

Research Report
**Beyond Touching:
Evolutionary Theory and Computer-Mediated Infidelity**

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Computer-mediation allows sexual relationships to exist despite geographical separation. The current study utilized evolutionary theory as a framework for understanding sex differences in perceptions of cyber-infidelity. A sample of 115 college students (46% male, age 18-42) were asked to rate their response to evidence of cyber-infidelity across four indices: jealousy, infidelity, distress, and destructiveness. Based in evolutionary theory, it was hypothesized that female participants, as opposed to males, would be significantly more likely to categorize extra-dyadic computer-mediated behavior as infidelity, would report higher levels of distress and jealousy, and would rate the stimuli as significantly more destructive to the relationship. Findings supported the theoretical perspective but were limited. Although jealousy ratings yielded no significant sex differences, female participants were significantly more likely to characterize the evidence as an act of infidelity, report higher levels of distress in response to these behaviors, and rate these behaviors as more destructive to the intra-dyadic relationship. Consistent with an evolutionary explanation, these findings suggest that females are more likely than males to view extra-dyadic computer-mediated relationships as acts of emotional infidelity.

Keywords: infidelity, evolutionary theory, online relationships

The paradigmatic model of infidelity holds that an act of infidelity involves a sexual behavior performed outside of a committed relationship (Merkle & Richardson, 2000). However, when one member of a committed relationship uses the Internet in a way that violates agreements concerning exclusivity within their relationship, betrayal occurs in the absence of a physical sex act (Maheu & Subotnik, 2001). Because a strictly computer-mediated relationship does not involve physical contact, it can often be difficult to determine if sex has even occurred (Collins, 1999). Consequently, people may not agree that cyber-infidelity is a 'real' infidelity.

Many people believe that infidelity requires physical consummation, whereas others believe betrayal can occur without an extra-dyadic physical sex act (Frame, 1997). Because the traditional definitions of infidelity often fail to account for non-physical aspects of infidelity, the construct of *emotional infidelity* was developed to include the feelings of betrayal that result from non-physical extra-dyadic intimacy or emotionally bonding with someone other than one's mate (Charny, 1972; Neuman, 2001).

Past research has found sex differences in attitudes toward justifications for extra-marital relationships, as well as sexual and emotional characteristics that are reflected in the affair (Glass & Wright, 1992). Studies suggest that

while men are more likely to cheat in a *physical* fashion, women are more likely to commit *emotional* infidelity (Glass & Wright, 1992; Johnson, 1970; Whitely & Whitely, 1967). In fact, Thompson (1984) provided evidence that significantly more men than women experienced extra-marital affairs that consisted of purely physical sexual acts. Although past research has shown that women do engage in physical infidelity, it is usually after an episode of emotional infidelity in which the woman becomes emotionally involved or develops a deep meaningful attachment to her extra-dyadic partner (Lawson, 1988).

A large literature exists which explores sex differences in response to infidelity. However, most infidelity studies, including emotional infidelity studies, were conducted with the assumption that infidelity occurs in close physical proximity and with some amount of tangibility (Collins, 1999). For example, in an emotional infidelity study conducted by Weis & Slosnerik (1981), participants were asked to rate their jealousy levels based on their partners either 'going to see a movie' or 'spending an evening talking' with a member of the opposite sex. Participants in this study did not characterize 'seeing a movie' as sexual infidelity, but did rate this behavior as emotional infidelity. These findings are thought to occur because the partner is in close physical proximity with the extra-dyadic other, thereby posing a potential threat to the physical integrity of the relationship. More specifically, when seeing a movie or simply talking there might be behaviors such as physical contact, non-verbal language, and even eye gazing that

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could be considered indicators of infidelity. Furthermore, participants might have imagined if their significant other 'spends an evening talking' with a member of the opposite sex it may lead to the possibility of a physical tryst.

Arguably, cyber-infidelity could be perceived as a type of emotional infidelity because it lies outside the parameters necessary for physically sexual infidelity, such as proximity. However, one could rationalize that without intentions of future physical endeavors, simply interacting with someone in a sexual manner over the Internet does not constitute infidelity. Ultimately, justifications such as this have led many people to stray from their relationships (Margonelli, 2000). In a recent study examining Internet infidelity, 61% of the participants who engaged in a cyber-affair reported limiting their sexual activity to non-physical cyber-sex, and yet over 20% separated or divorced as a final consequence of their actions (Schneider, 2000). With the possibility of consequences such as divorce, it is important to understand the underlying beliefs and perceptions of these sexually founded but non-physically conducted endeavors.

