

Reconsidering Evolved Sex Differences in Jealousy: Comment on Harris (2003)

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In a recent article, Harris (2003) concluded that the data do not support the existence of evolved sex differences in jealousy. Harris' review correctly identifies fatal flaws in three lines of evidence (spousal abuse, homicide, morbid jealousy), but her criticism of two other lines of evidence (self-report responses, psychophysiological measures) is based, in part, on a mischaracterization of the evolutionary psychological theory and a misunderstanding of the empirical implications of the theory. When interpreted according to the correct criterion (i.e., an interaction between sex and infidelity type), self-report studies (both forced-choice and non-forced choice) offer strong support for the existence of sex differences in jealousy. Psychophysiological data also offer some support, although these data are weakened by validity-related concerns. In addition, some refutational evidence cited by Harris (responses to real infidelity, responses under cognitive load) actually does not refute the theory. An integrative model that describes how jealousy might result from the interaction of sociocultural variables and evolved sex differences and suggestions for future research directions are discussed.

Evolutionary psychologists have theorized that the differential reproductive challenges faced by ancestral women and men led to a number of evolved sex differences, including sex differences in jealousy (Buss, Larsen, Westen, & Semmelroth, 1992; Daly, Wilson, & Weghorst, 1982; Symons, 1979). It has been hypothesized that men's unique challenge was paternal uncertainty—ancestral men could never be fully assured that they were the genetic fathers of their mate's children. Women, on the other hand, were thought to have faced the challenge of ensuring paternal investment in their children rather than the children of a rival. According to the theory, these differential challenges led to differential sensitivity to sexual and emotional infidelity, with evolution selecting for men who exhibited stronger jealousy in response to signs of sexual infidelity (over men who exhibited weaker jealousy in response to signs of sexual infidelity). Similarly, according to the theory, evolution selected for women who exhibited stronger jealousy in response to signs of emotional infidelity (over women who exhibited weaker jealousy

in response to signs of emotional infidelity). It should be noted that this theory does not preclude women from feeling jealousy in response to sexual infidelity, men from feeling jealousy in response to emotional infidelity, or either sex from feeling jealousy in response to other types of threats to a valued relationship. The theory simply indicates that sexual infidelity raises risks for men not faced by women (due to paternal uncertainty), whereas emotional infidelity raises risks for women not faced by men (due to concern with paternal investment).

In her comprehensive review and critique of the extant literature on sex differences in jealousy, Harris (2003) defined the theoretical position under consideration as the "jealousy as a specific innate module (JSIM) hypothesis" (p. 103), the view that jealousy is a distinct cognitive module, designed by natural selection to solve ancestral men's adaptive problem of paternal uncertainty and ancestral women's adaptive problem of ensuring paternal investment. The review examined five lines of evidence: self-reports (using forced-choice and continuous measures of jealousy), psychophysiological measures, spousal abuse, homicide rates, and pathological jealousy. In each case, Harris concluded that the evidence does not support the existence of a sex difference in jealousy. As Harris (2003) put it:

In closing, this article has critically examined five lines of research that have been previously reported to

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bolster the specific innate modular view of sex differences in jealousy. The review raises grave doubts about how much of a sex difference actually exists. Even the most robust support for the JSIM model (i.e., the forced-choice hypothetical data) is less clear-cut than it seems at first glance. As mentioned previously, there is great variability among men; in many samples, only a minority of men report that a mate's sexual infidelity would be worse. Further, the use of cognitive load to reduce the role of self-presentation strategies makes the effect disappear (DeSteno et al., 2002). The JSIM model provides no ready account for the fact that even in the United States close to half of the men say that emotional infidelity is the worse of the two infidelities, or for the fact that culture appears to account for as much variance as sex. Other self-report studies, those that rely on continuous measures and those that examine reactions to real infidelity, have almost always failed to find any evidence for a sex difference. In contrast to claims by Daly et al. (1982), when base rates for murder are taken into account, the homicide statistics simply do not support the contention that jealousy leads men to kill more often than women. The spousal abuse data are entirely ambiguous because the data only include female victims and, therefore, are incapable of addressing any potential sex differences. The pathological jealousy evidence is fraught with similar problems. (pp. 116–117)

With respect to psychophysiological measures, Harris (2003) similarly concluded, "In brief, the results from three articles, which have included a total of five psychophysiological experiments, fail to show clear evidence for men experiencing greater reactivity to sexual infidelity, and for women to emotional infidelity" (pp. 107–108).

Harris (2003) raises a number of valid concerns regarding Daly et al.'s (1982) data on homicide, spousal abuse, and pathological jealousy, and Harris' reanalysis of Daly et al.'s homicide data does, indeed, cast doubt on the theory-supportive interpretation of these data. However, with respect to the other lines of evidence (forced-choice, continuous, and psychophysiological measures of jealousy), the present article disputes Harris' conclusion that the evidence does not support the existence of sex differences in jealousy.

In this article, I will challenge Harris' (2003) conclusions on the following four grounds: First, I argue that Harris' characterization of the JSIM hypothesis differs in a number of important respects from the theory of evolved sex differences in jealousy, particularly as specified by Buss et al. (1992). I contend that intra-sexual and cultural variability in responses to forced-choice questions is not incompatible with the theory, and that the requirement that a majority of men endorse the sexual infidelity choice is based on a misunderstanding of the empirical implications of the theory.

Second, I revisit the non-forced-choice self-report studies reviewed by Harris (2003). When these studies

are reinterpreted using the correct criterion (i.e., an interaction between sex and infidelity type), the results offer support for the existence of a sex difference in jealousy—a conclusion bolstered by a recently published study (Sagarin, Becker, Guadagno, Nicastle, & Millevoi, 2003) not included in Harris' review. Third, I reanalyze DeSteno, Bartlett, Braverman, and Salovey's (2002) cognitive load data. This reanalysis demonstrates that a significant sex difference in jealousy remains under conditions of cognitive load. Fourth, I reconsider the psychophysiological evidence, including the three studies reviewed by Harris (Buss et al., 1992; Grice & Seely, 2000; Harris, 2000) as well as the recently published psychophysiological data from Pietrzak, Laird, Stevens, and Thompson (2002). As with the non-forced-choice self-report studies, when reinterpreted using the correct criterion, the psychophysiological data tend to follow a theory-supportive interaction pattern. However, as discussed in the following, the theoretical implications of these data are clouded by a number of interpretational problems raised by Harris (2000, 2003) and an anonymous reviewer.

I then review Harris' (2003) Social-Cognitive Theory of Jealousy and suggest that a parsimonious account of jealousy in its varied manifestations requires a synthesis of the Social-Cognitive Theory with the theory of evolved sex differences in jealousy (a possibility also suggested by Harris). Finally, I outline a model for the ways in which sociocultural variables and evolved sex differences may interact or provide independent influence on the manifestations of jealousy and offer suggestions for future research directions.

