

6

*Sex Differences in Jealousy*A Matter of Evolution
or Attachment History?KENNETH N. LEVY, KRISTEN M. KELLY,
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Jealousy is a powerful and painful emotion with pernicious effects on romantic relationships (White & Mullen, 1989). It has been implicated as the leading cause of spouse battering and homicide across many cultures (Daly & Wilson, 1988; Gibbens, 1958; Wolfgang, 1958). Historically, jealousy has been conceptualized as a consequence of low self-esteem or even neurosis (Mathes, Phillips, Skowron, & Dick, 1982; Pines & Aronson, 1983). Nearly two-thirds of romantic couples reported that jealousy posed a significant problem in their relationship, sometimes leading to assaults or battery (Gayford, 1975, 1979). Research has linked spousal abuse, rapes, and stalking behavior to feelings of jealousy (Davis, Ace, & Andra, 2000; Dutton, van Ginkel, & Landolt, 1996; Tjaden & Thoennes, 1998). If jealousy can be understood through developmental analysis rather than attributed to biological evolution, it might be easier to manage through education and clinical treatment. Although evolutionary psychologists (e.g., Thornhill & Palmer, 2000) have argued that evolutionary analyses of sex differences in socially undesirable behaviors do not imply that the behaviors cannot be socially controlled, viewing these behaviors as strongly

attributable to evolved genetic mechanisms clearly makes them seem virtually inevitable and hence difficult to change.

Evolutionary psychologists have distinguished between two kinds of jealousy: sexual and emotional (e.g., Buss, Larsen, Westen, & Semmelroth, 1992). Sexual jealousy is evoked by a perceived threat concerning a partner's sexual infidelity, whereas emotional jealousy arises from a perceived threat of a partner's emotional infidelity. Sexual jealousy is reportedly more common in men than in women. Across a wide variety of cultures, men are more likely than women to divorce partners who are sexually unfaithful (Betzig, 1989) and even to batter and kill such partners (Daly & Wilson, 1988). Given the seriousness and pervasiveness of these effects of male sexual jealousy, it is important to understand its causes and dynamics. In this chapter we argue that attachment theory provides a framework for understanding jealousy and for changing attitudes and beliefs in ways that may reduce the tragic consequences of jealousy that occurs in the context of romantic relationships.

THE EVOLUTIONARY EXPLANATION
OF SEX DIFFERENCES IN JEALOUSY

David Buss and his colleagues have offered an evolutionary explanation of sex differences in jealousy. They and other proponents of the evolutionary perspective assert that men and women evolved different sexual strategies (Buss, 1995; Daly & Wilson, 1988; Daly, Wilson, & Weghorst, 1982; Symons, 1979). For male mammals, gamete production is relatively inexpensive, because sperm are continuously and copiously produced. For female mammals, however, gamete production is more limited, there being only a few hundred gametes that become mature over a female's relatively short reproductive life cycle. Thus, even at the time of fertilization, women have contributed a greater proportion of net resources to future offspring than men have; women typically go on to invest more bodily resources in nursing and caring for offspring than men do. From these facts, evolutionary psychologists conclude that there is likely to be conflict between men and women due to differences in their mating strategies (Buss, 1995). Men can maximize their evolutionary fitness by impregnating as many women as possible while investing as little as possible in rearing any individual offspring. In contrast, women can maximize their fitness by carefully choosing a mating partner who will maximize their offspring's survival by providing support, protection, and "good genes" that get passed on to offspring. For women, it matters a great deal that some men more than others may be willing to provide the extended support and biparental care that increase the likelihood of offspring survival and health.

These differences in reproductive strategies are thought by evolution-

ary psychologists to produce inherent sex differences in types of jealousy. Whereas women bear the greater reproductive costs, the fact that fertilization occurs inside a woman's body means that men have always faced a profound adaptive problem not faced by women: uncertainty of paternity. Women are virtually certain which offspring are their own, but DNA studies indicate that between 9 and 13% of children have a putative father who is not the man who impregnated their mother (Baker & Bellis, 1995). Being uncertain of paternity presents substantial reproductive costs to men in the form of time, energy, nuptial gifts, and opportunity costs. The adaptive problem of uncertain paternity is exacerbated in species such as ours in which males often engage in postfertilization parental investment (Trivers, 1972). A man risks investing resources in a putative child who is not (genetically speaking) his own, thereby investing in another male's offspring while reducing his own evolutionary fitness. Evolutionary psychologists believe that male sexual jealousy evolved as a solution to this problem (Wilson & Daly, 1992).

