to look for the JSIM effect.

At the very least, our data suggest that anger, blame, and hurt feelings, which are surely part, at least, of jealousy, in terms of their provocation by sexual or emotional infidelity, show less variability across samples and genders than does reporting that one is “upset or distressed,” which is thought of as an index of jealousy.

With regard to our second research question, we closely replicated the JSIM effect in one university sample; we replicated the JSIM effect in a weaker form in the other university sample. In a sample of noncollege adults, we failed to replicate it. The fact that 61% of the men in our private school sample were more troubled by emotional than sexual infidelity is at the outer edge of what has been found in university samples (see Harris, 2000, for a review).

We found that in our noncollege adult sample, both men and women reported being more distressed by emotional infidelity, and in about equal numbers. It is worth comparing our result with the three other nonstudent samples that have looked for the JSIM effect. Bailey et al. (1994) solicited 75 heterosexual women and 65 heterosexual men from an “alternative press” newspaper. (They also recruited homosexual men and women but it makes sense to compare our unselected sample to their heterosexual sample.) Bailey et al. found a large effect of gender on sexual versus emotional infidelity; we did not. Buunk et al. (1996) reported one sample of 100 male and 100 female adult Germans; they were substantially younger than were our participants (their average age was 26.07). Buunk et al. found that about 85% of the women versus 72% of the men found the emotional infidelity more upsetting. This gender effect was significant but weaker than the effect in their other samples, students from the United States and students from the Netherlands. Finally, DeSteno and Salovey (1996) used a sample of 938 volunteers who were enrolled in a continuing education course connected to healthcare. Of the 938 volunteers, 858 were female, so DeSteno and Salovey randomly selected 80 women to match the 80 men. But obviously, there was a very strong gender skew in the population from which this sample was drawn. A (bare) majority of their women selected emotional infidelity as more distressing, as was true in our sample, and a similarly bare majority of their men selected sexual infidelity as more distressing.

Obviously, our sample is different from the three previous samples in many ways so it is difficult to see which of the differences mattered. Suffice it, perhaps, to say this: On the face of it, it would be hard to reconcile these data

with the view that the JSIM effect is a universal effect encoded for in the genome.

## STUDY 2

In Study 2, we kept the demographics of the sample the same as the third sample of Study 1—we went back to the train station—but we varied the method. We were interested in whether with this nonstudent adult sample we would be able to replicate hypothesized relations between hurt, anger, and blame with sexual versus emotional infidelity and whether we would be able to replicate the JSIM effect.

The usual method involves having participants think about a highly abstracted sketch; they are to think about their partner in either a sexual or emotionally intimate moment. Although these are certainly emotionally charged situations, there is no narrative component, not even a slight one. That is, there is no story of how the partner came to be in this situation, as there would be real life. In our second study, we provided participants with a bit of a narrative, a bit of a story about how the events came to take place. Narrative is a fundamental and ubiquitous mode of communication (Green, Strange, & Brock, 2002), and indeed, some researchers have made the strong claim that all thought is narrative (Schank & Abelson, 1995). A narrative presentation can increase participants’ engagement with and ability to imagine the situation (e.g., Green & Brock, 2000). Narratives aid mental simulation and individuals regularly experience and report emotional responses to narratives (Green & Brock, 2000; Oatley, 1999). Furthermore, if sex differences in jealousy are a basic evolved phenomenon, they should be robust across varied presentations of infidelity events.

To enhance realism further, we presented the scenarios on tape as well as on paper. Participants heard a tape-recorded voice of the opposite sex via earphones and a portable tape recorder; the participants were asked to imagine that the voice was that of their actual partner. They also were given a written version of the script they heard. The voice confessed an affair.

There were four conditions. The conditions varied in how active the “partner” had been in the affair. In the most active condition, the “partner” had put an ad in the paper looking for a new partner; in the most passive, the partner had been “hit on” (see the appendix for scripts). There were two versions of the tape in each condition. In one version, the “partner” confessed a sexual affair with the interloper; in the other version, it was an emotional event. Participants were asked to read and listen to both texts. They were then asked to compare the two and indicate which would upset them more, hurt them more, make them more angry, cause them to blame their partner more, and affect their relationship more. This

method retained the forced-choice aspect of the usual procedure but embedded the news of the illicit relationship in some bit of context. The question was, would we replicate the JSIM effect and, if so, how robust would the replication be over dependent variables and over conditions?

