

Gender and jealousy: Stories of infidelity

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In three studies (total $N = 337$) we tested an evolutionary prediction using a scenario method in which participants read stories about their partners' infidelity and responded with their predicted emotional reaction on Likert scales. In Study 1, participants read that their partners went to a brothel. Contrary to evolutionary expectations, females reported being more hurt and angry than did males. Study 2 described a sexual or emotional encounter. Again, contrary to the crossover interaction predicted by evolutionists, both genders were upset more by the sexual than the emotional fling. Study 3 was about the end of an affair with a married person. As evolutionary theory might expect, males were less upset when their partners returned to their husbands than were females when their partners returned to their wives, but these main effects did not interact with the use of birth control and the opportunity to profit from cuckoldry.

Perhaps the most prominent finding of evolutionary psychology so far has to do with sex differences in jealousy. Buss (Buss, 2000; Buss, Larsen, Westen, & Semmelroth, 1992) has argued that due to two profound asymmetries between males and females in their reproductive roles: (1) greater female investment in offspring (Trivers, 1972); and (2) uncertainty of paternity but certainty of maternity, men and women should differ to some degree in what makes them most jealous. If a male's steady partner has sex with another man, the first male faces the risks of cuckoldry and raising another man's children. Genes that lead a man to avoid these risks would, it would appear, have reproductive advantages. Thus, males might well be endowed with genes that cause them to react strongly to cues that their partners are sexually unfaithful. Because maternity is certain, sexual infidelity on the part of a female's mate is not a threat to her

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ability to recognise and care for her young. But it is certainly not in the female's or her offspring's reproductive interest for a male to withdraw material support from her or her offspring. Thus, females face the threat, not of cuckoldry, but of abandonment.

Buss and his collaborators have argued that signs of emotional engagement with another woman suggest that the male is about to withdraw resources and, hence, trigger jealousy. Thus they have argued that cues suggesting that a female is having intercourse with another male are more upsetting to males than are cues suggesting that she is emotionally engaged with another male, but that the reverse is true for females: Females find a male's emotional engagement with another female more upsetting than they find his sexual involvement with another female. For Buss, and evolutionary psychology more generally, these gender differences in jealousy are, at least to some degree, independent of the man's or woman's personal, unique situation; they are part of our genetic inheritance.

This hypothesis has been suggested by Buss (and others) in several publications (Buss et al., 1992, 1999; Buunk, Angleitner, Oubiad, & Buss, 1996) in the form of a forced-choice question about whether emotional or sexual infidelity would be more upsetting or distressing. Typically, studies have found that a small number of males find sexual infidelity more distressing than emotional infidelity, while a large number of females find emotional infidelity more distressing than sexual infidelity. Most, but not all, of the research has used this forced-choice dependent variable. Buss and others have used other dependent variables including: physiological arousal in response to stories of emotional or sexual infidelity, homicide rates provoked by sexual jealousy, and reports of those who have actually been cheated (see Harris, 2003, for a review). However, the questionnaire results with forced-choice outcomes are those that have most consistently supported the evolutionary view (Harris, 2003). (We will hereafter refer to this finding as the "Buss effect".)

Results consistent with Buss' claim have been found repeatedly. The phenomenon has been replicated in at least 22 samples, but not in all studies (see Harris, 2002, 2003, for reviews and Sabini & Green, 2004, for a list of studies that have found the "Buss effect"). These samples are strikingly diverse in terms of culture; most participants came from the US, but there are also participants from China, Germany, Japan, Korea, the Netherlands, and Sweden. Thus the Buss effect appears to be well established. It is also widely reported in the secondary literature (see Pinker, 1997).

However, there are critics of the evolutionary view (see Harris, 2002; Harris & Christenfeld, 1996; DeSteno, Bartlett, Braverman, & Salovey, 2002; DeSteno & Salovey, 1996). There have been several lines of criticism, but one is that the research in this tradition has been carried out largely with a single dependent variable. Participants have been asked to:

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 select 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.