In contrast, although women do not experience much uncertainty with regard to maternity, they do risk losing time, resources, and commitment from a man if he deserts her or channels investments to alternative mates (Trivers, 1972). Therefore, the evolutionary story says, women exercise more vigilance to prevent other women from absconding with their mates, rather than responding to specific acts of sexual infidelity, because a man's continued presence aids in successfully rearing offspring. Consistent with this notion that men are more bothered by sexual infidelity and women by emotional infidelity or loss of interest and commitment, research has found that men across a wide variety of cultures are more likely than women to divorce partners who are sexually unfaithful (Betzig, 1989) and possibly to batter or even kill partners who are unfaithful (Daly & Wilson, 1988). Conversely, women manifest greater distress while imagining their male partner's emotional infidelity (Buss et al., 1992), viewed as an important warning sign that their mate may withdraw his resources from the relationship and child.

In two large-sample tests of this line of reasoning, Buss et al. (1992) found that men tend to view sexual infidelity as more distressful than women do, and women tend to view emotional infidelity as more distressful. They also found that men displayed greater physiological distress than did women while imagining a mate's sexual infidelity, as reflected by increased electromyographic activity (i.e., muscle tension), increased electrodermal response (indicating autonomic arousal), and elevated heart rate.

These findings have been replicated by other researchers in the United States, Germany, the Netherlands, and China (Buunk, Angleiter, Oubaid, & Buss, 1996; Geary, Rumsey, Bow-Thomas, & Hoard, 1995; Wiederman & Allgeier, 1993). Buss and his colleagues (Buss, Kirkpatrick, Shackelford, &

Bennett, 1996) interpret the cross-cultural replicability of the sex differences as good evidence for their basis in genes and evolution.

ALTERNATIVES TO THE EVOLUTIONARY PERSPECTIVE

A number of researchers have challenged the evolutionary interpretation of sex differences in jealousy (DeSteno & Salovey, 1996a; Harris, 2003; Harris & Christenfeld, 1996; Rabinowitz & Valian, 2000). First, although cross-cultural data are crucial for testing the evolutionary hypothesis, they alone are not sufficient to support it. Second, it is especially important to rule out plausible alternative explanations in quasi-experimental studies such as these, in which biological sex serves as the independent variable, because men and women obviously cannot be randomly assigned to male and female conditions. In such studies, unmeasured variables are major threats to the validity of results and can lead to accepting spurious findings (Abelson, 1995). Third-variable correlations often cannot be accounted for, so it is quite possible that the replicable sex differences in types of jealousy are a result of other, nongenetic variables. Third, although a higher percentage of men than women report being more distressed by sexual infidelity, in many studies the majority of both genders are more distressed by emotional infidelity (Buss et al., 1992; Buunk et al., 1996; Geary et al., 1995; Wiederman & Allgeier, 1993). For instance, American men are equally divided on which form of infidelity is more distressing; the majority of Chinese, Dutch, and German men find emotional infidelity more distressing (see Buller, 2005, for a review). Thus Buss's theory does not fully or conclusively explain the data, and there are a number of reasonable alternative hypotheses. An evolutionary perspective on sex differences in jealousy cannot, without invoking additional constructs, explain these international differences within the sexes. Finally, evolutionary psychologists make "predictions" about events that have already occurred, based on assumptions and inferences about environments that generally cannot be tested. For instance, Eagly and Wood (1999) found a great deal of cross-cultural variability in the relative contributions of men and women to subsistence, with women sometimes contributing more. This variability makes it difficult to infer from evidence at hand what conditions prevailed for our ancestors.