*Method*

*Participants.* Eighty women and 77 men contributed data to the study. The participants ranged in age from 17 to 80 ( $M = 34$ ). Of the participants, 71.1% said they were Caucasian, 2.6% Asian, 3.5% Hispanic, and 18.4% African American. The other 4% either did not respond or indicated “other.”

*Procedure.* Participants were approached by an undergraduate experimenter either in an Amtrak station or in a block-sized urban park in the commercial-residential district of Philadelphia. They were asked to participate in a brief psychological study. If they agreed, they were handed a tape recorder with earphones and asked to imagine that a romantic partner of theirs was on the tape. They were told that there were two speeches on the tape and that they should not do anything until they had listened to both. They also were handed a written text of the script. We gave them a booklet with instructions on the first page. Participants were told to

imagine you have been in a relationship with someone for a couple of years. You have both been monogamous and committed to one another. You are both physically and emotionally involved with each other. You are both very much in love and trust each other with everything. You can see a future with this person.

They were told not to turn the page until they had listened to both speeches. The second page of the booklet contained the five dependent variables and the third page contained the demographic questions. We had half of the participants listen to the sex tape first and then to the emotions one; the other half heard them in the reverse order.

The first dependent variable read, “Which would upset or distress you more? The tape in which your partner describes a physical relationship he had with someone else or the tape in which he describes falling in love with someone else? (Circle one).” This was followed by, “His having a physical relationship with her” and “His falling in love with her.” “She” and “her” substituted for “he” and “his” for male participants.<sup>3</sup> The next dependent variables asked which would make you more angry, which would make you feel more hurt, which would affect your relationship more, and which would make you feel your partner was more to blame? We asked the same demographic questions as in Study 1.

**TABLE 4: Percentage of Participants Reporting That an Emotional Affair Was Worse Than a Sexual One by Gender, Collapsing Across Order and Condition in Study 2 ( $\chi^2$  and  $p$  for Gender Difference)**

	<i>Upset</i>	<i>Hurt</i>	<i>Angry</i>	<i>Blame</i>	<i>Affect Relationship</i>
Men	66.2	67.1	33.8	23.4	66.2
$\chi^2$ (for relationship of emotion to sex or emotion)	8.12	8.90	8.12	21.83	8.12
$p$	.004	.003	.004	< .0005	.004
Women	67.5	73.8	30.0	11.4	68.4
$\chi^2$ (for relationship of emotion to sex or emotion)	9.80	18.05	12.80	47.10	10.65
$p$	.002	< .0005	< .0005	< .0005	< .0005
$\chi^2$ (for sex difference)	0.03	0.83	0.26	3.91	.08
$p$	.87	.36	.61	.048	.78

NOTE:  $N/\text{cell} = 156$ .

*Results*

We first ran logit analyses to look for condition effects on the five dependent variables. Logit parameter estimates indicated that the only condition effect was for condition 1 (placing a personal ad) on the “upset” variable. In light of the number of effects tested for, we decided to collapse across condition in further analyses.<sup>4</sup>

*Hurt, anger, and blame.* Table 4 shows that the emotional infidelity caused greater hurt feelings for both genders and that the sexual infidelity caused greater anger and blame in both genders. The association between sexual infidelity and blame was stronger for women than men, although significant in both genders.

*JSIM effect.* Table 4 also presents the results for the percentage of men and women claiming that the emotion tape was more upsetting than the sex tape. The table indicates that there was no gender difference on this variable but that significant majorities of both genders found the emotion case more upsetting, as was true in Study 1.

*Previous experience.* Of the 156 participants, 147 had been in serious relationships. Removing the 9 participants who had not did not affect the results.

*Age.* As in Study 1, we performed separate median splits on the male and female samples ( $Mdn = 27$  for men, 31 for women) and then carried out separate chi-square analyses between gender and emotion versus sex on each of the dependent variables. Similar to Study 1, none of the Tarone statistics indicated that the chi-squares were different between the groups.