This forced-choice format is, perhaps, not the most obvious way to address Buss' hypothesis. Separate Likert scale ratings of the emotional and sexual infidelity scenarios seem more straightforward. Buss has offered a convincing argument for avoiding Likert scales—ceiling effects: “We continue to use the forced-choice methodology for an important methodological reason: Likert-type rating scales are subject to ceiling effects when they are used to rate the magnitude of upset one would experience in response to a partner's infidelity (Buss, 1989; Shackelford & Buss, 1996). Both sexes find both types of infidelity distressing as predicted (Buss et al., 1992; Shackelford & Buss, 1996)” (Buss et al., 1999, p. 130). So Buss dismisses results with Likert-type items on specific grounds. But whether ceiling effects are indeed an artifact in a particular dataset depends on the dataset; there are ways that the Buss evolutionary hypothesis could fail with a Likert-type dependent variable that could not plausibly be attributed to a ceiling effect.

Two studies, however, have found that using Likert-like items or dichotomous items is irrelevant in terms of the final outcome (Geary, Rumsey, Bow-Thomas, & Hoard, 1995; Pietrzak, Laird, Stevens, & Thompson, 2002). These studies found the Buss effect with both Likert and dichotomous items. However, DeSteno et al. (2002) have presented data suggesting that the Buss effect *is* an artifact of measurement technique. In addition, Sabini and Green (2004), with a sample of convenience of adult non-students, and Green and Sabini (2005), with a nationally representative sample, failed to find the Buss effect with continuous measures adapted from the forced-choice measures.

In this environment where each side of the debate accuses the other of being the victim of artifact, it would seem that convergence with multiple methods is the only sensible solution. One aim of this study, then, is to explore responses to this evolutionary question using Likert-type items. We will be sensitive, of course, to ceiling effects as an artifactual reason for the failure of the evolutionary hypothesis.

A more important motive for this study concerns how the distinction between sexual and emotional infidelity is usually operationalised. DeSteno and Salovey (1996) and Harris and Christenfeld (1996) argued that the Buss effect occurred because of the “double-shot” hypothesis. That is, they argued that both men and women find sexual and emotional infidelity together worse than either alone.

They further argued that when a man believes that his partner is sexually involved with another man, he assumes that she is also emotionally involved with him; men do this because, rightly or wrongly, they believe that women are not likely to be sexually involved with someone they are not emotionally involved with. Thus, the sexual scenario suggests to men both sexual and emotional infidelity. But, this argument continues, the same assumptions are not true for women—they do not assume, again rightly or wrongly, that male sexual infidelity implies emotional infidelity. So sexual infidelity on the part of males implies a single-shot, not double-shot. These arguments are reversed for emotional infidelity. On the double-shot hypothesis, the Buss effect occurs not because of sex differences in what makes us jealous, but because both sexes become jealous by the same pattern of behaviour. The difference lies in the inferences each gender draws from specific facts.

To counter the double-shot hypothesis Buss et al. (1999) undertook a series of studies in which (among other things) participants were told to imagine their partners having a sexual, but not emotional (or vice versa) affair, and they were asked to compare these kinds of affairs in terms of how upset they would become. Buss et al. (1999) found that even with these instructions the sex difference appeared, and they also found that controlling for participants' beliefs about the double-shot, there was still a detectable sex difference on the dichotomous measure. These results are, of course, reassuring about the double-shot, but again, convergence of multiple methods should certainly be sought in this domain. In the studies reported here, we used a different technique to establish the sexual versus emotional distinction—narratives. We gave participants narratives in which the circumstances made it clear whether sexual or emotional infidelity was in play and whether the double-shot hypothesis was plausible. We used narratives because there is reason to believe narratives are processed differently from unadorned description (Green & Brock, 2000; Green, Strange, & Brock, 2002) and also because narratives are usually closer to being ecologically valid than are simple descriptions.

Suppose that one were to find out that one's partner had had a sexual or emotional relationship with another person, but in circumstances in which the relationship could not blossom into anything more. How would evolutionary theory expect a person to react?