TESTS OF ALTERNATIVE THEORIES

DeSteno and Salovey (1996a, 1996b) and Harris and Christenfeld (1996) considered most of the alternative explanations of sex differences in jealousy. Harris and Christenfeld's (1996) "rational belief hypothesis" suggests

that sex differences may be based on a difference between the sexes in how they interpret evidence of infidelity, that is, a difference in reasoning or in operative rationality. They argue that, for cultural reasons, men are more likely to believe that women engage in sexual behavior when in love; and conversely, women are more likely to believe that men engage in sexual behavior independently of love. Thus men are more bothered by sexual infidelity because it signals that their mate has fallen in love with another man. Women, in contrast, may be bothered by sexual infidelity less than by emotional infidelity because sexual infidelity alone does not necessarily mean that her mate has fallen in love with someone else. These authors found support for their hypothesis in a survey of 137 people (Harris & Christenfeld, 1996). DeSteno and Salovey (1996a) proposed a "double-shot hypothesis." They contended that beliefs about types of infidelity are not as separable as might be expected. Instead, they argued, sex differences are due to different beliefs about the conditional probabilities that either sexual or emotional infidelity implies the occurrence of the other kind of infidelity. They found that both men and women selected the infidelity event that they believed was more likely to signal the concurrence of the other type of infidelity as well. Additionally, women more than men believed that emotional infidelity implied sexual infidelity. Thus the forced-choice dichotomy used by Buss and colleagues to study jealousy may not actually separate two interrelated kinds of jealousy.

It is important to realize, however, that the rational-belief and double-shot hypotheses do not explain cultural variation in sex differences in types of jealousy (Buss, Larsen, & Westen, 1996). Buss and colleagues noted that both hypotheses wrongly imply that socialization rather than genetics is the causal agent responsible for observed sex differences. They pointed out that biologically evolved sex differences might, in fact, explain the processes responsible for the rational-belief and double-shot phenomena. In support of their arguments, a recent series of empirical studies controlling for the correlated nature of infidelity types failed to replicate the findings reported by Harris and Christenfeld (1996) and DeSteno and Salovey (1996; Buss et al., 1999). The continued failure to resolve the debate between groups of theorists who favor an evolutionary explanation of sex differences in jealousy and groups who favor a nonbiological explanation suggests a need for a theory that explains both between- and within-sex differences, that distinguishes between socially and genetically mediated conditional probabilities of various implications of acts of infidelity, and that reveals why men often find sexual infidelity more distressing than emotional infidelity, whereas women often find emotional infidelity more distressing.

Rabinowitz and Valian (2000) and Eagly and Wood (1999) offered additional alternative explanations for sex differences in jealousy. They suggested that the differences are rooted in social and economic structures and the associated internalization of and adherence to gender roles. Although

Eagly and Wood (1999) provided evidence for certain parts of their critique of evolutionary psychological theories (showing, for example, that there is a great deal of cross-cultural variability in the relative contributions of men and women to subsistence, with women sometimes contributing more), there have been no direct tests of their account of sex differences in jealousy.

ATTACHMENT PROCESSES AS THE ALTERNATIVE EXPLANATION

Bowlby's (1969, 1973, 1980) attachment theory offers a parsimonious alternative explanation for the existence of sex differences in jealousy. According to the theory, the affective bond that develops between the child and caretaker affects the child's emerging self-concept and view of the social world. Bowlby (1969) conceptualized human motivation in terms of "behavioral systems," a concept borrowed from ethology, and proposed that attachment-related behavior in infancy (e.g., clinging, crying, smiling, monitoring caregivers, and developing a preference for a few reliable caregivers or "attachment figures") is part of a functional biological system that increases the likelihood of protection from predation, provides comfort during times of stress, and offers a foundation for social learning. Central to attachment theory is the concept of internal working models—mental representations formed through repeated transactions with attachment figures. These working models subsequently act as heuristic guides through the world of relationships and organize personality development.