Because engaging in cyber-relationships is not restricted by physical or geographical proximity, more research is needed to examine the applicability of modern perspectives and theories regarding sex differences in infidelity. For example, evolutionary perspectives attempt to explain sex differences in almost every aspect of relationship behavior including mate preferences, the sexual tactics employed and used during the dating period, jealousy, sexual conflict within the relationship, and infidelity outside the relationship. However, do evolutionary assumptions and predictions still apply when the cheating takes place in a computer-mediated context?

According to evolutionary theory, the main purpose for the mating process is to ensure reproductive success; however, due to differing reproductive capabilities, men and women have different perspectives and utilize different strategies to achieve that goal (Milhausen, & Herold, 1999). Evolutionary perspectives propose that men are more sexually promiscuous than women because engaging in sexual intercourse with multiple partners increases their chances of genetic reproduction. For women, a more successful evolutionary strategy would involve securing a male partner's resources in order to provide for the female and her offspring during the childrearing process. This in turn would help to ensure her reproductive success because a female is limited in the number of offspring she can produce (Buss, 1994; Nannini & Myers, 2000).

In accordance with the evolutionary perspective, it is due to these reproductive goals that sex differences also emerge in jealousy and perceptions of infidelity. In a classic study, Buss and colleagues (1992) examined sex differ-

ences in jealousy and perceptions of infidelity by measuring self-reported and physiological responses of men and women. Participants were asked which type of infidelity is more upsetting, emotional or sexual. Men chose sexual infidelity as more upsetting than emotional infidelity; conversely, women reported emotional infidelity as more upsetting than sexual infidelity. The physiological responses provided further evidence of the sex difference, in that men's heart rates were faster in response to sexual infidelity, and women's heart rates were greater in response to emotional infidelity (Buss, Larsen, Westen, & Semmelroth, 1992).

Some evolutionary theorists assert that males are more threatened by sexual infidelity because extra-dyadic sexual activities interrupt their genetic evolution more so than an emotional tryst. While women can be assured that they have passed on their genetic material upon conception, men can never be 100% confident of this. Consequently, males are likely to regard female sexual infidelity as posing a higher risk to their genetic prosperity than emotional infidelity. If a man has a sexual relationship with a woman while she is having a sexual relationship with another male, he risks the chance paternal uncertainty should the woman become pregnant. Furthermore, he may be unknowingly investing his financial and emotional resources into offspring that do not bear his genetic material (Buss, 1994).

On the other hand, as women are confident of their genetic success, they are presumably less concerned with a mate's sexual infidelity. However, because many women regard emotional infidelity as posing a higher risk to their genetic success, they may be more likely to feel upset or jealous in response to acts of emotional infidelity than sexual infidelity. Women risk the loss of resources, important during the childrearing process, financial or emotional, if their mates become emotionally invested in another woman. Women may perceive that if a man develops an emotional bond with another woman, he may choose to spend his resources on her instead (Buss, et al., 1992).

As extra-dyadic computer-mediated relationships become increasingly common, it is important to understand sex differences that may influence perceptions of and emotional responses to these behaviors. A new genre of infidelity, involving computer-mediation, presents new questions that may not be easily explained under the evolutionary framework. Since genetic propagation is technically impossible when a relationship is constrained to computer-mediation, the assumptions of the aforementioned evolutionary assumptions may no longer apply.

The purpose of this study was to examine the applicability of evolutionary theory for understanding sex differences in the beliefs and perceptions associated with com-

puter-mediated infidelity. Participants were given a brief scenario and evidence of a possible act of extra-dyadic computer-mediated behavior. Participants then reported their perceptions, reactions, and emotional responses that resulted from the stimuli. Their answers were examined specifically for differences between the sexes on whether the stimulus was categorized as infidelity, how upsetting the stimulus was, how jealous the participants felt, and how destructive the computer-mediated behavior would be to the primary romantic relationship.

This study addresses four main hypotheses which were developed using an evolutionary framework. Because computer-mediated infidelity is not physically sexual, it is believed that, even for predominantly sexual communication, evolutionary-based predictions pertaining to emotional infidelity are the most relevant. Therefore, female participants should have stronger reactions to situations of computer-mediated infidelity than males. The hypotheses of the current study are as follows:

Hypothesis 1: Females will be significantly more likely than males to categorize extra-dyadic computer-mediated behavior as infidelity.

