

Male and Female Jealousy, Still More Similar than Different: Reply to Sagarin (2005)

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Harris (2003b), reviewing evidence for the Jealousy as a Specific Innate Module (JSIM) theory, concluded that overall there is no support for innate sex differences in jealousy over sexual and emotional infidelity. This article responds to Sagarin's challenges (this issue) by showing (a) JSIM proponents have not advocated Sagarin's attenuated version of JSIM; (b) studies using continuous measures do not support the original JSIM (the majority find no significant effects, and the effects that exist show varied patterns); (c) Sagarin's JSIM is untestable due to well-known scaling problems; (d) Sagarin's data do not significantly change the conclusions of Harris' review, particularly given 3 new adult studies that do not support JSIM; and (e) studies of real jealousy do not support JSIM.

At first blush, the Jealousy as a Specific Innate Module (JSIM) hypothesis appears straightforward—psychologists, journalists, readers, and students all appear to easily comprehend it. Women faced resource loss but not cuckoldry so they should be more upset by emotional infidelity than sexual infidelity. Men faced cuckoldry but not resource loss so they should be more upset by sexual infidelity than emotional infidelity. My interpretation of this is that when examining responses within gender, JSIM predicts that (a) women should show or report greater jealousy to emotional infidelity than to sexual infidelity, and (b) men should show or report greater jealousy to sexual infidelity than to emotional infidelity. Similarly, when examining responses within a given infidelity type, JSIM predicts that (c) men will show or report greater upset to sexual infidelity than women and (d) women will show or report greater upset to emotional infidelity than men.

Sagarin (this issue) has a very different interpretation, according to which JSIM predicts none of these statements (a–d) due to the possible existence of innate modulators or some other factors. He claims that the only data relevant to JSIM is the interaction term (type of infidelity by gender), which need not show a cross-over pattern. Thus, according to Sagarin, support for JSIM

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. (p. 65)

This is more than merely a semantic argument. It bears closely on what data speak to the JSIM hypothesis and the interpretation of such data. Table 1 contrasts our two interpretations of JSIM's empirical predictions.

This article contends that (a) in fact, proponents of JSIM have not advocated Sagarin's attenuated version of JSIM; (b) studies that have used continuous measures of hypothetical scenarios do not support the original JSIM (the majority show no significant effects, and the significant effects that do exist show a variety of patterns including effects in the opposite direction of JSIM or effects that suggest sex similarities, not differences); (c) it is doubtful that Sagarin's version of JSIM is testable due to well-known scaling problems; (d) Sagarin's new data do not significantly change the overall conclusion of JSIM studies, particularly in light of three new studies of adults that do not support any version of JSIM; and (e) studies of real jealous feelings and behavior over infidelity do not support JSIM.

JSIM Proponents Have Not in Fact Argued for Sagarin's Attenuated Version of JSIM

Original proponents of JSIM clearly predicted strong sex differences for particular forms of infidelity, not merely gender by infidelity type interactions. Symons (1979) as well as Daly, Wilson and Weghorst (1982) focused specifically on sex differences in sexual jealousy.

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Table 1. Interpretations of JSIM Predictions of Intensity of Jealousy Over Infidelity

	Harris	Sagarin
Sexual infidelity	predicts males > females	does not predict males > females
Emotional infidelity	predicts females > males	does not predict females > males
Within males	predicts sexual > emotional	does not predict sexual > emotional
Within females	predicts emotional > sexual	does not predict emotional > sexual
Interaction	predicts interaction should be crossover or slopes for males and females should be in opposite directions	JSIM only predicts an interaction, can be based simply on different line slopes

Indeed, Symons had virtually nothing to say about “emotional” jealousy, nor was emotional jealousy a primary focus for Daly et al. In the *Evolution of Human Sexuality*, Symons (1979) specifically discussed sex differences in sexual jealousy in several places (e.g., pp. 27, 232, 240). In none of these discussions did he also mention that women, relative to men, should be more jealous of a mate’s emotional infidelity. For example, he wrote, “Sex differences are also apparent in the occurrence of sexual jealousy over a spouse’s adultery. In cross-cultural perspective there is no doubt that husbands typically are more concerned about their wives’ fidelity than wives about their husbands’ fidelity” (p. 240). As I noted in Harris 2003b, Symons claimed male sexual jealousy is “relatively invariant,” but female sexual jealousy is “facultative.” However, he did not provide specifics but instead stated “a wife’s experience of sexual jealousy varies with the degree of threat to herself that she perceives in her husband’s adultery” (p. 232). In fact, this sounds rather similar to the social-cognitive theory presented by Harris (2003b).

Daly et al. (1982) also clearly focused on sexual jealousy, as evidenced by the title of their seminal article “Male Sexual Jealousy” (note that not only was “Female Emotional Jealousy” missing from the title but it was clearly not the focus of the article). In defense of their focus, Daly et al. write,

It follows that while women may be expected to be jealous of their mates’ allocation of attention and resources, they should not be so concerned with specifically *sexual* fidelity as men. That, in brief, is the theoretical rationale for our emphasis on males.