We believe that evolutionists would respond that because of our genetic history men will respond more strongly to information of sexual infidelity and women to information of emotional infidelity, even if, *in a particular circumstance*, these kinds of infidelity are *not* predictive of the future. We believe that it is the unique prediction of evolutionary theory that knowledge of these kinds of infidelity will produce jealousy differentially in males and females *regardless of their predictive value in particular circumstances*. In any event, it is certainly worth knowing how rigid are the connections between sexual and emotional infidelity, jealousy, and gender. Therefore, in this article we will also address

how males and females react to news of sexual or emotional infidelity in circumstances where they believe the affair to be over.

The literature on jealousy is founded on males having a genetic predisposition to act and feel in ways that avoid, as far as possible, cuckoldry. Because of the uncertainty of paternity for males, cuckoldry leads to the risk that a male will devote resources to another male's offspring (and, hence, another male's genes). It is this cost that is thought to tie male jealousy to sexual infidelity per se. But if so, then cuckolding is a reproductive boon but, so far as we know, there are no reports in the literature investigating how men feel who are in the cuckolding situation. From an evolutionary aspect they should be gratified, since their genes will profit from another man's resources. We shall attempt to address this aspect of cuckoldry.

Finally, Harris (2002) has found that relationship history is an important moderator of the responses participants give to scenarios of this sort. Those with experience of several relationships may respond differently from those without such a history. Thus, in our studies we asked participants to report their relationship histories in terms of having been in significant relationships and also in terms of whether they had cheated a partner, or been cheated by a partner.

In the three studies reported here, participants were given scenarios inspired by evolutionary thinking. In each study participants were asked questions related to the evolutionary hypothesis; which questions they were asked varied from study to study. In all cases Likert scales were employed.

STUDY 1

Study 1 was meant to portray an emotionless, sexual encounter. We therefore asked participants to imagine their partners going to a brothel while at a convention in Las Vegas. We recognised, of course, that this was an improbable scenario for the male participants; as a statistic, there are probably very few women who frequent brothels. But we believed that the brothel in the Las Vegas story made it clear that there was no emotional connection; we traded a certain sort of plausibility for enhanced motivational clarity.

Evolutionary psychologists have so far made crossover predictions pitting emotional versus sexual encounters for men and women. But it seemed to us that evolutionary thinking has clearly led to the conclusion that, because of uncertainty of paternity, males should be more upset by their partners visiting a brothel than should females.

Half of the males and females in our study were told that, in the narrative, their partners were careful to use birth control (including a condom); the other half were not told this. It was of interest to us to know whether this modern manipulation would affect our participants' emotional responses. It is a common assumption of evolutionary psychology (see Pinker, 1997) that "modern facts" like birth control do not penetrate our emotional reactions because the

environment into which we evolved did not have birth control. But this is an assumption worth testing. It might be that the mechanisms that assess whether a person should get jealous are abstract and flexible enough to incorporate such modern facts. Indeed, fear is also, presumably, an evolved emotion, and one can easily imagine a woman becoming quite fearful on remembering that she forgot to take her birth control pill that morning or on discovering that a condom has slipped off! And these are surely modern facts.

Method

Participants. A total of 55 males and 39 females took part in the experiment. They were all University of Pennsylvania undergraduate students participating in order to fulfil research credits.

Procedure. Participants received the scenarios as two pages in a booklet of take-home studies.

Materials. Participants received a single scenario. Half of the participants of each gender received the following text:

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 your partner in this relationship went to Las Vegas for a week to a convention, and imagine that she told you that she had a confession to make. While she was at the convention she was hanging out with some friends and they went to a (legal) brothel—one that serves both men and women. Your partner went on to say that she used a prostitute. *She also told you that they were very careful and used both a condom and the birth control pill.*

The other half of the participants received the same text except that the italicised material was omitted. (The material was *not* italicised for those who did receive it.) Male participants received a version in which his partner was “she”; females received a version with a partner who was “he”.¹

Aside from gender, we asked participants six questions. Question 1 read: If my partner did this, followed by a 5-point scale. It ran from: (1) *I would end our relationship*; to (3) *Our relationship would be weakened*; and to (5) *Our relationship would be unaffected*. Question 2 read: If my partner did this, followed by a 5-point scale, (1) *I would be not at all angry with my partner*; to (5) *I would be very angry with my partner*. Question 3 read: If my partner did this, followed

¹Of course it is possible that one or more of our subjects is not heterosexual. But with sample sizes of the type we are working with, it is not feasible to investigate the effects of gender orientation on jealousy. We thus had the choice of asking about orientation and then using it to exclude participants, or not asking about it and allowing the noise created by having people imagine that the incorrectly sexed partner was included in our data. Since we expected there to be reasonably few such participants, we decided to take the second option.

by: (1) *I would be not at all hurt*; to (5) *I would be very hurt*. Questions 4–6 asked for a *yes* or *no* answer to the questions: Have you ever been involved in a serious relationship? Have you been cheated on by your partner? Have you cheated on your partner?