The JSIM Hypothesis

The JSIM hypothesis, as characterized by Harris (2003), specifies that selection pressures created a module that takes as input a set of hard-wired stimuli (signs of sexual or emotional infidelity) and gives as output a relatively inflexible, sexually dimorphic jealous response:

So far we have been focusing on a relatively strong version of JSIM, which claims that because sexual jealousy arose as a solution to cuckoldry, and emotional jealousy arose as a solution to resource loss, each problem would have been unique to each sex. Therefore it is hypothesized that there should be strong sex differences in the types of jealousy the two sexes experience. (p. 122)

Harris (2003) also outlines two weaker forms of the JSIM hypothesis. The first specifies that "within the jealousy module, there are hard-wired modulators that affect the responses of men and women, allowing environmental inputs to modify the strong sex differences predicted by JSIM (cf. Tooby & Cosmides, 1992, for a

general discussion of ‘adaptive flexibility’ within innate modules). These modifications, it is claimed, were designed by natural selection to allow certain prewired environmental inputs to modulate men’s reactions to sexual infidelity and women’s reactions to emotional infidelity” (p. 122). The second weaker form of JSIM requires

JSIM proponents [to] make another concession. Starting with an acknowledgement that a mate’s sexual infidelity may have had substantial costs to both sexes as did a mate’s emotional infidelity, they could retract their claim to say merely that within the male jealousy module there is a slight tendency to develop a stronger sexual ‘trigger’ than within the female jealousy module. (p. 123)

Symons (1979, see pp. 27, 246) and Daly et al. (1982, see p. 12) are somewhat ambiguous regarding whether men and women are theorized to have exclusive jealousy triggers. As such, it is unclear whether the exclusivity specified by the strong and first weaker forms of JSIM adequately represents their theoretical positions. Buss et al. (1992) are clearer on the issue:

Following Symons (1979) and Daly et al. (1982), our central hypothesis is that the events that activate jealousy physiologically and psychologically differ for men and women because of the different adaptive problems they have faced over human evolutionary history in mating contexts. Both sexes are hypothesized to be distressed over both sexual and emotional infidelity, and previous findings bear this out (Buss, 1989). However, these two kinds of infidelity should be weighted differently by men and women. (p. 251)

Although the first sentence seems to imply exclusivity of male and female jealousy triggers, the subsequent text makes clear that Buss et al. (1992) believe that both types of infidelity will elicit jealousy in both sexes, and that the best way to characterize the sex difference is in terms of the different weights that men and women assign to each type of infidelity. This position is in contrast to the exclusivity specified by the strong and first weaker forms of JSIM.

Buss et al.’s (1992) position is closest to the second weaker form of JSIM, which specifies that “within the male jealousy module there is a slight tendency to develop a stronger sexual ‘trigger’ than within the female jealousy module” (Harris, 2003, p. 123). However, the greater weight men are theorized to apply to sexual infidelity (due to paternal uncertainty) and the greater weight women are theorized to apply to emotional infidelity (due to concerns regarding paternal investment) would probably be more accurately characterized as strong rather than slight tendencies.

Furthermore, Harris (2003) implies that a weakness of JSIM is its inability to account for jealousy in all its manifestations:

This is related to one of the serious limitations of the JSIM position: It can only account for jealousy that exists in limited domains, namely, over sexual and emotional infidelity. However, jealousy clearly occurs in nonmating situations such as that between siblings. (p. 119)

Although Harris is correct that the theory of evolved sex differences in jealousy is limited to the domains of sexual and emotional infidelity, the theory was never intended to explain all of the variance in jealousy in all its manifestations (see Daly et al., 1982, p. 24).

Thus, evolved sex differences in jealousy can be viewed as an evolved predisposition in men towards greater jealousy in response to evidence of sexual infidelity than emotional infidelity and a corresponding evolved predisposition in women towards greater jealousy in response to evidence of emotional infidelity than sexual infidelity. According to this view, these predispositions influence the jealous responses of men and women, but the jealous responses are also influenced by a variety of contextual factors. The recognition that jealousy responses are multiply determined—stemming from both evolved predispositions and sociocultural influences—represents neither a weakening of the evolutionary psychological theory nor an empirically-motivated concession from a stronger position. It represents the theory in its original form.

In this sense, evolved sex differences in jealousy can be seen as analogous to men’s evolved predisposition towards an interest in short-term sexual liaisons. This predisposition does not mean that all men will respond with identical interest to all short-term sexual opportunities. The motivational and behavioral manifestations of this predisposition take into account the social context of the opportunity, a cognitive assessment of the risks and benefits of taking versus rejecting the opportunity, and so on. Furthermore, the opportunity itself can take a variety of forms, including those that are highly unlikely to have existed in the environment of evolutionary adaptedness (EEA; e.g., a flirtatious message in an Internet chat room).

Seen in this light, cultural variability does not present a problem for the theory of evolved sex differences in jealousy. Instead, the theory would suggest that within each culture, men, relative to women, should show a greater predisposition towards greater jealousy in response to sexual infidelity than emotional infidelity, and vice versa. In other words, the theory predicts cross-cultural homogeneity in the existence of a sex difference in jealousy, but the theory allows

for cross-cultural variability in the size of the sex difference.

Empirical Implications of the Theory

The empirical implications of the theory of evolved sex differences in jealousy are that, on any particular measure of jealousy, men will be more likely than women to report greater jealousy in response to sexual infidelity than in response to emotional infidelity. It is critical to note that this is a relative rather than an absolute prediction. Thus, support for this prediction can be obtained even if, on a particular measure of jealousy, both men and women report greater jealousy in response to sexual infidelity compared to emotional infidelity, as long as the difference is greater for men. In other words, the relevant outcome is a sex difference—the comparison of the relative responses of men and women to sexual versus emotional infidelity—not the absolute levels within each sex. For example, in a $2 \text{ (sex)} \times 2 \text{ (sexual vs. emotional infidelity)}$ factorial design with a continuous dependent variable, the relevant test is the interaction between sex and infidelity type. Support for the theory does not require significant simple effects of infidelity type within each sex, nor does it require significant simple effects of sex within each infidelity type. Similarly, in the traditional forced-choice methodology, the relevant test is the comparison of the proportions of men and women who selected each type of infidelity. Support for the theory does not require the proportions within each sex to differ significantly from 50%.

This is not to say that moderators of sex differences in jealousy are uninteresting or unimportant. As Harris (2003) notes, across forced-choice studies culture accounts for as much variance as sex. The specification of such moderators could offer important insights into the nature of the algorithm underlying evolved sex differences in jealousy and the interaction between evolved sex differences and a variety of contextual factors.