### Discussion

Using a slightly different, perhaps more realistic, method (narrative scenarios), we once again found strong support for the claim that at least two of the emotions that are thought to constitute jealousy, that is, anger and hurt feelings, were associated in the way we hypothesized with sexual versus emotional infidelity in both genders.

We once again failed to find the JSIM gender difference in jealous emotions using a nonstudent sample. Instead, we replicated our finding from Study 1 that both genders found the emotional infidelity more upsetting. Our failure to find the JSIM effect in Study 1 might have been attributable to the small sample size—although it was of roughly the same size as previous samples of nonstudents—but, obviously, were we to combine our nonstudent sample from Study 1 with the current sample, we would double the sample and still not find a JSIM effect while certainly still finding the association of jealousy's constituents with the predicted sort of infidelity.

### STUDY 3

Study 3 was designed to probe the hypothesized relations among jealousy's components and types of infidelity further again using a nonstudent sample and, also, to look again for the JSIM effect in a nonstudent sample. In this study, however, we used 7-point Likert-type scales. Buss et al. (1999) caution against using Likert-type scales on the grounds that there are ceiling effects. But Pietrzak et al. (2002) have provided data showing that Likert-type scales produce similar results to the traditional dichotomous choice dependent variable. On the other hand, DeSteno et al. (2002) have argued that the JSIM effect with the dichotomous measures is artifactual. We decided to use a Likert-type scale but to explore the issue of contrast inherent in the dichotomous format. That is, we decided to give our participants both the sexual and emotional scenarios. Half of the participants got the sexual scenario first, and half got the emotional scenario first. Also, we asked half of them to rate what their emotional state would be right after they heard each scenario, whereas the other half of the participants were asked to rate only after they had heard both scenarios. All participants received the no-previous-relationship coworker tape from the previous study; as before, participants both heard and read the scenario. We once again drew our participants from an urban park and an Amtrak station.

### Method

*Participants.* Eighty men and 102 women took part in this study. The mean age for the women was 31.14 ( $SD = 13.54$ ); the mean age for the men was 30.23 ( $SD = 10.49$ ).

Of these, 70.3% reported being Caucasian, 8.2% Asian, 3.8% Hispanic, and 12.1% African American. The other 5.6% either did not respond or indicated "other."

*Materials.* Participants received a booklet as in Study 2. They were also given a tape with two speeches on it: the sexual affair and the emotional affair with a coworker with whom there had been no previous relationship from Study 2. The face sheet of the booklet asked for demographic information first: age, ethnicity, gender, and marital status. Then it asked, "Please rate how blameworthy the individual on the recording was for his or her actions." This was followed by a 7-point scale ranging from *not at all blameworthy* (1) to *somewhat blameworthy* (4) to *very blameworthy* (7). The next three questions substituted upset, angry, and hurt for blameworthy. Next we asked, "If your partner told you this, how likely do you think it would be that *your partner would leave you* for this other person?" It was associated with a 7-point scale ranging from *not at all likely* (1) to *somewhat likely* (4) to *very likely* (7). Then we asked, "If your partner told you this, how likely do you think it would be that *you would leave your partner* because of what your partner told you?" which was followed by the same scale as was the previous question. We also asked them directly to rate how jealous they would be on the same 7-point scale used for angry and hurt.

After the participants rated the first conversation, they were told to turn the sheet over and rate the second or to wait until they heard the second conversation before turning the sheet over (depending on condition). The second page repeated the dependent variables and then asked if they had been in a serious relationship and, if so, for how long.

### Results

Table 5 presents the mean ratings for the various emotions for the first conversation the participants heard broken down by the gender of the participants, whether they heard about a sexual or emotional affair, and whether they rated right after hearing the first tape (each) or after hearing both tapes (both). The "each" cells of this table constitute a between-participant design in which the participants did their ratings before hearing the second scenario. We carried out 2 (gender)  $\times$  2 (sex vs. emotion) ANOVAs for these participants only on each of the seven dependent variables. The results of these analyses are presented in Table 6; the cell means are in the "each" columns on Table 5.