Results

We subjected the responses to questions 1–3 to a 2×2 MANOVA with sex as one factor and the presence of absence of birth control as the other. The MANOVA revealed a main effect for gender, Wilkes $\lambda = .88$, $F(3, 88) = 3.92$, $p < .011$, and a trend for a birth control by gender interaction, Wilkes $\lambda = .93$, $F(3, 88) = 2.24$, $p < .09$. In the light of these results we carried out separate univariate analyses on the three questions.

Question 1 produced a significant gender effect. As Table 1 shows, males were *less* certain that the activities in Las Vegas would affect their relationships, $F(1, 90) = 4.84$, $p = .03$. Neither the birth control main effect nor its interaction with gender reached or approached significance ($F_s < 1.75$). Question 2 also produced a significant main effect of gender, also shown in Table 1, $F(1, 90) = 10.88$, $p = .001$. Males were less angry than were females. There were no other significant or near significant effects ($F_s < 1.2$). Finally, question 3 also produced a gender main effect, $F(1, 90) = 9.43$, $p = .003$, shown in Table 1. Male participants reported being less hurt than did female participants. There were no other significant effects ($F_s < 1.0$).

Of the participants, 64 of the 91 reported having been in a serious relationship, whether they had been involved or not was not related to gender, $\chi^2(1, n = 93) = 0.27$, $p > .1$. The number of participants who had not been involved in a serious relationship was too small to investigate interactions with the other independent variables. However, we examined the ANOVAs with only the participants who had been involved and the direction and significance of the effects were unaffected.²

TABLE 1
Means (and standard deviations) for relationship unaffected, angry,
and hurt dependent variables, broken down by gender: Study 1

	<i>Relationship unaffected</i>	<i>Angry</i>	<i>Hurt</i>
Males	2.00 (1.04)	4.35 (0.96)	4.42 (0.88)
Females	1.54 (0.68)	4.90 (0.31)	4.87 (0.41)

Note: $N/\text{cell} = 39$ females, 55 males. Gender differences: Relationship unaffected, $p = .03$; Angry, $p = .001$; Hurt, $p = .003$.

²Of the participants, 28% reported having been cheated and 21% reported having cheated. The cell sizes were, again, too small to investigate interactions.

Discussion

First, there was no real effect on participant reactions as a result of using birth control. More importantly, however, the evolutionary hypothesis that males would be more concerned by their partner's use of a prostitute than would females, failed. But it certainly was not a matter of a ceiling effect, since there was a significant result on all three measures in the *opposite direction*. Our female participants reported being more angry and hurt, and less convinced the event would not affect their relationships.

Of course, as we noted in the introduction, the male participants might have been less reactive because they viewed the possibility of their partners visiting a brothel as implausible. This was certainly a flaw in our scenario. On the other hand, we felt that the scenario satisfactorily embodied the notion of an emotionless sexual encounter in a simple, concrete, and easily understood context. We therefore believe that our approach has virtues as well as flaws relative to the standard somewhat abstract instructions used to create the "single-shot" case.

STUDY 2

Study 2 was closer in spirit and method to the usual Buss procedures and, in particular, to one of the scenarios used in Buss et al. (1999, dilemma 3, study 2). We asked our participants to imagine finding their partners' diaries and reading about a one-night encounter their partners had had on a foreign business trip. In two of the conditions they were to imagine that their partner had a one-night sexual stand with someone and that their partner and the interloper decided to break-off the affair and that the interloper shortly thereafter died in a car crash. In one of these conditions the partners were careful to use birth control; in the other, no mention of birth control was made. In the third condition, the participants were asked to imagine that their partners had had an intimate (emotionally) but nonsexual one-night encounter which they decided to break-off, and which was also shortly followed by a fatal car crash. (We again traded off a certain statistical implausibility for clarity and certainty.)