Thus, they compare male sexual jealousy to female sexual jealousy. They also noted “that men and women may experience jealousy in qualitatively different ways” (p. 12), suggesting that they were not just predicting differences in “intensity weights” for men and women, but rather that male and female jealousy are “qualitatively” different. In sum, the primary proponents of evolutionary psychology theories of jealousy clearly did not maintain that the only data that can speak to JSIM are those that include measures of both emotional and sexual jealousy. Almost all of the data they reviewed related only to purported sex differences in sexual jealousy.

According to Sagarin (this issue), Buss is the clearest on predicting that JSIM only predicts an interaction, rather than main effects within gender. He notes that Buss, Larsen, Westen, and Semmelroth (1992) wrote “Both sexes are hypothesized to be distressed over both sexual and emotional infidelity... (Buss, 1989).” However, Buss (1989) did not offer any hypothesis to explain why both forms of infidelity would be troubling to both sexes. Instead, he discussed why he would not predict a sex difference in “general unfaithfulness,”

Conceptually, unfaithfulness by a partner does indeed threaten a mate’s potential resources. If a female partner is unfaithful, a man’s probability of paternity is lowered (Daly & Wilson, 1983; Dickemann, 1981). If a male partner is unfaithful, the woman risks the diversion of his resources away from herself and her (potential) offspring (Buss, 1988b). Thus, on conceptual grounds, men and women are both predicted to become upset at a partner’s unfaithfulness, and there are no clear conceptual grounds for predicting that one vector will be stronger than the other...Conceptual and empirical considerations, therefore, suggest that unfaithfulness by a partner would be equally upsetting for men and women, but for different ultimate reasons. (p. 739)

Nowhere in this article did Buss offer an ultimate cause for men being bothered by emotional infidelity and women being bothered by sexual infidelity. Although JSIM proponents have sometimes in passing mentioned both sexes being bothered by both forms of infidelity, their theory speaks to sex differences, not similarities.¹ (See Harris, 2003b, for a theory of similarities). Furthermore, on the one occasion where Buss et

¹To explain the large numbers of men choosing emotional infidelity as worse, Buss et al. (1992) suggested that this may be due to emotional infidelity signaling sexual infidelity. Yet, Buss et al. have repeatedly attempted to dismiss the double-shot or two-for-one hypothesis of DeSteno and Salovey (1996) and Harris and Christenfeld (1996), which claims that when given the forced-choice infidelity question, men and women tend to draw different inferences that then impact their responses. Men tend to think that a woman who is sexually unfaithful is probably also emotionally unfaithful, hence sexual infidelity is chosen as worse because it implies both forms of infidelity. Women are less likely to draw such conclusion and instead tend to think that a man’s emotional infidelity also indicates sexual infidelity. Data from several studies suggests that this is indeed one of the factors that contribute to the gender effect on the forced-choice infidelity scenarios (DeSteno & Salovey, 1996; Harris & Christenfeld, 1996; Dijkstra et al., 2001).

al. (1992) used a method other than the forced-choice format, they did not even test for an interaction of sex and infidelity type—which is puzzling if, as Sagarin believes, these are the only data that speak to JSIM. Instead, they examined simple main effects of infidelity type within each gender. In fact, virtually all JSIM proponents tested for simple main effects (either within gender or infidelity type) and ignored interactions when using continuous measures (e.g., Geary, Rumsey, Bow-Thomas, & Hoard, 1995; Shackelford, LeBlanc, & Drass, 2000; Weiderman & Allgeier, 1993).² This leaves little ambiguity on whether work focusing on just one type of infidelity could provide evidence relevant to JSIM.

JSIM is Ultimately a Theory About Behavior

When thinking about the predictions of JSIM for responses to self-report questions, it is important to keep in mind that JSIM is ultimately a theory about putative mechanisms that would have arisen for their effects on actual behavior. According to JSIM proponents, there would have been stark differences in what behavioral responses would have been optimal for men and women. Given the fragility of links between attitudes and behavior, well documented by social psychologists (e.g. Fazio & Zanna, 1978), one can well ask: If these supposed innate adaptations only succeed in slightly altering the magnitude of sex differences in self-report responses to one or another hypothetical scenario, how are they going to produce the major behavioral differences that behavioral ecology supposedly demanded? If sexual infidelity was an evolutionary disaster for males, necessitating behavioral mechanisms to make men detect and actively counter this threat, then they should show a strong tendency to focus upon this threat, and far less concern with emotional infidelity (and conversely for women). Thus, one should be able to see this propensity within each gender, without having to compare magnitudes of scenario differences across the two sexes. Otherwise the effect is at most a pale vestigial shadow of the sort of adaptation evolutionary psychologists have portrayed.³ The traditional view of JSIM, which predicts within-gender differences in sexual versus emotional jealousy and between-gender differences in each type of infidelity, can be much more plausibly linked to behavior than Sagarin's

(this issue) version. Sagarin's approach of only paying attention to differences that appear when both men and women are considering both forms of infidelity simply has little, if any, behavioral implications and hence makes little sense as an adaptation.