A Reinterpretation of Self-Report Studies Employing Non-Forced-Choice Response Formats

One of Harris' (2003) major criticisms of the evidence for sex differences in jealousy is the failure of researchers to demonstrate sex differences using non-forced-choice measures. Indeed, if the sex difference only emerged when researchers used the forced-choice response format, this would be a serious limitation in the empirical support for the theory. However, a reinterpretation of the 14 self-report studies reviewed by Harris that employed non-forced-choice response for-

mats using the correct interaction criterion reveals that five of the studies are irrelevant for theory-testing and the remaining nine studies generally show support for the existence of sex differences in jealousy.

Of the 14 studies, three (Buunk & Hupka, 1987; Hansen, 1987; Paul & Galloway, 1994) cannot be used to test the participant sex by infidelity type interaction because they did not assess reactions to emotional infidelity. Two additional studies (Harris, 2002; Sheppard, Nelson, & Andreoli-Mathie, 1995) assessed constructs that differed substantially from jealousy. Harris (2002) asked past victims of infidelity how much they had focused on each type of infidelity rather than how jealous they had felt in response to each type of infidelity (Harris, in press, also used this variable to assess reactions to real infidelity). It is unclear, however, that "focus" is equivalent to "distress," "upset," or "jealousy." It seems plausible that, even if someone was more distressed by the sexual infidelity, he or she might focus more on the emotional infidelity in discussions with the straying partner, perhaps because the sexual infidelity is too distressing to discuss or because the sexual infidelity is sufficiently unambiguous that there seems little point in discussing it. Sheppard et al. had participants listen to four fictitious infidelity scenarios and rate the acceptability of each. Overall, men rated the infidelities as significantly more acceptable than women rated the infidelities. However, because the scenarios were third-person (i.e., they did not involve the participant or the participant's partner), these results would represent jealousy (or, rather, the absence of jealousy) only if participants spontaneously placed themselves in the role of the relationship partner being cheated upon, and there is no evidence that participants adopted this role rather than the role of the straying partner or the rival (or no role whatsoever).

Of the remaining 9 studies, two (Sheets & Wolfe, 2001; Wiederman & Allgeier, 1993) reported statistically significant interactions in line with the theory of evolved sex differences in jealousy. Three (DeSteno et al., 2002; DeSteno & Salovey, 1996; Harris, in press) reported non-significant interactions, although the interactions in DeSteno and Salovey (1996) and Harris (in press) showed trends in the theory-supportive direction ($p = .19$ and $p = .09$, respectively). The final four studies reported the relevant means but did not report tests of the interaction. Of these, three (Geary, DeSoto, Hoard, Sheldon, & Cooper, 2001; Geary, Rumsey, Bow-Thomas, & Hoard, 1995; Shackelford, LeBlanc, & Drass, 2000) reported patterns of means in the theory-supportive direction, and one (Buunk, 1981) reported a pattern of means in the opposite direction (see Table 1).

These generally theory-supportive findings are bolstered by data from Sagarin et al. (2003). Across two studies ($N_{Study1} = 513$, $N_{Study2} = 353$), participants were instructed to consider a hypothetical infidelity scenario

Table 1. Data From Self-Report Studies Employing Non-Forced-Choice Response Formats

Study	Sample Size		Dependent Variable	Men		Women		Interaction
	Men	Women		Sexual Infidelity	Emotional Infidelity	Sexual Infidelity	Emotional Infidelity	
Buunk (1981) ^a	50	50	“How frequently various [jealousy-related] perceptions and feelings had occurred in the relationship on a 5-point scale including never, seldom, now and again, fairly often, and very often” (p. 361).	1.68	1.97	2.08	2.16	NR (means in opposite direction)
DeSteno, Bartlett, Braverman, and Salovey (2002) ^b	50	61	Likert scale					
			Agree-disagree scale					
			Checklist					
DeSteno and Salovey (1996)	34	31	“A six-item jealousy measure (Cronbach’s $\alpha = .90$) for each of the two types of infidelity” (p. 371).	5.82 (0.86)	5.38 (1.04)	6.02 (0.87)	5.81 (1.06)	n.s.
Geary, DeSoto, Hoard, Sheldon, and Cooper (2001) ^c			“The intensity of their...jealous feelings... rated on a 1 (not...jealous) to 5 (extremely...jealous) scale” (p. 304).	5.72 (1.01)	5.50 (1.23)	6.07 (0.85)	5.84 (0.94)	n.s.
	133	159		5.02 (1.46)	4.94 (1.63)	5.66 (1.24)	5.56 (1.34)	n.s.
Geary, Rumsey, Bow-Thomas, and Hoard (1995) ^d		303	“The intensity of their...jealous feelings... rated on a 0 [Not...jealous...at all] to 4 [Extremely...jealous...1 scale” (p. 361).	43.62 (12.16)	42.21 (12.32)	47.03 (8.97)	48.47 (7.67)	$F(1,62) = 1.78$, $p = .19$
Harris (in press) ^e		219	9-pt. scale (1 = <i>not at all upset</i> , 9 = <i>extremely upset</i>).	3.20 (1.39)	3.02 (1.37)	3.33 (1.37)	3.52 (1.21)	NR (means in theory-supportive direction)
Shackelford, LeBlanc, and Drass (2000) ^f		331	“Ratings were provided on a 9-point scale ranging from 0 (‘I would not experience this emotion [jealousy] at all’ to 8 (‘I would be consumed with this emotion’)” (p. 647).	~2.4	2.29	~2.5	2.65	NR (means in theory-supportive direction)
	324	331		8.05 (1.39)	7.63 (1.65)	8.22 (1.18)	8.04 (1.21)	$F(1, 355) = 2.86$, $p = .09$
Sheets and Wolfe (2001) ^g	42	75	“After choosing which option was more upsetting, participants indicated <i>how much more</i> upsetting they found their choice to be on a 0–4 scale (0 = <i>not more upsetting</i> and 4 = <i>much more upsetting</i>)” (p. 264).	5.55	5.61	5.51	6.21	NR (means in theory-supportive direction)
				–1.12 (mean represents difference score: sexual minus emotional)		–3.92 (mean represents difference score: sexual minus emotional)		$p < .05$

Wiederman and Allgeier (1993) ^b	103	120	"Nine-point scales ranging from 1 = <i>Not At All Upset</i> to 9 = <i>Extremely Upset</i> " (p. 126).	7.81 (1.39)	6.41 (2.01)	7.76 (1.46)	6.99 (1.65)	$F(1, 220) = 5.52, p = .02.$
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Note: Standard deviations are in parentheses. NR = Not reported. In studies with multiple dependent variables, these results represent "jealousy" or "upset" rather than other emotions (e.g., "anger").