In this case, we anticipated the usual gender by emotion versus sex interaction in that females were expected to be made more jealous by the emotional affair, and men by the sexual affair.

Method

Participants. These were 71 male and 77 female Penn undergraduates who were fulfilling research requirements in their introductory psychology or social psychology courses.

Procedure. Participants received the scenarios as two pages in a booklet of take-home studies.

Materials. Some participants received the following scenario:

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. You accidentally come across your husband's diary. But unless you tell him, he will never know you read it. His diary says that on a recent business trip to another country he *had a one-night sexual fling with a stranger. The fling was very passionate sexually, but it was obvious to both that it was just sexual. They were very careful and used both a condom and the birth control pill.* They both decided never to see each other again. Before returning to the US, your husband learned that this woman had been killed in a car accident. Your husband says in the diary that no one else knows of this fling. At the end of the diary entry he writes that he has never cheated on you before and will never cheat again because it is only you that he loves.

Participants in the sexual, no birth control condition did not receive the sentences italicised above. Participants in the emotional condition read the following instead of the material italicised above: "... met a woman at a conference. They had dinner. They went back to his room and spent the whole night talking. They both felt deeply connected. They were tempted to have sex but didn't."

The scenario was followed by the same six questions as in Study 1.

Results

We subjected the responses to questions 1–3 to a 2 (gender) \times 3 (condition) MANOVA. The analysis revealed a significant effect for condition, Wilkes $\lambda = .67$, $F(3, 146) = 10.83$, $p < .0005$, and a significant interaction of gender with condition, Wilkes $\lambda = .92$, $F(6, 292) = 2.17$, $p < .011$. To interpret this result, we carried out univariate analyses on each of the questions. The cell means for the six cells and three questions are shown in Table 2.

On the question about affecting their relationship. There was a significant effect of condition, $F(2, 148) = 22.62$, $p < .0005$, but neither gender nor its interaction with gender was significant ($F_s < 1.85$, $p .1$). Post hoc Tukey tests revealed that the participants reported that the emotion condition would leave their relationships most unaffected, and that the other two conditions would not differ from one another.

On the anger question, there was a significant effect of condition, $F(2, 149) = 20.39$, $p < .0005$, and a marginal condition by gender interaction, $F(2, 149) = 3.04$, $p = .051$; the main effect of gender was not significant, $F(1, 149) = 0.11$, $p > .1$.

TABLE 2
Means (and standard deviations) for how unaffected the relationship would be, how angry, and how hurt the participants would be, broken down by gender:
Study 2

	<i>Sex (no BC)</i>	<i>Sex (BC)</i>	<i>Emotion</i>
How unaffected the relationship would be			
Males	2.78 (0.89)	2.72 (0.75)	3.84 (0.92)
Females	3.05 (0.62)	2.79 (0.95)	3.62 (0.77)
How angry			
Males	3.72 (0.70)	3.88 (0.94)	2.51 (0.98)
Females	3.63 (0.90)	3.94 (1.10)	3.12 (1.13)
How hurt			
Males	4.17 (0.47)	4.40 (0.61)	2.92 (1.02)
Females	4.37 (0.68)	4.35 (0.85)	3.68 (1.18)

Note: *N*/cell ranged from 18 to 40. BC, birth control.

Separate one-way ANOVAs carried out for each gender revealed that for the males, the condition effect was significant, $F(2, 74) = 22.01, p < .0005$, and that the two sex conditions differed from the emotion condition, Tukey $p < .05$, but not from each other. For females, the condition effect was also significant, $F(2, 75) = 4.30, p = .017$. Post hoc tests showed that the difference between the sex with birth control and the emotion condition reached significance (Tukey $p = .012$), but that the difference between the sex without birth control and emotion did not reach significance (Tukey $p > .1$). Nonetheless, for both sexes the emotion condition produced the least anger, and the sex conditions produced more anger whether with or without birth control.