*Emotion and type of infidelity.* All of the sex versus emotion contrasts were significant except for the question about whether the participant would leave his or her partner (which was a nonsignificant trend) and the question about whether one's partner would leave one. In



**TABLE 5: Means (Standard Deviations) of Ratings by Gender of Participants, Whether They Are Rating a Sexual or Emotional Affair, and Whether They Rated After Each or Both Tapes in Study 3**

	Men				Women			
	Sex		Emotion		Sex		Emotion	
	Each	Both	Each	Both	Each	Both	Each	Both
Upset	5.75 (1.12)	5.85 (1.54)	4.85 (2.06)	5.21 (1.61)	6.70 (0.47)	6.45 (0.83)	6.05 (1.28)	6.30 (0.92)
Hurt	6.00 (1.21)	5.98 (1.49)	5.05 (2.06)	5.24 (1.99)	6.60 (0.68)	6.65 (0.59)	6.10 (1.21)	6.50 (1.00)
Angry	5.45 (1.54)	5.39 (1.44)	3.45 (2.11)	4.10 (1.82)	6.30 (0.87)	5.95 (1.32)	4.75 (1.92)	4.70 (1.78)
Blame	5.30 (1.72)	5.38 (1.60)	4.30 (2.00)	4.76 (1.88)	6.05 (1.15)	6.00 (1.30)	4.85 (2.01)	4.85 (1.42)
You leave	5.00 (1.65)	4.70 (1.70)	4.30 (2.45)	3.97 (1.86)	4.85 (2.01)	4.80 (1.47)	3.90 (2.43)	5.25 (1.52)
Partner leaves	3.10 (1.55)	3.48 (1.42)	4.75 (2.20)	4.00 (1.69)	2.95 (1.79)	2.60 (1.10)	3.95 (1.79)	4.25 (1.48)
Jealous	4.90 (1.71)	4.48 (1.82)	4.05 (2.09)	4.24 (1.90)	4.75 (1.77)	5.45 (1.61)	5.10 (1.97)	5.20 (1.85)

NOTE:  $N/\text{cell} = 20$ , except for the male, both, emotion cell, which had 29, and the male, both, sex cell, which had 33.

**TABLE 6:  $F$ s,  $d$ fs, and  $p$ s for the First Conversations of Participants Who Rated the First Confession Before Hearing the Second, by Dependent Variable in Study 3**

	Upset	Hurt	Angry	Blame	Partner Leave	You Leave	Jealous
$F$ gender	23.11	7.11	8.21	2.75	1.25	0.32	1.13
$p$	.001	.009	.005	.10	.27	.57	.29
$F$ sex vs. emotion	6.55	5.49	22.39	7.86	9.76	2.92	0.35
$p$	.012	.022	< .0005	.006	.003	.09	.56
$F$ interaction	0.17	0.53	0.36	.07	0.59	0.07	2.01
$p$	.68	.47	.55	.80	.45	.80	.16

NOTE:  $d$ fs = 1, 76.

these data, the emotional impact of the sexual infidelity was rated as greater than the import of the emotional infidelity on all of the emotion terms (including hurt), contrary to our hypotheses and our findings from Studies 1 and 2 but consistent with the results of DeSteno et al. (2002). Consistent with our previous studies, the participants thought that a partner emotionally involved with another was more likely to leave than was a partner in a purely sexual affair. Of interest, the term “jealous” was not associated more strongly with either sex or emotion.

*JSIM effect.* None of the Gender  $\times$  Emotion versus Sex interactions was a significant or a nonsignificant trend. Thus, there was no evidence of a JSIM effect in these data.

*Ratings of the first conversation after reading the second.* Participants in the *both* condition rated the two confessions only after hearing both. To look for the effect of hearing both, we carried out a 2 (gender)  $\times$  2 (sex vs. emotion)  $\times$  2 (each vs. both) ANOVA on each of the dependent variables. None of the (28)  $F$ s for main effects of when the conversation was rated or interactions of this variable reached significance.

*Difference scores.* To look at these data from a within-participant perspective, we calculated the difference on

each variable between their rating of the sex case and the emotion case (sex – emotion). We subjected these data to a one-sample  $t$  test comparing the means to zero as well as to independent sample  $t$  tests comparing men to women.