^aThese results correspond to the two explicitly emotional infidelity items ("I could hardly stand my partner's paying me less attention than formerly;" "I was afraid that my partner would leave me") and the one explicitly sexual infidelity item ("I could hardly bear it that my partner had sexual intercourse with that very person;" pp. 363-364).

^bNon-significant interactions ($F_s < 1$) were also reported for three sets of individual items: (a) "I would be upset" in response to the two types of infidelity" (p. 1107) answered on an agree-disagree scale, (b) "Ratings for relief" contained in the sexual and emotional infidelity Likert scales ... scores reflect the reverse scoring of the relief item" (p. 1107), and (c) "Distress from the two checklist measures" (p. 1107).

^cSubjects were asked to first imagine that their partner had developed a deep emotional attachment to another person and then respond, based on how they would feel today, to four items that assessed their affective reactions to this scenario (Geary et al. 1995) ... The intensity of their hurt feelings, anger, and jealous feelings, respectively, was rated on a 1 (not hurt/angry/jealous) to 5 (extremely hurt/angry/jealous) scale. The subjects then completed the same four items, after imagining their partner having passionate sex with another person" (p. 304). These results correspond to the ratings for "jealous."

^dSubjects were asked to imagine their partner "forming a deep emotional relationship with another person," and then indicate the intensity of various emotional reactions that they might feel....The intensity of their hurt feelings, anger, and jealous feelings, respectively, were rated on a 0 [Not hurt (angry, jealous) at all] to 4 [Extremely hurt (angry, jealous)] scale...In the third section, the subjects completed the same items, but only after imagining their "partner enjoying passionate sexual intercourse with another person" (p. 361). These results correspond to the ratings for "jealous." Reactions to sexual infidelity were estimated from Figure 3. Results were from Study 1. For Study 2, the relevant means for jealous reactions to emotional infidelity were not reported.

^e"Amount of upset over mate having one night stand while on vacation;" "Amount of upset over mate falling in love with other while on vacation" on "9-pt. scale (1 = *not at all upset*, 9 = *extremely upset*)" Note: these results were cited as Harris (2002b) in Harris (2003).

^fParticipants were instructed to indicate for each of 103 emotions the degree to which they would feel that emotion if their partner was: (a) sexually unfaithful but not emotionally unfaithful, and (b) emotionally unfaithful but not sexually unfaithful. Ratings were provided on a 9-point scale ranging from 0 ('I would not experience this emotion at all') to 8 ('I would be consumed with this emotion')" (p. 647). These results correspond to the ratings for "jealousy."

^gParticipants completed two versions of the forced-choice question. Then "after choosing which option was more upsetting, participants indicated *how much more* upsetting they found their choice to be on a 0-4 scale (0 = *not more upsetting* and 4 = *much more upsetting*)" (p. 264). The DV "was formed by summing participants' distress ratings with negative weights assigned to those more distressed by emotional infidelity and positive weights assigned to those more distressed by sexual infidelity (range = -8 to +8)" (p. 264). These means represent difference scores between sexual and emotional infidelities for heterosexual participants.

^h"For each scenario respondents were asked to indicate (on nine-point scales ranging from 1 = *Not At All Upset* to 9 = *Extremely Upset*) the degree of emotional upset that they would probably feel in the situation. One of the scenarios made reference to suspected sexual infidelity by the dating partner without loss of partner time, commitment, or emotional intimacy (hereafter referred to as the sex scenario). The other scenario described suspected loss of partner time, attention, and love without loss of sexual exclusivity (hereafter referred to as the love scenario)" (p. 126).

and to indicate how jealous they would feel about “their partner forming a deep emotional attachment to this other person” and “their partner enjoying sexual intercourse with this other person” (p. 19). Jealousy was indicated on 10-point scales ranging from “not at all jealous” to “extremely jealous.” Consistent with predictions, both studies yielded significant participant sex by infidelity type interactions.¹

Clearly, sex differences in jealousy manifest most reliably using the forced-choice response format. But as this review demonstrates, significant sex differences have also been observed in multiple studies using non-forced-choice measures. Theory-consistent directional differences were found in 10 of 11 studies (counting the two studies of Sagarin et al., 2003, separately) and these were significant in 4 of the 11 cases.

A Reanalysis of Sex Differences under Cognitive Load

DeSteno et al. (2002) argued that if sex differences in jealousy represent evolved mechanisms, then they should not diminish under conditions of cognitive

load. As DeSteno et al. put it, “...as evolved mechanisms are theorized to represent automatic processes that increase the facility with which organisms respond to environmental challenges relevant to their fitness potential, the functioning of these mechanisms should not be inhibited under conditions of cognitive constraint” (p. 1111). To test the effects of cognitive load on sex differences in jealousy, DeSteno et al. had participants respond to the traditional forced-choice scenario either under conditions of cognitive constraint (participants were instructed to respond within ten sec. while remembering a 7-digit number) or no constraint. In the abstract, DeSteno et al. (2002) describe the results in this way, “A second study revealed that the sex difference on the forced-choice measure disappeared under conditions of cognitive constraint” (p. 1103). DeSteno et al. interpret these results as refuting the evolutionary explanation for sex differences in jealousy.

There are two problems with this interpretation, one theoretical and one empirical. First, DeSteno et al.’s (2002) argument rests on an unwarranted assumption that an evolved response to a jealousy-inducing social situation implies an automatic response to a hypothetical scenario presented in written form on a computer screen. Clearly, the proposed mechanism did not evolve to automatically answer forced-choice questions presented in written format. Thus, it is unclear how the theory of evolved sex differences in jealousy is refuted by the ability of cognitive load to attenuate the sex difference in response to a hypothetical written scenario. Second, a reanalysis of DeSteno et al.’s (2002, Table 2) data reveals that a significant sex difference in jealousy remains among participants responding under cognitive constraint. Under cognitive load, a significantly higher proportion of men (92% or 24/26) than women (65% or 20/31) indicated that a sexual infidelity would cause greater distress than an emotional infidelity, $\chi^2(1, N = 57) = 6.20, p = .013$. To be sure, the sex difference was larger for participants not under cognitive load: In the non-load conditions 96% (24/25) of men reported that a sexual infidelity would cause greater distress, compared to 36% (14/39) of women, $\chi^2(1, N = 64) = 22.8, p < .001$. Thus, DeSteno et al.’s cognitive load manipulation did not make the sex difference disappear. Rather, cognitive load attenuated the sex difference, but a significant sex difference remained under cognitive constraint.