As for being hurt, a similar pattern emerged. A 2 (gender) \times 3 (condition) ANOVA resulted in a significant main effect of condition, $F(2, 149) = 27.26, p < .0005$, qualified by a gender by condition interaction, $F(2, 149) = 4.72, p = .01$. The interaction, however, occurred because the effects of condition were greater on the males than the females; the shapes of the effects were the same for both sexes.

Separate one-way ANOVAs carried out for males and females show that there were significant effects of condition for both genders: for males, $F(2, 74) = 29.16, p < .0005$; for females, $F(2, 75) = 4.47, p = .015$. For males, as with anger, both sex conditions differed from the emotion condition (Tukey $p < .0005$), but the sex conditions did not differ from each other. For females, similarly, the two sex conditions differed from the emotion condition (Tukey $ps < .05$), but not from each other (Tukey $p > .1$).

A total of 111 of the participants reported having been in a serious relationship; 39 participants reported not having been in such a relationship. The

proportion of such participants was not related to condition, $\chi^2(2, N = 150) = 3.40, p > .1$, or to gender, $\chi^2(1, N = 150) = .40, p > .1$. Again, the number of students reporting not having been in a relationship was too small to investigate interactions of this variable with others. However, we reran the analyses using only those participants who had been in a relationship and the results were unchanged except that the marginal interaction of gender with condition on the anger variable was reduced to nonsignificance.

A total of 104 participants reported *not* having been cheated by a partner; 22 participants reported having been cheated. Clearly, the number of participants cheated was too small to investigate interactions; we reran the univariate analyses described above only on those reporting not having been cheated. All of the effects discussed above remained, except that the marginal condition by gender interaction for anger became nonsignificant.

Discussion

There is little support for the evolutionary position in these data. With regard to all three dependent variables, the two sex conditions had a greater impact than did the emotion conditions for both sexes. Of course, our scenario involved a case in which the emotional affair was disconnected from withdrawal of resources both by the decision the partners made not to pursue the affair, and by the untimely demise of the interloper. So it might be argued that this is why the women did not find the emotional involvement as upsetting as the sexual involvement. But the evolutionary perspective is that emotional involvement is connected to resource withdrawal in the history of our species, not in the lives of individuals.

STUDY 3

Much has been written about the deleterious effects of being cuckolded and the relationship of such effects to the evolution of jealousy. However, for every cuckolded male there is a male who has gotten another male to rear his young. And this ought to be exactly as much a boon to him as is the cost to the male who is being duped. Consider in this light the end of an affair. Imagine that a male finds out that a married woman with whom he is having an affair is returning to her husband. He may well have many feelings, but among them, on an evolutionary view, is the recognition that he may now be in the position of passing off his offspring to another male. And this should be something quite positive. However, because of the certainty of maternity, this advantage does not accrue to a woman whose married affair partner is returning to his wife. Thus, one might expect that males would be less angry and hurt by the end of the affair than would females, and one might expect this to be so especially in the case where they had been careless about contraception.

To examine these ideas we conducted a study in which male and female participants were told of the end of such an extramarital affair. Half were told that the couple had been scrupulous in their birth control practices; half were told they had been more lax. We asked how angry and hurt they would be were they the participants.

Method

Participants. A total of 41 male and 45 female Penn undergraduates took part in this experiment to meet research requirements in their social psychology or introductory psychology courses.

Procedure. Participants received the scenarios as two pages in a booklet of take-home studies.

Materials. Half of the male participants received the following scenario:

Imagine that you fell in love with someone who was married. Imagine that at first you try to avoid acting on your desires because the other person is married, but eventually you come to have a romantic/sexual affair. Imagine that it lasts several months. Now imagine that after several months, the person that you are having the affair with tells you she can't stand the guilt and that she is breaking off the affair, though she still loves you very much. *Imagine that you have been very careful throughout your relationship to use both a condom and the birth control pill.* How do you think you would feel?

The italicised material was in the participants' version, but was replaced with the following in the "less than perfectly careful" condition: "Imagine that most of the time you had been very careful to use both a condom and the birth-control pill, but that there had been a couple of times lately when you hadn't been able to."

Following the scenario were the anger and hurt items (described in Study 2) and the questions about serious relationships and cheating used in both of the previous studies.