Hypothesis 2: Female participants will report greater levels of distress in response to these behaviors than male participants.

Hypothesis 3: Female participants will report greater levels of jealousy in reaction to these behaviors than male participants.

Hypothesis 4: Female participants will perceive these behaviors as more destructive to the relationship than male participants.

Method

Participants

A total of 115 undergraduate psychology students (53 males and 62 females) participated in this study. The age of the participants ranged from 18 to 42 ($M = 19.97$, $SD = 3.08$). Participants reported their race as Caucasian (67%), Asian (17%), African-American (7%), Hispanic (1%), Native American (1%), Biracial (1%), and Other (7%). Most of the participants reported their sexual orientation as heterosexual ($n = 113$); one participant reported being homosexual, and one refrained from answering the question. As most of the hypotheses are based on differences between the sexes, and not sexuality preferences, all of the participants were retained in the final analyses.

Materials

Participants were randomly assigned to one of two groups in which they were introduced to a couple ("Bill" and "Colleen") and provided with descriptions of extra-

dyadic computer-mediated behaviors. Half of the participants read an email in which "Bill" was engaging in extra-dyadic computer-mediated sexual behavior, and the other half read an email in which "Colleen" was engaging in the extra-dyadic computer-mediated sexual behavior. Participants in the condition where "Bill" was the cyber-cheater were told:

"Please read the following scenario and then answer the corresponding questions: Bill and Colleen have been involved in a committed relationship for some time now. Recently, Colleen found an email from Bill to another woman. A copy of the email is included below."

Participants were then shown a hard copy of an email screen shot, depicting a possible occurrence of cyber-infidelity. The email was addressed to *lookingout@hotmail.com* and the subject line read: *"Hey Sexy!"* The content of the email was the same in both conditions, but the 'cyber-cheater' differed by condition. For example, in the condition where "Bill" was the cyber-cheater, the email read:

*"Thank you so much. I had a really great time chatting with you last night. I didn't know that talking dirty on the computer could be so much fun. I went to bed totally satisfied and I slept so good. You are truly seductive.
Bill"*

The stimuli was created to appear ambiguous (i.e. not using personal, or pet names), strictly computer-mediated ("talking dirty on the computer"), and sexual in nature ("You are truly seductive"). It was expected that the participants would believe that this was computer-mediated sex and would perceive the stimuli as depicting computer-mediated infidelity. Questions checking the effectiveness of the manipulation were obtained. To check that participants perceived the stimuli as computer-mediated sex, they were asked: "In your opinion, do you believe Bill's behavior constitutes 'cyber-sex'?" To check that participants perceived the stimuli as computer-mediated infidelity, they were asked: "In your opinion, do you believe Bill's behavior constitutes 'cyber-infidelity' or 'cyber-cheating'?"

After reading the email, participants completed items regarding jealousy and distress, assertions of infidelity and perceived destructiveness to the relationship, views toward computer-mediated communications, and demographic variables, such as sex, age, race, and history with computer technology. Participants in the condition where "Bill" is the cyber-cheater were told:

"Now, imagine that you are Colleen, and your significant other is Bill (regardless of your or your significant other's actual sex). Please answer the following questions, as if you are Colleen"

To measure whether the stimulus was perceived as infidelity, participants were asked to rate three Likert type questions on a 10 point scale, ranging from "Not at all" to "Definitely": "Would you consider Bill's/Col-

leen's behavior to be cheating?", "Do you think that Bill's/Colleen's on-line behavior is a betrayal to your relationship?", and "How similar to traditional infidelity is Bill's/Colleen's behavior?" For the comparison to traditional infidelity question, the scale ranged from 1 (Different) to 10 (Same Thing). Responses from the three questions were combined and averaged to yield an infidelity assertion construct, ranging from 1 to 10. Internal consistency measures indicated a reliable measure of the infidelity assertion construct ($\alpha = .72$).

To measure distress, participants were asked to rate two Likert type questions on a 10 point scale, ranging from "Not at all" to "Extremely": "How upset would you be if you found this email?", and "How hurtful do you feel Bill's/Colleen's on-line behavior is?" The items were then combined and averaged to yield an infidelity distress construct, with a minimum score of 1 and a maximum score of 10. Internal consistency measures indicated a reliable measure of the distress construct ($\alpha = .77$).