Based on Bowlby's theory, Ainsworth and her coworkers (Ainsworth, Blehar, Waters, & Wall, 1978) identified three major styles of attachment in infancy—secure, avoidant, and anxious-ambivalent—and traced these styles to caregivers' behavior. Subsequently, Hazan and Shaver (1987) extended Ainsworth's framework to the study of romantic love, which they conceptualized as an attachment process. They created a pencil-and-paper measure of adult attachment styles, which asked respondents to say which of three descriptions of relationship styles fit them best: secure, avoidant, or anxious-ambivalent. In a host of studies conducted since 1987, this brief measure and various extensions of it have significantly predicted relationship outcomes (e.g., satisfaction, breakups, commitment), patterns of coping with stress, couple communication, and even phenomena such as religious experiences and patterns of career development (see reviews by Shaver & Hazan, 1993, and Mikulincer & Shaver, 2003).

Bartholomew (Bartholomew & Horowitz, 1991) revised Hazan and Shaver's (1987) three-category classification scheme, proposing a four-category model that differentiated between two types of avoidant adults: fearful and dismissive. Consistent with Bowlby's (1969) analysis of working models of self and relationship partners, the four categories could be ar-

rayed in a two-dimensional space, with one dimension being "model of self" (positive vs. negative) and the other being "model of others" (positive vs. negative). For secure individuals, the models of self and other are both positive. For anxious-ambivalent (or preoccupied, to use Bartholomew and Horowitz's term) individuals, the model of others is positive (i.e., relationships are attractive), but the model of self is not. For dismissing individuals, the reverse is true: The somewhat defensively maintained model of self is positive, whereas the model of others is not (i.e., intimacy in relationships is regarded with caution or avoided). Fearful individuals have relatively negative models of both self and others.

Attachment research indicates that attachment styles are mainly attributable to experiences in close relationships, not to genes. Numerous studies have linked children's developing attachment patterns to patterns of parenting behavior (see Main, 1995, for a review), but researchers have failed to find genetic influences on children's attachment styles (e.g., Bokhorst et al., 2003). The stability or instability of attachment patterns across the childhood and adolescent years is largely attributable to stability or instability of relationships with attachment figures during that same period (see Fraley, 2002, for a review). Moreover, adult romantic attachment styles are related to people's descriptions of childhood relationships with parents (e.g., Levy, Blatt, & Shaver, 1998) and can change systematically over time as a function of relationship experiences (e.g., Kirkpatrick & Hazan, 1994). In addition, behavior genetic studies of relationship styles in adult twins show that these styles are attributable more to environmental factors than to genetic factors (e.g., Waller & Shaver, 1992).

Although there are no replicable sex differences in attachment security measured in infancy or in adulthood, there are sex differences among the insecure styles that may help explain sex differences in jealousy. More men than women have an insecure dismissive-avoidant attachment style (e.g., Bartholomew & Horowitz, 1991; Levy et al., 1998; Shaver et al., 1996). Dismissive-avoidant individuals tend to be unemotional, to deny their needs for intimacy, to be strongly invested in autonomy, and to exhibit greater sexual promiscuity (e.g., Bartholomew & Horowitz, 1991; Brennan & Shaver, 1995; Schachner & Shaver, 2002, 2004; Simpson, 1990). However, this counterdependent and compulsively self-reliant style is not as strong as its possessors let on. Instead, it appears to be a defense against unconscious feelings of vulnerability (e.g., Bowlby, 1988; Mikulincer, Dolev, & Shaver, 2004).

ATTACHMENT STYLE AND SEX DIFFERENCES IN JEALOUSY

Recognizing the limitations discussed earlier concerning simple evolutionary models of sex differences in jealousy, we (Levy & Kelly, 2006) proposed

an attachment theory perspective on sex differences in jealousy. We hypothesized that observed sex differences in types of jealousy were actually due to sex differences in adult romantic attachment style. First of all, we hypothesized, in line with most of the previous research, that there would be a significant sex difference in the type of jealousy that was experienced as most distressing. Second, we predicted a significant difference between men and women in the degree of dismissive attachment, with men being more dismissive than women. Although sex differences in attachment security in infancy and early childhood are not theoretically predicted in attachment theory, by late adolescence and early adulthood, sex differences in attachment are typically found when using the self-report romantic attachment measures typically employed by personality and social psychologists. More men are found to be dismissing, and more women are found to be preoccupied. Gender-specific parental socialization practices may contribute to these gender differences in attachment style. For example, research has shown that parents use more positive emotion words in conversation and joint play with their girl children than with their boy children (Dunn, Bretherton, & Munn, 1987; Fivush, Brotman, Buckner, & Goodman, 2000; Goodnow, 1988). Over time, the cumulative absences of such experiences may result in a greater likelihood of dismissive attachment for men. Additionally, with progressive development, gender roles may be increasingly internalized. However, the data are mixed with regard to the influence of gender roles. For example, Shaver et al. (1996) found that feminine gender roles were negatively correlated with avoidance; however, Servello and Bartholomew (1996) were unable to confirm a relationship between gender roles and dismissive attachment in men (although gender role was related to preoccupied attachment in women). These findings suggest a link between gender roles and attachment patterns but indicate that other factors are also likely to be influential in explaining sex differences in adult attachment.