Psychophysiological Studies

Four articles (Buss et al., 1992; Grice & Seely, 2000; Harris, 2000; Pietrzak et al., 2002), containing a total of six studies, have examined women and men’s psychophysiological reactions to imagining sexual and emotional infidelities. Four of these studies included

¹It should be noted that the results of Geary et al. (1995, 2001) and Sagarin et al. (2003) might have been affected by a methodological artifact described in Sagarin and Guadagno (2004). Sagarin and Guadagno found that women and men tend to report different exemplars when asked to remember a time when they felt extremely jealous, with a significantly greater proportion of women than men reporting extreme jealousy that occurred in the context of a romantic relationship. Sagarin and Guadagno suggest that this sex difference in the context of extreme jealousy might introduce bias into scales that use “extremely jealous” as the upper anchor. In Study 2 of Sagarin and Guadagno, women and men were asked how jealous they would feel in response to a sexual infidelity and in response to an emotional infidelity. Both questions were answered on continuous scales ranging from “not at all jealous” to, depending upon condition, either “extremely jealous” or “as jealous as you could feel in a romantic relationship.” Both scales produced the traditional sex difference in which men, relative to women, reported greater jealousy in response to the sexual infidelity than the emotional infidelity. However, on the scale with “extremely jealous” as the upper anchor, a significant main effect also occurred: Women reported significantly greater jealousy than men in response to both sexual and emotional infidelity. This difference did not occur on the scale with “as jealous as you could feel in a romantic relationship” as the upper anchor. The change in the upper anchor impacted men’s responses to both sexual and emotional infidelity, with a larger effect for emotional infidelity. This larger effect for emotional infidelity suggests that the use of “extremely jealous” as an upper anchor (as in Geary et al., 1995, 2001, and Sagarin et al., 2003) may artificially increase the magnitude of the sex by infidelity type interaction. It is unlikely that this methodological artifact can fully account for the sex differences in jealousy observed across the non-forced-choice studies, however. First, the results of Sagarin and Guadagno demonstrate that the “extremely jealous” effect increases the magnitude of the sex difference, but it does not create the sex difference. Second, the effect is only relevant for studies that use “extremely jealous” as the upper anchor. Thus, it cannot account for the significant sex difference in jealousy observed in Sheets and Wolfe (2001) and Wiederman and Allgeier (1993), which used different jealousy scales.

male and female participants and are thus suitable for examining the interaction between sex and infidelity type. These studies included measures of pulse/heart rate (all four studies), electrodermal activity (EDA, three studies), electromyographic activity (EMG, three studies), systolic blood pressure (one study), diastolic blood pressure (one study), and skin temperature (one study). Across these 13 psychophysiological measures, 11 out of 13 measures showed means in the theory-supportive direction (1 showing a significant interaction, 5 showing significant simple effects that likely imply a significant interaction, and 5 showing patterns of simple effects that make it difficult to determine the significance of the interaction), whereas 2 out of 13 showed means in the opposite direction (1 showing a non-significant interaction, $p < .063$, and the other showing no interaction, $F < 1.0$).

Like the self-report results previously discussed, the results of these four psychophysiological studies generally conform to the theory-consistent interaction prediction. However, these psychophysiological results must be interpreted in light of some additional findings and concerns. First, Harris (2000, Study 2) found that men's physiological reactions to infidelity imagery involving sexual or emotional interaction between the partner and a rival did not differ significantly from men's physiological reactions to self-related imagery involving sexual or emotional interaction between the participant and his partner. This provides a plausible alternative explanation for the greater physiological reactivity of men in response to sexual infidelity imagery. Second, as noted by an anonymous reviewer, studies that employ physiological measures of this type have a number of interpretational challenges: (a) The physiological responses may not be reliable and valid measures of participants' generalized emotional responses to the infidelity imagery tasks, (b) these emotional responses may not be valid indicators of the presence of jealousy, (c) if the physiological measures are being used in an attempt to tap into a deep emotional response that is unaffected by cultural influences, this represents a misunderstanding of the cognitive mediation of psychophysiological responses, and (d) individual differences strongly influence psychophysiological reactivity.

The State of the Evidence

The abstract for Harris' (2003) review summarizes the evidence for the theory of evolved sex differences in jealousy as follows:

Five lines of evidence have been offered as support: self-report responses, psychophysiological data, domestic violence (including spousal abuse and homicide), and morbid jealousy cases. This article reviews

each line of evidence and finds only one hypothetical measure consistent with the hypothesis. This, however, is contradicted by a variety of other measures (including reported reactions to real infidelity). (p. 102)

This summary paints a rather bleak picture of the state of the evidence supporting the theory. Indeed, if only one portion of one line of evidence is consistent with the theory, whereas the other portion of that line and four additional lines of evidence contradict the theory, the picture would be rather bleak. However, a closer examination of each of these lines of evidence disputes this negative assessment. First, when interpreted using the correct criterion, evidence from self-report responses using multiple hypothetical measures strongly supports the existence of sex differences in jealousy. Second, psychophysiological data also tend to support the existence of sex differences, although this line of evidence must be viewed in the context of a possible alternative explanation for the data and a number of validity-related concerns.

Third, as Harris (2003) points out, the spousal abuse data lack information on violence perpetrated by women and the morbid jealousy data lack information on the base rates of relevant mental disorders in women and men. As a result, these lines of evidence can neither support nor refute the existence of sex differences in jealousy. Harris' meta-analysis of the homicide data demonstrates that an equivalent proportion of women's and men's murders are motivated by jealousy, and this result could, arguably, provide evidence against sex differences. But as Harris notes, "Observations about population extremes are likely to offer a very unreliable guide to species-typical characteristics" (p. 108). Thus, evidence from extremes of behavior such as spousal abuse, morbid jealousy, and homicide may not offer relevant insights into the existence of sex differences in jealousy. Finally, as discussed, the studies on reactions to real infidelity cannot speak unambiguously to the existence of sex differences in jealousy as they used a dependent measure ("focus") that differed substantially from jealousy.

In sum, one line of evidence (self-report responses) strongly supports the existence of sex differences in jealousy, one line of evidence (psychophysiological measures) tends to support the existence of sex differences in jealousy but this support is weakened by the questionable validity of the measures, three lines of evidence (spousal abuse, homicide, and morbid jealousy) neither support nor refute the existence of sex differences in jealousy, and one line of evidence (retrospective reactions to real infidelity) tends to refute the existence of sex differences in jealousy but this refutation is also weakened by the questionable validity of the measures. Thus, Harris (2003) is correct that theoretical and empirical flaws in four lines of evidence (psychophysiological measures, spousal abuse, homicide,

and morbid jealousy) weaken or eliminate the support these lines of evidence provide for the theory of evolved sex differences in jealousy. But these flaws in evidence previously thought to be supportive do not automatically render such evidence refutational. Furthermore, the only line of evidence that provides a refutational pattern of results (retrospective reactions to real infidelity) is hampered by validity-related concerns.