Results

We subjected the responses to the anger and hurt questions to a 2×2 MANOVA with sex of participant and birth control status as the independent variables. The analysis produced a significant main effect for gender, Wilkes $\lambda = .92$, $F(2, 81) = 3.67$, $p = .03$. No other effects reached or approached significance ($F_s < 0.35$, $p > .1$). As Table 3 shows, females were angrier and more hurt than were males.

TABLE 3
Means (and standard deviations) for how
angry and hurt protagonists would feel,
broken down by gender: Study 3

	<i>Angry</i>	<i>Hurt</i>
Males	3.02 (1.13)	4.42 (0.59)
Females	3.47 (1.10)	4.00 (0.87)

Note: *N*/cell = 45 females and 41 males.
Gender differences are significant at the .049
level for Anger and .024 for Hurt.

Of the participants, 75% reported having been involved in a serious relationship, and whether they had been or not was not related to gender, $\chi^2(1, N = 81) = 1.83, p > .1$. Repeating the analyses above only on those who had been in a serious relationship did not have an effect on the results—28% reported having been cheated on, and this result was also unrelated to gender, $\chi^2(1, N = 70) = 2.32, p > .1$. Also, 24% reported having cheated on a partner; a result which was also unrelated to gender, $\chi^2(1, N = 70) = 1.66, p > .1$.

Discussion

The fact that males were less hurt and less angry by the end of the affair is consistent with the evolutionary hypothesis. But the failure of an interaction with birth control use to emerge leaves this result clouded, since it is also consistent with the idea that women report greater emotion than men do, either because they experience more emotion or because they are more willing to report the emotion they experience.

GENERAL DISCUSSION

There is little support for evolutionary psychology in these data. That is, the fact that brothel visiting by their partners bothered female participants more than it did male participants is surely not what we would have expected. And the reversal of prediction can hardly be accounted for by ceiling effects. Similarly, the finding that sex is worse than emotion for males and females is not what we expected on evolutionary grounds in Study 2, though it is consistent with other studies that have used continuous measures (DeSteno & Salovey, 1996; Green & Sabini, 2005; Sabini & Green, 2004). That males were less affected by the break-up of an extramarital affair is, one supposes, consistent with evolutionary predictions, but the failure for this to interact with the birth control variable makes these results consistent with any theory that expects women to report more emotion than men.

We found that most of our participants had been involved in serious relationships, but we certainly did not find evidence that whether they had or had not affected their responses to our scenarios. Harris (2002) found that such experience did matter, but because the number of participants without experience was so low, we were not really in a position to test her observation.

What do our results have to say about the evolution of the emotions? What are the issues with regard to the evolution of the emotions? Surely one issue is whether natural selection has produced links between relatively concrete cues and emotional reactions or has produced links at a higher level of abstraction. The position Buss has made popular vis-à-vis jealousy is that although both genders may be made jealous by the belief that their relationship to their partners is threatened, natural selection has forged a link between the more concrete cue that a sexual affair (or emotional affair) had begun and jealousy, and which of these links one has is a matter of one's gender. This is the claim that these data, as well as those of Harris and Christenfeld (1996) and DeSteno and Salovey (1996), call into question. But what is the alternative?

There is, of course, no reason to believe that both types of links cannot exist. If we consider the emotion of fear, we can appreciate that cues that currently signal danger, but have no evolutionary connection to danger—high cholesterol levels—can cause fear. But it is also plausible that cues have been associated with danger in our evolutionary past, but are not currently connected to danger, nonetheless produce the experience of fear—or something like it—roller coaster rides, or are particularly likely to become connected to the fear experience—preparedness. Neither of these views is a radical social constructivism; neither endorses the Watsonian claim that any *arbitrarily selected* category of cue could become emotionally charged.

We believe that these three studies were conceptual replications of the studies that did find the “Buss effect”. We expected convergent results with the large number of studies that have found the “Buss effect”, at least among undergraduates, but we did not achieve convergence. In the light of the recent findings by DeSteno et al. (2002) the ball seems to be in the evolutionist's court with regard to the narrow Buss evolutionary hypothesis.

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