Measures of Hypothetical Infidelity Do Not Support JSIM

Sagarin (this issue) and I agree that it is problematic for JSIM if sex differences are found only when using the forced-choice method. However, we differ in our interpretations of the studies that use continuous measures of hypothetical infidelity. Sagarin excludes five studies that I included in my review (Harris, 2003b). In the following, I question this exclusion. It is also important to note that Sagarin chose to focus only on results of measures of "upset," "distress," or "jealousy." For consistency, my reply also focuses only on these measures. However, there are no theoretical or empirical grounds that justify limiting the construct of jealousy to just these three terms. To the contrary, several researchers have argued and provided empirical data for the idea that jealousy may be a term that encompasses several more basic emotions such as anger, sadness, and fear. (See Harris, 2004, Hupka, 1984; Sharpsteen, 1991; Shaver, Schwartz, Kirson, & O'Connor, 1987; White & Mullen, 1989, for various models of how this might occur.) Given the prominent role of jealousy in homicides, anger may be particularly important in jealousy. Although space limitations prohibit the review of data from jealousy studies that have assessed these other emotion terms, such work is likely quite important in understanding the nature of jealousy.

The Original JSIM

Of the hypothetical studies that Sagarin (this issue) chooses to include, he claims that all but one support JSIM. There are several reasons for doubting this. First, only two studies found significant interactions and one found a trend ($p < .10$). Second, the pattern of the significant interactions does not offer support for the original JSIM (see Figure 1). In one study, both genders rated emotional infidelity as worse than sexual infidelity (Sheets & Wolfe, 2001), however in the other two studies, both genders rated sexual infidelity as worse than emotional infidelity (Weiderman & Allgeier, 1993; Harris, 2003a). In other words, none of the significant findings of studies reviewed by Harris (2003b) showed the type of cross-over interactions that (I contend) JSIM has always been understood to predict.

Furthermore, there are two additional studies of hypothetical betrayal that Sagarin excludes because they examined only sexual infidelity. However, as noted,

²Sagarin, Becker, Guadagno, Nicastle, and Millevoi (2003) also tested simple main effects within gender in addition to interactions.

³As one anonymous reviewer pointed out, it would in this case resemble the tailbone or the appendix. Or, perhaps more likely, it may be one of the innumerable number of rather modest sex differences disclosed by questionnaire research, one which merely has some partial and coincidental resemblance to the sort of stark difference JSIM would predict.

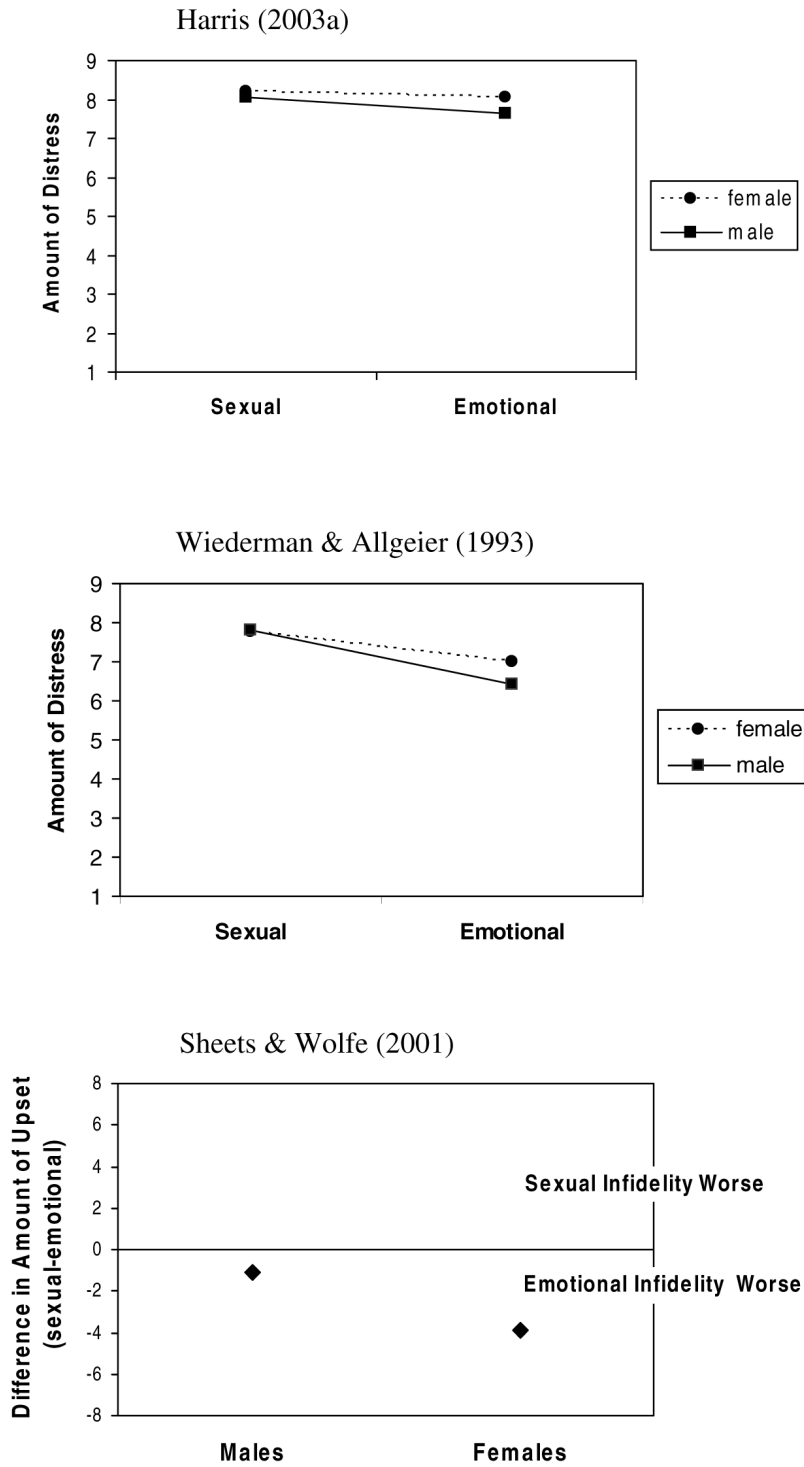


Figure 1. Studies reviewed in Harris (2003b) that had statistically significant interactions.