We replicated our finding that anger and blame are associated with sexual rather than emotional infidelity. On the anger and blame dependent variables, both men and women gave higher ratings in the sex condition; the difference between the two conditions was significantly greater for women than for men for the blame dependent variable. We failed to replicate our findings with regard to the hurt dependent variable; there were no sex versus emotion differences in rated “hurt.” Finally, men reported equal jealousy in the two conditions but women were made slightly more jealous in the emotion condition. The difference in jealousy for women was significant; the difference between men and women was a nonsignificant trend.

*JSIM effect.* For the upset variables, the men and women were equally troubled by the sexual and emotional confessions, and the two genders did not differ in this way. So, we once again failed to replicate the JSIM effect in a nonstudent sample but we also did not observe the sex is worse than emotion effect found in the first conversation and in DeSteno et al. (2002).<sup>5</sup>

**TABLE 7: Means (Standard Deviations) of Sex-Emotion Difference Scores by Gender and *t* Test of Gender Difference in Study 3**

	Men	Women	<i>t</i> (180) Test	<i>p</i>
Upset	0.25 (0.28)	0.23 (1.28)	-0.05	.96
Hurt	0.22 (1.61)	0.04 (1.12)	-0.87	.39
Angry	0.96 (1.49)***	1.21 (1.53)***	1.12	.27
Blame	0.88 (2.19)***	1.49 (1.86)***	1.98	.05
Partner leaves	-1.14 (2.12)***	-1.46 (1.89)***	-1.05	.29
You leave	0.56 (1.99)**	0.24 (2.07)	-1.06	.29
Jealous	0.02 (1.58)	-0.45 (1.68)*	-1.93	.055

NOTE: *N*/cell = 79 for women, 100 for men.\*\**p* < .01. \*\*\**p* < .0005, one-sample *t* test vs. 0.

As Table 7 shows, participants of both genders, as we have found in all previous studies, were more likely to believe that their partners were going to leave them in the emotion than in the sexual condition. Participants of both genders said they were more likely to leave their partners, however, because of a sexual than an emotional affair. The sex-emotion difference reached significance for men but not for women, although the difference between men and women was not significant.

*Upset and hurt in the second confession.* The lack of a difference between the sex and emotion ratings on the upset and hurt variables in this within-participant analysis is quite striking, especially in light of the fact that there were differences, at least, in the *each* condition in ratings of the first conversation. One would expect the difference scores to be more sensitive than the between-participant analysis of the first conversation, which did reveal a sex versus emotion difference. The answer seems to lie in the ratings of the second confession. Table 8 displays the means for the second confession broken down by gender and sex versus emotion. We subjected these data to 2 (gender) × 2 (sex vs. emotion) ANOVAs.

For the upset variable, there was a significant effect for gender,  $F(1, 178) = 23.26$ ,  $M_{\text{male}} = 6.42$ ,  $SD = 0.90$ ;  $M_{\text{female}} = 5.39$ ,  $SD = 1.75$ , but there was no effect of sex versus emotion, or interaction of the two,  $F_s < 0.60$ ,  $p > .1$ . Similarly, for the hurt dependent variable, there was a main effect for gender,  $F(1, 178) = 31.97$ ,  $M_{\text{male}} = 5.45$ ,  $SD = 1.61$ ,  $M_{\text{female}} = 6.57$ ,  $SD = 0.88$ , but there was no effect of sex versus emotion, or interaction of the two,  $F_s < 2.61$ ,  $p > .1$ . Thus, for these dependent variables, the emotion versus sex distinction had no effect on the ratings of the second confession, although it did have an effect on the first confession.

*Serious relationships.* Only 12 men and 8 women denied ever having been involved in a serious relationship so we were not able to analyze for the effects of this variable.