Third, we expected a significant difference in reactions to different jealousy-provoking situations between people with different attachment styles. Specifically, we expected dismissive individuals to find sexual infidelity more distressing and securely attached individuals to find emotional infidelity more distressing. There are two main reasons for hypothesizing that dismissive individuals would find sexual infidelity more distressing. First, previous research has found that dismissive individuals, compared with people with the other attachment styles, tend to be more concerned with the sexual aspects of relationships than with emotional intimacy (Schachner & Shaver, 2004).¹ For example, dismissive men report more sexual interests in extradyadic relationships, more promiscuous behavior, and poaching the mates of others, and they are more likely to describe relationship partners in terms of physical and sexual attributes rather than internal and emotional ones (Allen & Baucom, 2004; Schachner & Shaver, 2002; Simpson & Gangestad, 1991). Additionally, dismissive men report a short-term, low in-

vestment, exploitive sexual strategy that includes engaging in sexual behavior to regulate negative affect and to control and coerce others (Davis, Shaver, & Vernon, 2004; Levy, 1990, 1999). Second, consistent with psychodynamic theories of projection, research has shown that dismissive individuals are more likely to engage in defensive projection of negative information about the self, which seems also to serve the secondary purpose of maintaining interpersonal distance (Mikulincer & Horesh, 1999). Taking these points together, we hypothesized that dismissive individuals would be more concerned about their partner's sexual investments than their partner's emotional investments. In addition, they were expected to be more likely to project their own motives and interests in extradyadic relationships onto their partners. Thus differences in jealousy that appear to be rooted in sex differences might actually reflect differences in attachment style. That is, dismissing individuals, who are more likely to be men, might be more likely to report jealousy regarding sexual infidelity. In contrast, secure individuals, regardless of sex, were hypothesized to be more likely to experience jealousy in response to a partner's emotional infidelity.

Using the Buss Infidelity Questionnaire (Buss et al., 1992) and Bartholomew's Relationship Questionnaire (Bartholomew & Horowitz, 1991), we assessed 416 undergraduate students enrolled in introductory psychology classes at two large northeastern urban universities. As predicted, we replicated Buss et al.'s (1992) finding of sex differences in jealousy reactions to sexual and emotional infidelity. Men were more likely to find sexual rather than emotional infidelity distressing, and women were more likely to find emotional infidelity rather than sexual infidelity distressing. In our study, this difference, shown in Table 6.1, was highly significant, $\chi^2(1) = 29.93$, $p < .001$.

Also, as predicted, we found a significant sex difference in the distribution of attachment types, $\chi^2(3) = 10.67$, $p < .01$. Men were more likely than

TABLE 6.1. Relation between Sex and Type of Jealousy Experienced as Most Distressing

Jealousy type	Sex		Row total	
	Male	Female		
Emotional	44 (18.1) (46.5%)	240 (81.9) (75.7%)	284	100%
Sexual	55 (44.4) (53.5%)	77 (53.3) (24.3%)	132	100%
Column total	99 (27.0%) 100.0%	317 (73.0%) 100.0%	416	100%

Note: Cell entries are *n*'s, row percentages, and column percentages. $\chi^2(1) = 29.93$, $p < .001$. Data from Levy and Kelly (2006).

women to exhibit dismissive attachment, and women were slightly more likely than men to exhibit fearful attachment (Figure 6.1).