original JSIM proponents clearly believed that such data could speak to JSIM. In one study of 2,079 university students from seven countries, the sexes did not differ in their estimated jealousy over a partner having sexual relationships with someone else (Buunk & Hupka, 1987). More recently, Paul and Galloway (1994) found a sex effect, but in the opposite direction from JSIM predictions: Significantly more women

than men reported that they would “harass” and “bad-mouth” the rival, show anger against the mate and breakup over a mate’s sexual betrayal. Furthermore, significantly more men than women reported that they would “do nothing” and would try to “change self.”

In sum, none of the nine studies that used continuous measures to assess hypothetical infidelity reviewed in Harris (2003b) found significant results to support

the original version of JSIM (of those reporting significant findings, three found that the sexes agree on which form of infidelity is more upsetting and one found, contradictory to JSIM, that women are more upset over sexual infidelity than men).

Sagarin’s Version of JSIM is Untestable

Sagarin (this issue) claims that the existing data support his version of JSIM since the difference between slopes of the lines connecting sexual and emotional jealousy are not perfectly parallel for men and women. There are empirical, methodological, and theoretical problems with this.

The biggest empirical problem, as noted previously, is that the majority of studies that have used continuous measures have failed to find significant effects, even with substantially large samples. If all of these studies showed a similar pattern of results, then such a case might be supported. However, these studies show a variety of patterns. For example, Figure 2 (top) shows a

sample of a study Sagarin claims offers some support for JSIM, along with a study that he claims does not (bottom).

Secondly, interactions observed in self-report measures of variables like distress, even when statistically significant, may or may not reflect true underlying interactions (Bogartz, 1976; Krantz & Tversky, 1971; Loftus, 1978). This is because instruments such as Likert-type scales offer at best a monotonic relationship to the underlying state being measured. With this kind of scale, the only interpretable interactions are crossover interactions or others where the sign of the effect of one independent variable is reversed by a change in the other independent variable. Many of the interactions Sagarin argues support JSIM fall squarely within the uninterpretable category, even if they had been statistically significant, which most are not (compare Figures 1 and 2 with Loftus, 1978, Figure 3, Panel C, “Uninterpretable Interactions”).

A third serious empirical problem is a lack of convergent validity within studies. Different measures of-

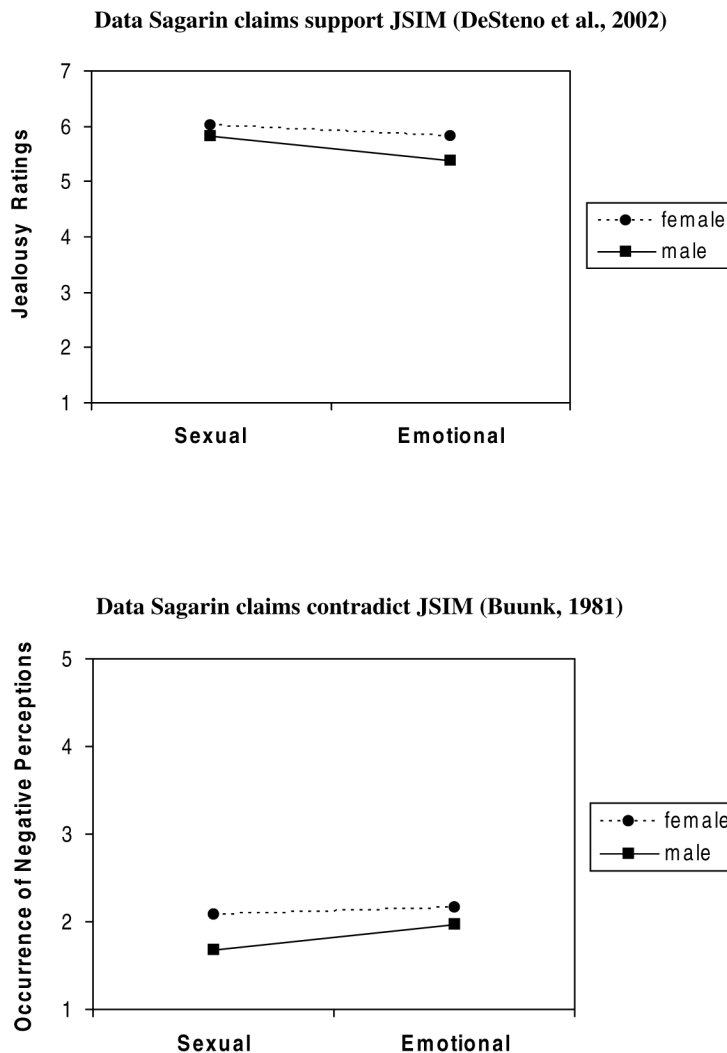


Figure 2. Comparison of data patterns Sagarin claims are consistent versus inconsistent with JSIM.