**TABLE 8: Means and Standard Deviations for Ratings After Second Confession Broken Down by Sex Versus Emotion and Gender in Study 3**

	Men		Women	
	Sex	Emotion	Sex	Emotion
Upset	5.25 (1.81)	5.53 (1.69)	6.45 (0.93)	6.40 (0.87)
Hurt	5.24 (1.75)	5.64 (1.47)	6.45 (1.01)	6.70 (0.72)
Anger	4.92 (1.95)	4.57 (1.82)	6.35 (0.95)	5.33 (1.49)
Blame	5.69 (1.76)	4.63 (1.77)	6.45 (1.13)	4.65 (1.55)
Partner leave	3.15 (1.66)	4.43 (1.65)	3.08 (1.85)	4.72 (1.61)
You leave	4.78 (1.99)	4.36 (1.76)	5.23 (1.87)	5.00 (1.94)
Jealous	4.06 (1.88)	4.51 (1.79)	4.97 (1.85)	5.82 (1.63)

NOTE: *N*/cell = 49 for men, 40 for women.

*Age.* For each of the dependent variables, we regressed sex versus emotion, gender, and age in the first confession. Age did not produce a significant  $\beta$  for any of the dependent variables.

### Discussion

We looked at difference scores between the sexual and emotional confession for men and women. Contrary to our previous findings, we found no differences on the hurt feelings scale. We note that we did not find a reversal but we did fail to find the usual effect. We cannot tell from our data whether the inconsistency between this result and our other two studies is a result of using a slightly different method or simply a statistical fluctuation.

Consistent with our previous findings, we did find differences on the anger and blame scales: Both men and women were made angrier by the sexual than by the emotional confession; both genders blamed the sexual confessor more than the emotional confessor, and this was especially true for the women. We once again found that Buss et al. (1992) are correct in believing that people (of both genders) take an emotional involvement on the part of their partner to be a more ominous sign of their partners' leaving than is a purely sexual involvement.

Finally, ratings of the term "jealousy" marginally produced the Gender × Type of Confession interaction evolutionary theory would predict. But given the marginal nature of this result, the size of the sample, and the number of tests run, this finding should be thought of as nothing more than a suggestion for future research.

*JSIM effect.* In a between-participant analysis of ratings of the first confession (before hearing the second), contrary to the JSIM effect, both genders were more upset by, hurt by, and angry about a sexual than an emotional affair. Buss et al. (1999) have cautioned against using

Likert-type scales because they are prone to ceiling effects in this context. And indeed, the ratings on these variables are near the scale ceiling, seven. But, at least for the women, the finding here is a significant result in the reverse direction from the one the JSIM model would predict; it is hard to see how that could be a ceiling effect.

Buss has argued that his forced-choice measure is more sensitive than Likert-type scales because, among other things, it forces participants to consider both a sexual and emotional affair before deciding. The idea is that participants would be so upset by whichever scenario they imagined that they would give that scenario a very high rating and then have no way to go up for the second scenario. To look for such an effect, we compared ratings of the first confession by those who heard both confessions to those who heard only one; none of the comparisons proved significant.

#### GENERAL DISCUSSION

We started with the following set of concerns: (a) We believed that because the JSIM effect relies on the terms “upset and distressed,” which we thought were more vague than angry and hurt, the JSIM effect would be less robust across samples and methods than would the association between anger and sexual infidelity and hurt feelings and emotional infidelity. The data were consistent with this belief. (b) We hypothesized that two constituents of jealousy, anger and hurt feelings, would be provoked by sexual and emotional infidelity, respectively, for both genders; we did not expect a sex difference in these connections. There were no sex differences in these components of jealousy. (c) The JSIM effect, although replicated many times, has been replicated only three times in a nonstudent sample. We set out to see if we could replicate the effect first in students and then in nonstudent adults. We could not. We fully replicated in one student sample, partially replicated in another, and could not replicate in an adult, nonstudent sample. (d) The version of evolutionary thinking that Buss presents suggests that women should fear resource withdrawal more from men who are emotionally involved with another woman than from men who are sexually involved with another woman. And the “double shot” hypothesis suggests that women more than men would be concerned about the stability of their relationship if their partner were involved emotionally rather than sexually.<sup>6</sup> These claims were supported.

#### *Replicable but Not Robust*

We found then that the JSIM effect is replicable but it is not robust. It is most easily replicated in university samples using the vague terms “upset” and “distressed.” The fact that sexual affairs provoke blame and anger while

emotional affairs, in contrast, provoke hurt feelings was much more robust across samples, genders, and measures.