Given the balance of evidence favoring the existence of sex differences in jealousy, it seems appropriate to incorporate the theory of evolved sex differences in jealousy into any attempt to account for jealousy in its varied manifestations. To this end, I outline a synthesis of the theory of evolved sex differences in jealousy with the social-cognitive theory of jealousy proposed by Harris (2003). I also outline a series of suggestions for future research directions designed to address the notable gaps and weaknesses in the current empirical record on sex differences in jealousy,

Evolved Sex Differences and the Social-Cognitive Theory of Jealousy

After reviewing past research and concluding that the evidence does not favor the JSIM hypothesis, Harris (2003) presents an alternative: A social-cognitive theory of jealousy:

This approach stresses the importance of interpretation and appraisal of a diverse assortment of threats in the elicitation of jealousy. In particular, it views romantic and sexual jealousy as the result of perceptions that another person or rival (even if only imaginary) poses a threat to what one perceives to be valuable in oneself and in an important relationship (Parrott, 1991; White & Mullen, 1989). Inherent in such an account is the idea that jealousy can be induced when any important aspect of an interpersonal relationship is threatened ... Social-cognitive theorists have particularly emphasized the importance of two factors that can impact the likelihood of experiencing jealousy: (a) when relationship rewards are threatened and (b) when some aspect of a person's self-concept, self-regard, or other representations of oneself is challenged by a rival. (p. 119)

Harris' (2003) social-cognitive theory makes a lot of sense, and, indeed, it can account for jealousy that occurs outside the domain of the theory of evolved sex differences in jealousy. However, given the evidence favoring the existence of sex differences in jealousy, it would seem most productive to consider the social-cognitive theory not as a substitute for the theory of evolved sex differences in jealousy but rather in synthesis with the theory of evolved sex differences in jealousy. As Harris (2003) pointed out, the social-cognitive theory is not incompatible with the theory of

evolved sex differences in jealousy. A theory that synthesized the social-cognitive and evolutionary psychological approaches would have the benefit of explaining manifestations of jealousy in a wider domain than could be accounted for by either theory alone. The theory of evolved sex differences in jealousy provides an explanation for the ultimate origins of the different weights that women and men seem to assign to sexual and emotional infidelities, and the social-cognitive theory describes how these sexually dimorphic weights interact with a myriad of psychological and contextual factors in producing the emotional experience and behavioral manifestations of jealousy.

In the following section, I outline the three ways that evolved sex differences and sociocultural variables could relate in producing a jealous response: additive influence, moderation (including situational triggers of evolved modulators), and evolutionary influences on sociocultural variables (see Figure 1). I then offer suggestions for additional research in four domains: self-report responses to hypothetical infidelity scenarios, self-report responses to real infidelity, psychophysiological responses, and behavioral responses.

Additive Influence

Certain sociocultural variables may affect the jealous responses of women and men equally. For example, if a well-publicized sex scandal sensitizes both women and men to sexual infidelity, the proportions of both sexes selecting the sexual infidelity choice in response to a forced-choice question may increase. This would not change the magnitude of the relative sex difference, but it would change the absolute proportions for each sex.

A variety of enduring cultural variables might also provide additive influence on the manifestation of sex differences in jealousy. Women and men from societies that strongly proscribe adulterous behavior might both report greater jealousy in response to sexual infidelity. Alternately, in subcultures that admonish against the expression of sexual jealousy (e.g., swingers), both sexes might report less jealousy in response to sexual infidelity. Nevertheless, barring ceiling or floor effects, the theory of evolved sex differences in jealousy would suggest that sex differences would still emerge in both these cases.

The results of DeSteno et al. (2002) suggest that the medium and context in which the question is asked might function as an additive influence. In Study 2, participants responded to a forced-choice question on a computer after a series of other relationship-related questions, and an unusually large proportion of both men and women selected the sexual infidelity choice. Question wording might also provide additive influence if, for example, "falling in love" is more threaten-

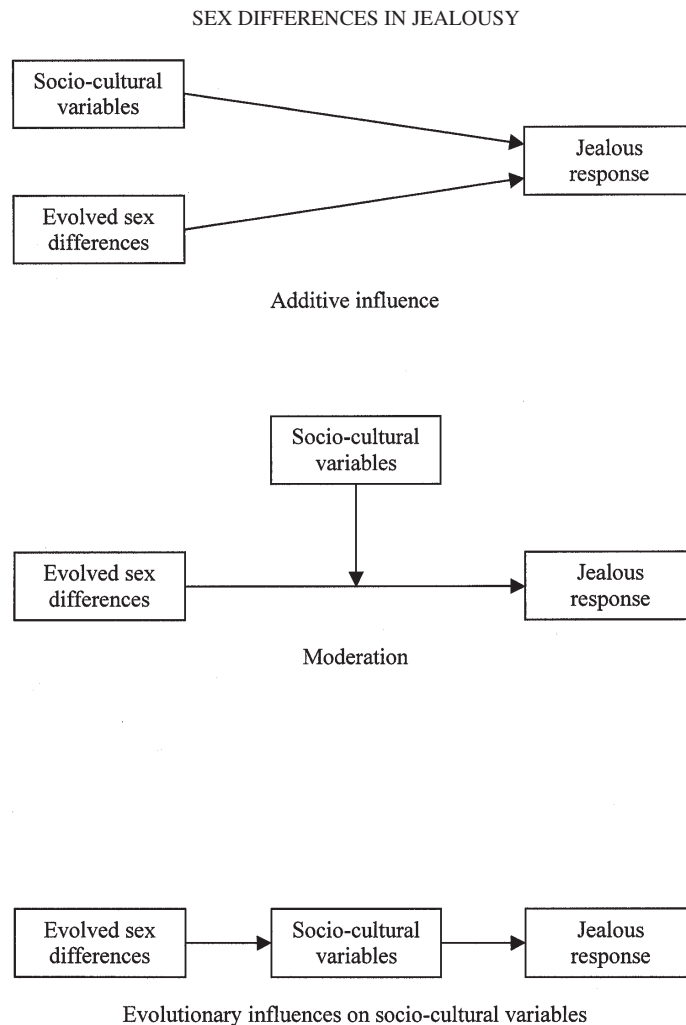


Figure 1. Three ways in which evolved sex differences in jealousy and sociocultural variables could relate in producing jealous responses.

ing to women and men than “forming a deep emotional attachment.”

Moderation

Sociocultural variables could also moderate the manifestation of sex differences in jealousy. In some cases, these moderators could represent situational triggers of evolved modulators (see Harris, 2003). In other cases, moderation may stem from sociocultural variables that have a sexually dimorphic effect on women and men but that do not modulate the evolved sex difference itself.