ten produce different results. For example, in Harris (2003a), continuous measures revealed that both men and women reported significantly greater jealousy to sexual infidelity than to emotional infidelity. However, on the forced-choice infidelity questions, these very same subjects showed the opposite pattern of results: 83% of the women and 56% of the men reported that emotional infidelity would be worse than sexual infidelity. This inconsistency across measures is also found in Green and Sabini (2004), Sheets and Wolfe (2001), and Weiderman and Allgeier (1993). Recall, that Sagarin claims that the interactions noted above support JSIM but that innate modulators or cultural factors altered the “weightings” so that both men and women care more about one form of infidelity. However, the argument that these factors are responsible for the variety of responses to hypothetical scenarios is rendered less plausible by the fact that minor variations in question wording can dramatically alter the results, even when given to the very same subjects. This variation across measures seriously weakens the case for construct validity of hypothetical questions as indicators of the presumed underlying processes. This again reinforces the importance of behavioral evidence in the debate of possible sex differences in jealousy.

On a theoretical level, Sagarin’s JSIM (this issue) loses virtually all predictive power (e.g. it no longer predicts that men will be more upset than women over sexual infidelity or women will be more upset over emotional infidelity than sexual infidelity).⁴ In these discussions of data from hypothetical infidelity it is important to remember that, as noted, JSIM is ultimately a theory about mechanisms that purportedly arose to affect behavior. The fact that sex differences are so elusive in continuous hypothetical measures that we need to rely, in the majority of cases, on statistically non-significant results involving dubious types of interactions to find evidence for these mechanisms raises serious questions of how these mechanisms could have potent behavioral effects. Furthermore, if one does accept these hypothetical measures as valid and relevant to jealous behavior, then the clearer conclusions would be (a) that women find both emotional and sexual betrayal more upsetting than men and, (b) that sexual betrayal is usually more upsetting than emotional betrayal.

⁴The 2-X-2 table is defined by a set of four values (we will refer to these as male-S [male upset over sexual], female-S, male-E [male upset over emotional], and female-E). The standard JSIM model imposes a partial ordering on the set: It entails that both male-S and female-E are greater than either male-E or female-S. Sagarin’s model merely requires that $\text{male-S} + \text{female-E} > \text{male-E} + \text{female-S}$. The former entails the latter (the sum of two larger terms must be greater than the sum of two smaller terms), but the latter does not entail the former (see Figure 1 for examples that fit Sagarin’s model but not standard JSIM). Thus, the set of outcomes consistent with classic JSIM is a small subset of the set of outcomes consistent with Sagarin’s model, and hence the classic JSIM is more restrictive.

The Hypothetical Forced-Choice Data Also are Problematic

Sagarin (this issue) notes that the sex effect in the DeSteno, Bartlett, Braverman, and Salovey (2002) study, although greatly attenuated under cognitive load, did not completely disappear. However, it is quite possible that with a greater cognitive load (e.g. remembering a greater number of digits) the sex effect might completely disappear. Sagarin also argues that “the proposed mechanism did not evolve to automatically answer forced-choice questions presented in written format” (p. 14). Ironically, a similar type argument could be made that these modules also did not evolve to affect responses on hypothetical scenarios in which one is forced to predict which form of infidelity would be more upsetting. Because such modules purportedly evolved to affect behaviors, one might be skeptical of the ability of any of the hypothetical data, upon which Sagarin’s defense of JSIM completely rests, to speak to real jealous feelings and behavior.

It should also be kept in mind that there are serious methodological issues with the hypothetical forced-choice findings. First, virtually all attempts to show converging validity for the forced-choice question have failed. Responses to such measures have not been found to correlate with physiological measures (Harris, 2000) or with recall over actual experience with infidelity (Harris, 2003a, 2003b). Further, they often produce opposite results from continuous measures, as mentioned previously. Finally, the forced-choice method is a particularly poor way to test Sagarin’s model of JSIM since it is incapable of independently assessing emotional and sexual jealousy. If, as Sagarin claims, there are separate triggers for sexual jealousy and for emotional jealousy, each of which can be independently affected by cultural modulators, then it is essential that measures of jealousy are capable of separately assessing these two triggers. The forced-choice question is incapable of doing so (e.g., a majority of both sexes choosing emotional infidelity as worse could arise because of decreases in the weighting of the “sexual” trigger, or increases in the weighting of the “emotional” trigger or both). Hence, Sagarin’s version of JSIM really requires the use of measures that are not in a forced-choice format.⁵

New Research using Hypothetical Scenarios

Sagarin (this issue) argues that a new psychophysiological study provides evidence for JSIM

⁵Moreover, any effects on the forced-choice scenarios would be consistent with a theory in which the sexes had the same innate weighting on one trigger but had a different innate weighting on the other trigger.