Why, then, did the relationship between sex, emotion, and the JSIM dependent variable fluctuate so much from sample to sample? First, we point out again that the fluctuation was especially pronounced for “distressed” and “upset”; it was less pronounced for anger and hurt, which surely have as much (at least) claim to be markers of jealousy. In light of our findings, and of those of DeSteno et al. (2002), we strongly urge researchers to use a broader set of reactions than the vague terms “distressed” and “upset” when probing for jealousy.<sup>7</sup> But, still, why did upset and distressed vary so from sample to sample?

Here we can only speculate. First, why were our undergraduate samples different from our adult, nonstudent samples in terms of the JSIM effect? Harris (2000) calls attention to experience with relationships as an important variable. Unfortunately, in our samples there were too few adult, nonstudents who denied such experience to allow for such an analysis.<sup>8</sup> We saw no effect of age in the nonstudent sample, however, and one might expect age to be correlated with experience.

Our speculation, and it is only a speculation, is that when answering how “upset and distressed” one would be, students were sensitive to their impressions of what the locally correct thing to say is. Thus, students, more than nonstudent adults, may be responding with their impressions of the social norms. We would expect less of this effect with the less vague questions of anger and hurt feelings.

The two university samples also differed from one another. Why? We designed our studies to look for, and frankly expected to find, the JSIM effect robustly. So we did not select our samples to isolate reasons the effect shows up in some samples but not others. Thus, the two university samples differ in a variety of ways that might matter: the ethnic composition of the two samples differed, we believe that the median incomes of the students' families were quite different, we suspect that the samples differed substantially in the percentage of each sample that has professional school or graduate school aspirations, the two samples may have differed in how far away from parenthood they see themselves, and the two schools were from different parts of the country and may have had different proportions of students from “culture of honor” states (Nisbett & Cohen, 1996; Vandello & Cohen, 2003). Finally, the schools may have had different norms about how sensitive men are supposed to be. As we indicated, we did not expect to find so much variation and our research was not designed to track down the cause(s) of the variation. Having found that the JSIM

effect is not all that robust, we are not certain it is important to understand why it varies in the particular way it varies. In any event, it was not the aim of our research to explain that variation.

#### *Single Module Versus Collection of Modules*

The JSIM effect on questionnaires is, we believe, the best evidence in favor of a sexually dimorphic triggering system for special jealousy module. We believe our results at the very least weigh against such a view. Our results do so by pointing to the narrowness of the JSIM effect in terms of samples and methods compared to what one might expect from a connection theorized to be in mammalian genomes. But we do not imagine that our data will lead those in favor of an evolutionary view of jealousy to abandon their attachment to evolution as a source of testable hypotheses; we understand that commitments to meta-theory are typically based on broader considerations than any particular set of data. Still, we see our data as supporting Harris's (2003) view that jealousy is an emotion made up of other states, for example, anger, hurt feelings, and other emotions (see DeSteno et al., 2002; Hupka, 1984; Parrott & Smith, 1993; White & Mullen, 1989). We find it highly plausible that these states evolved and were pressed into mate-guarding service, thus constituting the emotion of jealousy. We have no evidence, and know of no evidence, to suggest that these lower-level states are sexually dimorphic and, therefore, we would not expect jealousy to be sexually dimorphic.

For those, however, who do not see our data as seriously infirming the modular, evolutionary view, we strongly urge a focus on life history. That is, if one believes that evolution produced a jealousy module that is sexually dimorphic in the way the JSIM model predicts, and if one finds that the predicted effect is present in some samples but not in others, then one ought to theorize about why that should be so. And one ought to hypothesize in terms of variables thought to be important to reproductive success. Age is the obvious (but surely not the only) candidate for such a variable. If jealousy evolved to "mate guard," then the closer one is to maximum reproductive age (about 25 for women, perhaps older for men), the more jealous one should be. We think our data show that it is time to move on to such more subtle theorizing.

#### APPENDIX Infidelity Scenarios

*Introduction to all scenarios:* There is something that I have been meaning to tell you. I think it is important that I be honest with you, we have been together for a couple of years now, and I hope that you can understand what I have to tell you.