To measure jealousy, participants were asked one Likert type question, scored on a ten-point scale ranging from 1 (Not at all) to 10 (Extremely): "How jealous would Bill's online behavior make you feel?" Ratings on this single item constituted the jealousy construct.

To measure the amount of perceived destruction to the relationship, participants were asked to rate three Likert type questions on a 10 point scale, ranging from "Not at all" to "Definitely": "How likely is it that you would 'break-up' with Bill/Colleen, due to the on-line behavior?", "Would finding this email cause you and Bill/Colleen to fight?", and "Do you believe that Bill's/Colleen's behavior will bring about an inevitable end to the relationship?" The items were then combined and averaged to yield an infidelity destructiveness construct, with a minimum score of 1 and a maximum score of 10. Internal consistency measures indicated a reliable measure of the destructiveness construct ($\alpha = .67$).

Results

Manipulation checks regarding participants' perceptions of whether the stimuli depicted computer-mediated sex and computer-mediated infidelity were conducted. The vast majority of participants indicated that the stimuli did depict 'cyber-sex' and 'cyber-infidelity,' less than 4% of participants did not think that the stimuli depicted cyber-sex, and less than 3% did not think that the stimuli depicted cyber-infidelity. Therefore, it was concluded that the manipulations were largely effective.

The first hypothesis investigated sex differences in assertions of infidelity. A t-test concluded that females were significantly more likely to characterize the stimulus as

depicting infidelity ($M = 8.36$, $SD=1.24$) than male participants ($M = 7.74$, $SD=1.76$), $t(113) = -2.22$, $p < .05$.

The second hypothesis proposed that female participants would report the depicted situation as more upsetting than male participants. This hypothesis was also supported. Female participants reported significantly more distress ($M = 9.40$, $SD = 0.73$), than male participants ($M = 8.81$, $SD = 1.12$), $t(113) = -3.39$, $p < .01$.

The third hypothesis proposed that female participants would report significantly more jealousy in reaction to the stimulus. However, there was no significant difference in jealousy ratings provided by female participants ($M = 7.98$, $SD = 2.27$) and the ratings provided by male participants ($M = 8.34$, $SD = 2.10$), $t(113) = -0.88$, $p > .05$.

The fourth hypothesis proposed that female participants would rate the stimulus as significantly more destructive than male participants. Consistent with this hypothesis, female participants rated the stimuli as significantly more destructive ($M = 8.12$, $SD = 1.27$), than male participants ($M = 7.33$, $SD = 1.58$), $t(113) = -2.97$, $p < .01$.

Discussion

Although the behavior examined in the current study depicted a strong sexual relationship, it was assumed that the extra-dyadic behavior would be more indicative of emotional infidelity because an individual cannot physically consummate a computer-mediated relationship. Therefore, the current study predicted that evidence of a cyber-affair would evoke similar patterns of responses found in studies that examine emotional infidelity. According to the evolutionary perspective, females should report stronger reactions to an act of emotional infidelity than male participants, and male participants should feel very little threat or distress. It was hypothesized that female participants would be more likely to categorize extra-dyadic computer-mediated sexual behavior as infidelity, report greater levels of distress and jealousy, and perceive the behavior as more destructive to the primary relationship.

The results of this study indicate that an evolutionary perspective is generally applicable to cyber-infidelity. Female participants were more likely to assert that the stimuli depicted infidelity, reported more distress, and rated the stimulus as more destructive to the committed relationship. This suggests that reactions to cyber-infidelity are similar to reactions of emotional affairs for females. If a female believes that her significant other has engaged in sexual communication, even one strictly mediated by the computer, she may feel that her relationship is threatened.

The evolutionary perspective successfully predicted female reactions to cyber-infidelity, yet it does not explain the strong ratings of jealousy reported by the male participants. One explanation specific to the current study may be that a perception exists that persons who engage in cyber-infidelity will eventually consummate the extra-dyadic relationship. More specifically, participants, regardless of sex, may believe that if a mate is engaging in sexual conversations, even in a strictly computer-mediated fashion, that the mate intends to take the relationship to the physically sexual level. This may cause an emotional reaction to a physically linked paranoia. Future research should examine if a cyber-relationship is ominous of a sexual relationship, or whether emotional infidelity often becomes sexual infidelity. Perhaps even an emotionally based relationship may hint at a future sexually based relationship which may invoke pre-emptive expressions of jealousy.