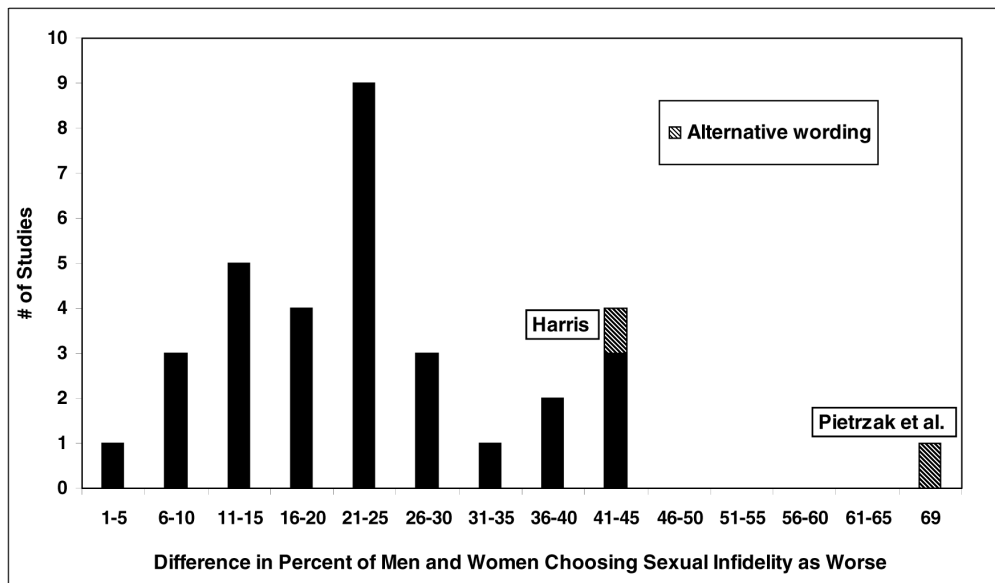


Figure 3. Distribution across studies of the difference in percent of men and women choosing sexual infidelity as worse in forced-choice studies; crosshatched squares show Pietrzak et al. (2002) study and Harris replication using the same wording with UCSD undergraduates.

(Pietrzak, Laird, Stevens, & Thompson, 2002). This is the only study to find strong effects within women (i.e., greater reactivity to emotional infidelity relative to sexual infidelity). However, despite being the most recent psychophysiological study, this work did not attempt to grapple with any of the limitations found in previous work (e.g., testing the alternative hypothesis that these women show greater reactivity to emotional imagery in general). Furthermore, based on responses to other infidelity measures, this sample appears to be deviant (see Figure 3). The size of the sex effect in this sample was an extreme outlier relative to all other samples (including other U.S. college samples). This is odd given that some other samples vary on sexual orientation, culture, age, and so on. Sagarin's suggestion that this deviance is due to the wording of the forced-choice question does not appear to be correct. When these questions were administered to a UCSD college sample, the size of the sex effect was similar to other research using the traditional wording (see Figure 3).

Thus, this new psychophysiological study does not question any of the conclusions of my original review. Several of my criticisms of Sagarin's analysis of the self-report data also apply to the psychophysiological data (e.g., relying on nonsignificant results, problems with testing non-cross over interactions, dismissing data that focus within gender, failure to find converging validity across measures). Furthermore, there are several findings that are problematic for JSIM such as the fact that women with sexual experience show greater reactivity to sexual infidelity than to emotional infidelity (Study 4 from Harris, 2000) and the fact that the physiological measures show no association with

subjects' self-report. In sum, most work has not found women to be significantly more physiologically reactive to emotional relative to sexual infidelity. Perhaps more importantly, however, we should not lose sight of the fact that there is no evidence that these physiological measures in response to hypothetical infidelity scenarios are valid or reliable indices of any particular emotion, much less of jealousy (particularly given the work of Harris, 2000).⁶ Moreover, there is no reason to view such measures as somehow "purer" or more "unadulterated" than self-report or behavioral measures. In sum, these data may have no relevance to jealousy at all.

The second article Sagarin (this issue) cites is Sagarin et al. (2003), which included two college student samples. This work shows the cross-over interaction predicted by JSIM. Although it is difficult to determine why these results are different from other studies, some possibilities are: (a) subjects answered the forced-choice questions first and then immediately responded to the continuous measures, which may have influenced their responses on the continuous measures;⁷ (b) these questions were embedded in much larger questionnaire, one which may have had

⁶Sagarin (this issue) suggests measuring cortisol to assess "upset" and testosterone to assess being "primed for aggression" can overcome these limitations. This is unlikely for many reasons. For one, the term "upset" is used by people to refer to a large number of emotions. For another, different basic emotions may be involved in sexual and emotional jealousy.

⁷New work by several of the authors of the Pietrzak et al. (2002) article failed to find significant results with continuous measures of emotion when they were presented before the forced-choice question (Strout, personal communication).

other questions that alerted the subjects to the hypothesis of gender differences; and (c) responses were obtained without privacy in mass testing of a large class. In short, because no other work has found significant cross-over interactions on continuous measures of jealousy or upset, these data by themselves cannot salvage JSIM.