A week ago, I put a personal ad in one of the newspapers. I wrote that I was looking for someone interested in an intimate relationship. I wrote back to someone who seemed like my type and we met at a bar downtown. We got along well enough but the relationship was purely physical.

As you know, last week I went on a business trip to Chicago. While there I spent a lot of time with one of my coworkers that I have always been very close with. We have always had a special emotional connection. Previously there had never been anything sexual between us, but one evening our relationship became physical.

As you know, last week I went on a business trip to Chicago. While there I began spending time with one of my coworkers with whom I had never really spoken to before. One evening the two of us became sexually involved. We got along well enough but the relationship was purely physical.

As you know, last week I went to a bar downtown for a friend's birthday party. While there, I met someone who happened to be one of my coworkers who I had never really spoken to before. The entire evening she told me how she had been hoping to meet up with me because she was very attracted to me. In fact, she had been coming to that bar every week in hopes of running into me. She kept making advances on me and finally I gave in. We got along well enough but the relationship was purely physical.

For the emotion conditions, the last sentence in each scenario was replaced with, "It was purely an emotional connection, nothing physical, but I fell in love with them."

All scenarios ended, "I've talked with them and we've both decided it would be better to end our relationship. I care about you very much and I hope that you can forgive me so that we can work through this."

#### NOTES

1. Other kinds of evidence also have been advanced. Rates of homicide provoked by sexual jealousy, physiological responses to stories of infidelity, and reports by people who have actually been cheated on also have been advanced (see Harris, 2003, for a review). But the questionnaire results are the only experimental results and are the ones that have been most consistently supportive of the Buss position.

2. Anger is often thought of as related to blame, but not always. Notably, those scholars involved in the Frustration-Aggression hypothesis (Dollard, Miller, Doob, Mowrer, & Sears, 1939) did not see "blame" as a central concept, preferring the morally neutral "frustration." This is why we test to determine whether participants blame their partner more for sexual than emotional transgression.

3. This assumes, of course, that all of the participants were heterosexual, and likely some of them were not. Our failure to provide a tape appropriate to the gender of the gay and lesbian participants may have added noise to the data but we decided that this cost was not worth the intrusiveness of asking for sexual orientation.

4. We also looked for order effects. There were no significant order effects, all  $\chi^2(1) < 1.5$ , all  $ps > .1$ .

5. We also looked for the *jealousy as a specific innate module* (JSIM) effect using an ANCOVA. From the JSIM point of view, one might expect a significant effect on the upset variable from the sexual infidel-



ity, holding upset to the emotional infidelity constant. And for women, one might expect the reverse. We found instead that women were more upset about the emotional infidelity than were men, holding their degree of upset about the sexual infidelity constant,  $F(1, 179) = 5.07$ ,  $p = .026$ , adjusted  $M_{\text{male}} = 5.53$ , adjusted  $M_{\text{female}} = 5.99$ , as JSIM predicts, but they were also more upset than men about sexual infidelity holding their degree of upset to the emotional infidelity constant,  $F(1, 179) = 8.72$ ,  $p = .004$ , adjusted  $M_{\text{male}} = 5.73$ , adjusted  $M_{\text{female}} = 6.27$ , contra the JSIM prediction.

6. The idea here is that women believe, rightly or wrongly, that men have sexual affairs without emotional attachments but do not have emotional affairs without sexual attachments. Thus, women infer emotional involvement from sexual. The assumptions and inferences are simply reversed for men, who infer emotional connections from sexual ones but do not infer sexual connections from emotional ones. Thus, the argument has been made, women who hear that their male mates have had an emotional affair and men who hear that their female mates have had a sexual one suffer a "double shot" because they infer the other sort of affair along with the one they have heard about. (See DeSteno & Salovey, 1996; Harris & Christenfeld, 1996, for discussions and supportive data.)

7. Alternatively, evolutionary theorists need to explain why "upset" and "distressed" are the gold standard for measuring jealousy, whereas other terms—angry and hurt, for example—are inferior.

8. We considered blocking on this variable but that would have involved asking people whether they had ever been in a serious relationship before admitting them to the study; we thought this was too embarrassing for all concerned. The other solution is to take all comers but to have truly large samples.

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