The failure to predict and account for strong male reactions (i.e., jealousy) to non-physical sexual communication is not a new problem for the evolutionary theory. Nannini and Meyers (2000) explain that evolutionary perspectives are often successful in predicting and explaining female jealousy, but usually fall short in accounting for men's reactions. They propose that the effect of sex differences is actually being driven by women's severe aversion to emotional infidelity. As men tend to be more similar in their levels of aversions to sexual and emotional infidelity, their actual reactions may not be the underlying root cause of the sex differences that occur in these studies.

The current study is beneficial because of its unique application of the evolutionary theory to non-physical sexual infidelity. However, there were limitations. It is possible that, for the jealousy rating, a ceiling effect of mean scores may have prevented adequate detection of sex differences. More specifically, mean scores on this item tended to cluster toward the top end of the scale ($M=8.2$, $SD=2.2$), suggesting that this item was not sensitive enough to precisely measure the construct of jealousy. The psychometric limitations of using scales with three items or less may have suppressed any true effects of the stimulus on jealousy. In addition, jealousy may be better conceptualized as a multidimensional, rather than unitary, construct, which would allow for more sensitive measurement. Future research in this area should use previously validated measures that can specifically investigate the nuances of jealousy. Another possibility for future research would be to include physiological responses such as heart rate, blood pressure, and electrodermal activity, similar to the measures used in the study conducted by Buss and colleagues (1992). These measures have been shown to be sensitive enough to determine sex differences in levels of jealousy.

Additionally, past studies examining the evolutionary theory have usually used a forced-choice paradigm to determine sex differences in perceptions of infidelity. Participants are asked which of the two types of infidelity, sexual or emotional, are more upsetting. This study made the assumption that cyber-infidelity was emotional infidelity and was focused more on the underlying mechanisms that might cause the cyber-infidelity to be upsetting; therefore it was inappropriate to use the forced-choice paradigm. Future research might deem it necessary to include the forced-choice methodology for more consistent evaluations of the evolutionary-based assumptions.

Further limitations of this study are those usually associated with the use of self-report and convenience sampling. Social desirability factors, biased memories, and whether the participants are honest in their answers should be taken into account. Additionally, if the focus of the study is to gauge reactions to cyber-infidelity in committed relationships, the traditional college student may not be the most representative sample. Although it is likely that traditional college students have vast knowledge of technology, as well as cyber-relationships, the actual extent of that knowledge and college students' experience in committed relationships is unknown. One possibility is that commitment level may moderate the emotional reactions to cyber-infidelity. When considering the possible consequences of divorce, future studies should examine the reactions to extra-dyadic computer-mediated behaviors in an adult population, especially those who are married or in a long-term committed relationship.

The new genre of computer-mediated communication creates more possibilities in relationships, such as allowing friendships to flourish while geographically separated, increasing opportunities to meet those with similar romantic interests, or to engage in sexual behaviors without physically having intercourse. This fairly recent behavior leads people to ask themselves new questions and reestablish boundaries. Is interactive cyber-sex the equivalent of pornography, sexually explicit phone communication, or 'real' sexual intercourse? If a mate is engaging in a computer-mediated relationship with someone who is not physically accessible, does the behavior count as a sexual or emotional betrayal? Extra-dyadic computer-mediated relationships have the ability to be just as intense and profound as a tangible relationship, and the consequences can be just as great. Therefore, it is important to examine the perceptions and reactions to this new mode of relationship behavior.

Furthermore, extra-dyadic computer-mediated relationship behavior may possibly lead to complications in modern theories of jealousy and perceptions of infidelity. First, it is unclear whether cyber-infidelity is categorized as

sexual infidelity or emotional infidelity. If the content of the extra-dyadic communication is highly sexual in nature but the individuals have never physically met, and there is no meaningful attachment, which type of infidelity has occurred? A new construct may be needed which encompasses behaviors that are more sexual than emotional, but lack the meaningful connection that most emotional endeavors contain. Future research should examine perceptions of this type of infidelity and the extent to which sex influences perceptions, attitudes, and reactions. Modern theories of jealousy and infidelity should be further examined to determine whether they have predictive utility and are theoretically capable of explaining variations in reactions. It is possible that modern perspectives, including evolutionary theory, may need to evolve in order to include these new types of relationships.

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