Sagarin (this issue) calls for work with older populations and using additional methods. Fortunately, there are three new studies that provide such data from non-college age adults. One study recruited 157 adults (mean age = 34) from a train station or public park (Sabini & Green, in press). This work retained the forced-choice format, but used a more vivid and realistic method in which subjects listened to a tape of a person confessing to a sexual or emotional affair and imagined that this person was their mate. No sex difference emerged: 66% of the men and 67.5% of the women selected the confession of emotional infidelity as more upsetting. These researchers employed this method with a second adult sample ($n = 182$), but this time included 7-pt. Likert-type scales of upset. Again, JSIM was not supported as evidenced by the failure to find a significant gender by type of infidelity interaction ($F = .17$).⁸ Finally, in a web study using a representative national sample of 777 people, men and women did not differ in their continuous ratings of upset over the two forms of infidelity nor was there any hint of a significant interaction ($F = .09$; Green & Sabini, 2004). In short, the data from the most relevant populations—adults with relationships—does not offer support for JSIM.

In sum, there are 15 studies of continuous measures of hypothetical infidelity: Nine found no gender differences, three found the sexes agree on the worse form of infidelity, two support JSIM, and one found women to be more sexually jealous than men. The common failure to find gender differences does not appear to be an issue of power, given the sample sizes noted in Table 2. Hence, if there is a sex effect, its magnitude is so small, and so lacking in robustness as to cast serious doubt on the proposition that JSIM's proposed psychological "weightings" would have any predictable effects on actual behavior, which is really what JSIM is all about.

Leaving the Pallid Hypothetical Studies Behind, Real World Findings Do Not Support JSIM

The argument that JSIM only predicts interactions and not main effects is key for Sagarin's (this issue) argument because it provides a justification for dismissing several findings. These data are arguably far more

⁸The term "jealousy" proved more mixed across different analyses.

relevant to the JSIM hypothesis than are any of the studies involving purely hypothetical measures, because they are based on actual experiences rather than on guesses about how people think they would feel were they to be placed in purely hypothetical situations. Some of the findings that were dismissed include: (a) wives in open marriages, compared to their husbands, had greater negative perceptions of their spouses' affairs and were significantly more bothered by thinking about their mate having sexual intercourse with the other person (Buunk, 1981); (b) male and female college students did not differ in their reports of the degree to which a mate's actual sexual betrayal had damaged the primary relationship (Hansen, 1987); and (c) men and women did not differ in their reactions to the different aspects of a mate's actual infidelity (Harris, 2002; 2003a).

Sagarin (this issue) claims that Harris (2002; 2003a) do not bear on JSIM because of the questions that were asked. In this work, participants were first asked "How emotionally distressed were you upon discovering this infidelity?", followed directly by "To what degree did you focus on the emotional aspects of your partner's infidelity?" and "To what degree did you focus on the sexual aspects of your partner's infidelity?"⁹ There is good reason to believe that "focus" is quite pertinent to emotion. According to functional accounts, emotions arise in response to events that could substantially impact inclusive fitness and enable the individual to respond more adaptively in these situations. One key effect of negative affective states is to shift attention to the emotional stimulus and there is a growing literature that documents precisely such effects of emotion on attention (see, e.g., Mathews, Mackintosh, & Fulcher, 1997; Ohman & Mineka, 2001). Thus, asking people how much they were distressed by an infidelity and then specifically asking how much they focused on the sexual versus emotional aspects of that infidelity would appear to be quite relevant to the emotion of jealousy.¹⁰ Moreover, even if one wants to claim that the "emotional" aspects might be an ambiguous notion, there is no ambiguity in "sexual aspects." Yet, no sex difference was found on this measure.

Other non-hypothetical data are also relevant to JSIM. Mullen and Martin (1994) found that men and women did not differ in their reports of their concern over loss of sexual exclusivity. This New Zealand

⁹In discussing this work, Sagarin embeds the term "focus" in the context of discussions with the straying partner, but as described previously, the questionnaire did not frame it in that way.

¹⁰While opposing this measure, Sagarin, when reviewing Buunk (1981), stretched the construct of "emotional jealousy" to include losing a partner's attention and being afraid that a partner would leave. However, if leaving is an emotional infidelity then both sexes should find emotional infidelity the most upsetting since the loss of a partner would be the most devastating blow to inclusive fitness.

Table 2. *Studies Employing Continuous Measure of Jealousy to Hypothetical Infidelity and Real Infidelity*

Hypothetical Infidelity				
Study	Both Forms of Infidelity			Findings
	N	Sample	Interaction?^a	
Green and Sabini (2004)	777	adult	n.s.	
Sabini and Green (in press)	182	adult	n.s.	
DeSteno and Salovey (1996)	65	college	n.s.	
DeSteno, Bartlett, Braverman, and Salovey (2002)	111	college	n.s.	
Geary, Rumsey, Barr-Thomas, and Hoard (1995)	516	college	NR	
Geary, DeSoto, Hoard, Sheldon, and Cooper (2001)	292	college	n.s.	
Harris (2003a)	358	college	$p = .09$	S > E for both genders
Nannini and Meyers (2000)	301	college	n.s.	
Sagarin, Becker, Guadagno, Nicastle, and Millevoi (2003)	513	college	$p = .001$	Cross-over
	353	college	$p = .001$	Cross-over
Shackelford, LeBlanc, and Drass (2000)	655	college	NR	Authors conclude "no sex difference was found for jealousy"(p. 656) ^b
Sheets and Wolfe (2001)	117	college	$p < .05^c$	E > S for both genders
Wiederman and Allgeier (1993)	223	college	$p = .02^c$	S > E for both genders
Sexual Infidelity Only				
Study	N	Sample	Sex Effect?^a	Findings
Buunk and Hupka (1987)	2,079	college	n.s.	
Paul and Galloway (1994)	116	college	$p < .05$	♀ > ♂ for sexual jealousy
Real Infidelity				
Both Forms of Infidelity				
Study	N	Sample	Interaction?^a	Findings
Harris (2002)	196	adult	n.s.	Significant main effect: E > S for both genders
Harris (2003a)	127	college	n.s.	
Sexual Infidelity Only				
Study	N	Sample	Sex Effect?^a	Findings
Buunk (1981)	100	adult	$p < .05$	♀ > ♂ for sexual jealousy
Hansen (1987)	90	college	n.s.	No sex difference in effect of partner's sexual infidelity on primary relationship