As Harris (2003) discusses as part of the first weaker form of JSIM, evolved sex differences in jealousy may have developed with a set of built-in modulators that would moderate the jealous responses of men and women based on situational cues. These evolved modulators would have to be based on situational triggers that existed in the EEA and provided sufficient adaptive advantage that they could have been selected for. Buss et al. (1992) suggest two such moderators: cultural differences in paternal investment and age of

the female mate. The male to female ratio in a population may represent another moderator of this type, in that members of the more numerous sex may have benefited, historically, from reducing the intensity of their jealous response. Sagarin et al. (2003) discuss reproductive compatibility between the partner and rival as another possible evolved modulator. Moderators that manifest cross-culturally and that explain cross-cultural variation may be good candidates for this type of moderation.

Moderators may also take forms unrelated to evolved modulators. For example, the forced-choice results of Pietrzak et al. (2002) suggest that question wording may moderate the size of the sex difference. Pietrzak et al. presented participants with the following choices: “(A) Discovering that your partner is having deep passionate sex with that other person, trying out sexual positions you had only dreamed about” and “(B) Discovering that your partner is forming a deep emotional attachment by confiding and sharing confidences with that other person” (p. 86). In response to these choices, 73% of men chose (A) as more upsetting or distressing, compared to 4% of women. It seems

likely that the unusual size of this sex difference stemmed from the unique wording of the choices. The phrase “trying out sexual positions you had only dreamed about” may have resonated well with male participants but poorly with female participants.

In some cases, moderation may manifest in a particularly extreme form: suppression of the evolved sex differences. For example, the strong social norms against sexual jealousy among some active swingers (Bartell, 1970) may cause self-report measures of sexual jealousy to show a complete lack of such jealousy in both sexes. If this effect stems from self-presentation concerns, psychophysiological measures may help to circumvent it.

Evolutionary Influences on Sociocultural Variables

Finally, evolved sex differences in jealousy may act as distal causes of sociocultural phenomena. Daly et al. (1982) theorize, for example, that male sexual jealousy may form the basis of the double-standard in adultery laws and other “socially sanctioned modes of coercive constraint” (p. 19) of women (see Harris, 2003, however, for a number of arguments against the perspective that these laws and traditions are rooted in male sexual jealousy).

Future Research Directions

Self-Report Responses to Hypothetical Infidelity Scenarios

As Harris’ (2003) meta-analysis of the forced-choice studies illustrates, sex differences in jealousy on forced-choice measures have been well documented in American college students, with this population comprising 17 out of the 32 independent samples. As such, additional replication of the basic finding in this population seems unnecessary.

Of greater value would be replication in currently underrepresented populations, including older women and men (comprising 8/32 meta-analysis samples), lesbians, gay men, and bisexual women and men (comprising 3/32 meta-analysis samples), and women and men from countries other than the U.S. (comprising 10/32 meta-analysis samples). Cross-cultural replication is particularly important, given the importance of such replication as evidence for or against evolutionary psychological theories. True random sampling would be ideal, of course, and such sampling may actually be feasible in some countries, given the brevity of the survey and the availability of polling organizations and research laboratories that specialize in random sampling.

A smaller number of studies have examined sex differences in jealousy using continuous measures, and al-

though the evidence seems to favor the existence of a sex difference, replications—particularly with samples other than heterosexual, U.S. college students—are warranted.

Future studies could also examine moderators of the sex difference. On this subject, Daly et al. (1982) offer a number of suggestions:

Male sexual jealousy appears to be a cross-culturally universal trait, then, but we should like to know a great deal more about variability between and within cultures. Is cultural variation in paternal investment in putative offspring directly related to the prevalence and vehemence of male jealousy, or is the emotion instead causally severed from its supposed functions as an anticuckoldry device? Might we expect men in avuncular societies to be less jealous, since they do not invest in putative offspring, or should they be just as jealous as elsewhere because they are still competing with other men? Do different societal norms of sexual exclusivity condition men to be more or less jealous? And is there sufficient heritable variation between individuals that birth control, female participation in the work force, and other social changes might effect an imminent natural selective change in the trait? Variability is not belittled by an evolutionary approach to jealousy, which instead suggests numerous hypotheses about probable correlates of such variability. (p. 23)

Along these lines, Buss et al. (1992) offer some specific predictions:

Future studies could explore the degree to which these sex differences transcend different cultures and age groups. Two clear evolutionary psychological predictions are (a) that male sexual jealousy and female commitment jealousy will be greater in cultures where males invest heavily in children, and (b) that male sexual jealousy will diminish as the age of the male’s mate increases because her reproductive value decreases. (p. 254)

Of particular interest would be an examination of the factors that differentiate women and men who endorse the sexual versus emotional choice in the forced-choice measure. Such an examination could provide insight into one source of cross-cultural variation. For example, if factor X emerges as an important differentiator of men who endorse sexual infidelity as more distressing from men who endorse emotional infidelity as more distressing, differential base rates of levels of X in different countries could account for the different proportions of men in each country who choose the sexual infidelity as more distressing. For example, Sagarin et al. (2003) found that for men, past experience as a victim of infidelity increases the likelihood of choosing the sexual infidelity as more distressing. If a greater proportion of American men than Chinese men have experience as victims of infidelity, this could help to explain the greater proportion of Ameri-

can men (compared to Chinese men) who endorse the sexual infidelity as more distressing.

Self-Report Responses to Real Infidelity

As previously discussed, Harris (2003) criticized the validity of the hypothetical infidelity scenarios based, in part, on the lack of a sex difference found when past victims of infidelity were asked how much they focused on each aspect of the infidelity (Harris, 2002, *in press*). However, because Harris (2002, *in press*) asked about focus rather than jealousy, upset, or distress, it is unclear whether these results represent a lack of a sex difference in jealousy in response to real infidelity, or a difference between the constructs of focus and jealousy. Differentiating between these two explanations could be accomplished by a relatively simple study that asked past victims of infidelity either (a) which aspect of the infidelity (sexual vs. emotional) did they focus on more, or (b) which aspect of the infidelity made them more jealous.

The highest level of comparability to past studies would be achieved by using the forced-choice response format and the terms “distress” or “upset” to represent jealousy. For example, participants who answered “yes” to the question, “Have you had any experiences in which someone you were romantically involved with ‘cheated on’ you?” (Harris, 2002, p. 9) would be asked either “Which aspects of your partner’s infidelity did you focus on more?” (with answers “I focused more on the emotional aspects of my partner’s infidelity” and “I focused more on the sexual aspects of my partner’s infidelity”) or “Which aspects of your partner’s infidelity distressed or upset you more?” (with answers “I was more distressed or upset by the emotional aspects of my partner’s infidelity” and “I was more distressed or upset by the sexual aspects of my partner’s infidelity.”).

A lack of sex differences in both conditions would support Harris’ (2002, 2003, *in press*) conclusion that hypothetical scenarios provide an invalid test of the evolutionary explanation for sex differences in jealousy. Significant sex differences in the latter condition, in contrast, would offer support for the theory of evolved sex differences in jealousy by demonstrating the effect in the context of real (rather than hypothetical) infidelity.

Psychophysiological Responses

One of the major advantages of psychophysiological measures is their ability to reduce self-presentational effects. However, as discussed, the interpretation of psychophysiological data raises numerous questions regarding validity. Does an increase in heart rate, for example, represent greater jealousy or greater excitement?

Thus far, studies that have employed psychophysiological measures have used very general measures of

physiological arousal (e.g., heart rate, EDA, blood pressure). Alternative physiological measures may enable researchers to eliminate some of the interpretational ambiguity. For example, Cohen, Nisbett, Bowdle, and Schwarz (1996) used salivary measures of testosterone and cortisol to assess participants’ reactions to being insulted. These measures were used to determine which participants were “more upset (as shown by a rise in cortisol levels) [and] more physiologically primed for aggression (as shown by a rise in testosterone levels)” (p. 945). More generally, cortisol has been shown to be associated with stress (Kirschbaum & Hellhammer, 1994) and testosterone with dominance and aggression (Dabbs & Dabbs, 2000). As such, these hormonal measures may be well suited to the study of jealousy, as they are not as susceptible as heart rate, EDA, and so on, to being interpreted as generalized physiological arousal.

Changes in levels of cortisol and testosterone appear in saliva approximately 20 minutes after the corresponding stimulus (Cohen et al., 1996; Dabbs, 1993; Kirschbaum & Hellhammer, 1994; Veldhuis et al., 1987). Because of this delay, studies that assess cortisol and testosterone-based reactions to imagining sexual versus emotional infidelities (compared, potentially, to imagining sexual versus emotional interactions between the participant and partner; Harris, 2000) would need to increase the amount of time participants spend imagining the scenes, and the saliva measures would need to be taken 20 minutes later. Longer intervals between imagination tasks would also be needed to ensure a return to baseline.

Alternatively, researchers could create provocations in the laboratory theorized to elicit differential responses in women and men. For example, couples could be brought into the lab and separated. Then, while one member of the couple observes from a separate room, a confederate could make either flirtatious (i.e., sexual) or empathic (i.e., emotional) overtures towards the partner. Sex differences in jealousy would be expected to manifest as differential increases in cortisol (i.e., stress) and testosterone (i.e., aggression) in women and men in response to the two types of overtures. Studies that implement provocations of this sort would need carefully constructed debriefing procedures and other methodological precautions in place to minimize the risk of harm to participants. In the provocation study outlined here, for example, risk to the participants’ relationship could be reduced by scripting the methodology such that the partner is not given an opportunity to respond to the confederate’s overtures.

Behavioral Responses

Harris’ (2003) critique of Daly et al. (1982) raises a number of methodological and theoretical issues that are relevant to future behavioral studies. Methodologi-

cally, Harris' critique highlights the importance of comparing not the absolute frequencies of a behavior in men and women but rather the relative frequencies of the behavior relative to a suitable baseline. Theoretically, Harris' critique questions the appropriateness of examining extreme, non-normative behavior for evidence regarding evolved predispositions. Both of these points are good ones, and they suggest that studies involving behavioral outcomes should examine more normative behaviors and incorporate appropriate baselines.

One relatively normative behavioral outcome of infidelity in marriage is divorce, but an analysis of divorce rates would require addressing many of the same issues that arose in Harris' (2003) critique of Daly et al.'s (1982) homicide data. Specifically, researchers would need to assess the total number of divorces initiated by each sex, the proportion of these divorces that stemmed from the partner's infidelity, and the nature of the infidelity (sexual, emotional, or both). Clear predictions could be made regarding infidelities that are purely sexual or purely emotional, and infidelities of the former type might be common enough to be analyzed. Predictions regarding infidelities that encompass both sexual and emotional components are less clear, as these infidelities contain cues to both paternal uncertainty and threats to paternal investment.

These ambiguities can be avoided to some extent (albeit at the price of venturing into less normative territory), by comparing the relationships of polyamorous couples to the relationships of couples into the swinging lifestyle. Both types of relationships involve sexual interactions with people outside of the dyad, but they differ in the emotional component of the interactions. Specifically, the extra-dyadic relationships of polyamorous couples often include both sexual and emotional components (Constantine & Constantine, 1971; Knapp, 1976; Rust, 1996), whereas the extra-dyadic relationships of swinging couples typically include only a sexual component (Denfield & Gordon, 1970; Fang, 1976; but see Symonds', 1971, discussion of utopian swingers and Varni's, 1974, discussion of interpersonal and communal swingers).

This distinction provides a number of opportunities for theory testing. First, because swinging is associated with cues to paternal uncertainty but not to threats to paternal investment, whereas polyamory is associated with cues to both paternal uncertainty and threats to paternal investment, women should initiate couples' decisions to leave the polyamorous lifestyle more often than women initiate couples' decisions to leave the swinging lifestyle. Second, of relationships that break up as a result of experiments with polyamory or swinging, men should initiate swinging-related breakups more often than men initiate polyamory-related breakups. Predictions regarding self-reported jealousy in swinging versus polyamorous relationships could also be made, although the strong norms against expres-

sions of jealousy in some swinging communities would need to be taken into account (Bartell, 1970).

Another possibility for observing behavioral responses to sexual versus emotional infidelity involves a modification to the provocation study previously outlined. In this version, after observing the confederate making flirtatious versus empathic overtures towards the partner, the participant would be given an opportunity to act aggressively towards the confederate. This opportunity could take the form of administering electric shocks of a chosen intensity and duration, allocating fewer resources or rewards from a shared pool, or defecting in a prisoner's dilemma game. As with the psychophysiological measures, male and female participants would be expected to react with relatively greater aggression to sexual versus emotional provocation, respectively.

Conclusions

Clearly, additional work needs to be done to examine sex differences in jealousy beyond the realm of responses to hypothetical infidelity scenarios. As Harris (2003) aptly demonstrated, the extant research of this type (e.g., Daly et al., 1982) has flaws that reduce its theoretical impact. Moreover, as Harris (2002, in press) demonstrates, it is critical to examine responses to real infidelities in addition to hypothetical ones (although it is suggested that the leap from hypothetical to real not be confounded with a change in the construct being measured).

However, a reanalysis and reconsideration of some of the evidence reviewed by Harris (2003) and a review of new evidence that was not included in her review suggests that there is more evidence favoring the existence of sex differences in jealousy than the conclusions offered by Harris would lead one to believe. Moreover, rather than framing the debate as a dichotomous choice between rigidly defined evolved modules versus more general context-sensitive psychological processes, it may be most fruitful to consider a synthesis of the best of both models. A comprehensive theory of jealousy must account for jealousy's ultimate origins (both sexually dimorphic and sex-invariant) as well as its complex set of proximal mechanisms and contextual moderators.

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