Note: S = Sexual Infidelity, E = Emotional Infidelity, NR = interactions not reported (note all NR studies were conducted by JSIM proponents)

^aFor studies that included both forms of infidelity, entry in table refers to the significance of the gender by infidelity interaction term. For studies that included only sexual infidelity, entry into table refers to the significance of main effect of gender on sexual infidelity.

^bTheir data were mixed: ♀ > ♂ for anger and hurt to sexual and to emotional infidelity; ♀ > ♂ for jealousy to emotional infidelity but ♀ = ♂ for sexual infidelity.

^cTest of difference score

study is particularly impressive in that it used random sampling and included a sample with a wide range of SES and age. In other work (Sheets & Wolfe, 2001), men, relative to women, did not report that sexual fidelity was more important to them nor were the means in the direction predicted by JSIM (e.g. for heterosexuals, Women = 6.32, Men = 5.83, on a 7-pt. scale with 7 being highest importance).

In sum, none of the studies of real infidelity support JSIM. Three found no sex differences and one found a significant effect in the opposite direction of JSIM!

Conclusions

In sum, Sagarin's (this issue) claim that JSIM only predicts a sex by infidelity interaction is not in keeping with the original version of JSIM proposed by Symons and Daly and Wilson, nor with Buss' and most other JSIM proponents' data analyses of continuous measures. Furthermore, Sagarin's new version of JSIM has weaknesses at many levels. With the exception of the forced-choice data, the bulk of the allegedly supportive evidence reflects statistically non-significant findings from hypothetical questions given

to college students. As argued earlier, all of the hypothetical data remain of questionable validity. The data from real infidelity suggests either no gender effects or women are more upset than men over sexual infidelity. Furthermore, the homicide data also suggest a lack of sex differences.¹¹

The evidence described in this article shows how doubtful it is that there really is any robust sex difference in emotional and sexual jealousy as outlined by JSIM. There is one odd exception—the forced-choice hypothetical answers, which may be particularly affected by female’s self-presentation styles or elicit different inferences in the two genders (DeSteno et al. 2002, Harris & Christenfeld, 1996). However, as noted earlier, there is no reason to take this as the true measure of jealousy, particularly in light of findings from real infidelity.

Furthermore, simply finding even a valid gender difference, in and of itself, would not speak to the origin of that difference, nor can the ability to construct a persuasive sounding adaptive story prove that some gender effect is innate. For example, relative to women, men across many cultures rate “being a good cook and housekeeper” as a more important trait in a mate (Eagly & Wood, 1999). One could easily construct a story according to which men have evolved a specific innate mechanism that causes them to find this an important trait. Those of our ancestors who found mates who were good cooks were simultaneously able to reduce their threat of parasites and microbes while consuming tasty food. This conferred a selective advantage on those who then sought out good cooks. The degree to which you find this version of life in the ancestral environment palatable has no bearing on its veracity. One would need more than a good story and evidence that men desire wives that are good cooks before we conclude that there is support for a specific “good cook” module. Even in studies of animal behavior, where isolation rearing experiments are feasible, demonstrating that behavioral dispositions are innate is challenging (see Ariew, 1999, for an insightful discussion).

Even if, as JSIM proponents contend, men and women faced different inclusive fitness risks, this need not have led to evolution of sexually dimorphic mechanisms. The best way to prevent either form of infidelity from occurring is to stop it before it happens. Given the tremendous overlap of signals of emotional interest and sexual interest, there simply may have been no need for sexual dimorphism. If it does turn out that

there is a gender difference in jealousy, it will likely be in the form of women caring more about both forms of infidelity. Although JSIM cannot account for such a finding, social-cognitive theories may fare better (particularly given that women tend to be the relationship “monitors”).

In closing, social psychology has a tradition of strong methodology (e.g. converging methods, construct validity, etc.). Although one can applaud the use of evolutionary theory to enrich our stock of potential psychological theories, one must be cautious about letting a good story substitute for rigorous methodology, including testing alternative hypotheses. Jealousy is a powerful emotion that still remains shrouded in mystery. Its study is clearly important. However, in the case of jealousy over infidelity, it seems clear that more studies involving individuals who have actually experienced infidelity will be most useful for further progress in this field.

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¹¹Sagarin dismisses these because they rely on extreme behavior, but other evolutionary psychologists view the threat of violence as an inherent aspect of the adaptive strategy of male jealousy (Daly et al., 1982; Pinker, 1997); after all, the deterrent to potential rivals is the potential for aggression by the female’s mate.

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