These results are consistent with previous research, in which men were more likely than women to be dismissively avoidant in attachment style (Brennan, Shaver, & Tobey, 1991; Brennan & Morris, 1997; Levy et al., 1998; Shaver et al., 1996). Consistent with our (Levy & Kelly, 2006) main hypothesis that sex differences in jealousy would be explicable in terms of differences in attachment style, we found that dismissive individuals, who were more likely to be men, were also more likely to report distress regarding sexual infidelity (Figure 6.2).

In contrast, secure individuals, including secure men, reported more jealousy than did dismissive individuals in response to emotional infidelity (Figure 6.3). In line with our reasoning, we (Levy & Kelly, 2006) also found that the association between dismissive attachment and sexual jealousy was significant for both men and women, $\chi^2(3) = 27.84$, $p < .001$, and $\chi^2(3) = 16.29$, $p < .001$, respectively.

We computed odds ratios separately for each variable to evaluate the specific effects of sex and attachment style on jealousy. Overall, men were between three and four times more likely than women to endorse sexual jealousy. However, when odds ratios were computed separately by attachment style, the sex differences in jealousy for secure and preoccupied individuals were weak and not significant according to simple chi-square tests. The sex differences in jealousy were dramatically heightened, however, in the fearful and dismissive groups, with men being roughly 5 and 26 times, respectively, more likely to endorse sexual jealousy. A Mantel-Haenszel test showed that the odds ratios, taken together, were significantly greater than 1,

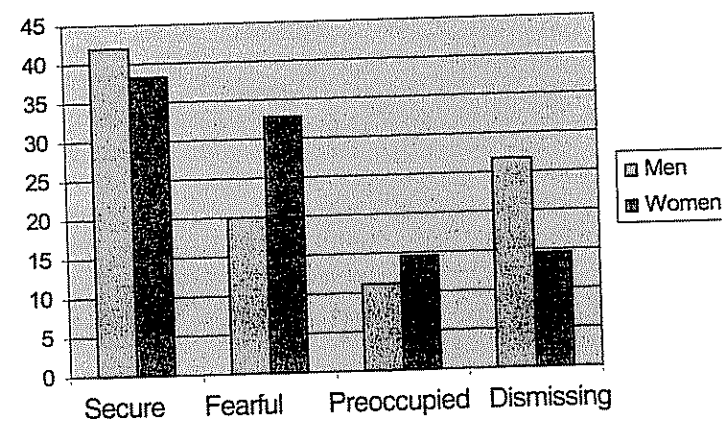


FIGURE 6.1. Percentage of each of four attachment styles in samples of men and women. Data from Levy and Kelly (2006).

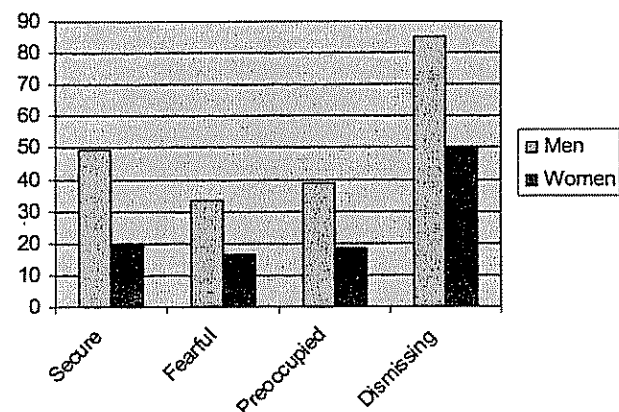


FIGURE 6.2. Percentage of respondents in each attachment-style category who were more distressed by sexual than by emotional infidelity. Data from Levy and Kelly (2006).

consistent with a main effect of sex on jealousy type, $\chi^2(1) = 24.07, p < .001$. However, the Breslow–Day test suggested significant heterogeneity between the stratified odds ratios, $\chi^2(3) = 8.03, p < .05$, consistent with a moderating effect of attachment style on the relationship between sex and jealousy type.

Odds ratio analyses also revealed the importance of attachment style overall, and within each sex, especially with regard to secure versus dismissing styles. Dismissive women, for example, were roughly 4 times more likely to endorse sexual jealousy than were their secure counterparts, whereas dismissive men were nearly 50 times more likely than secure men

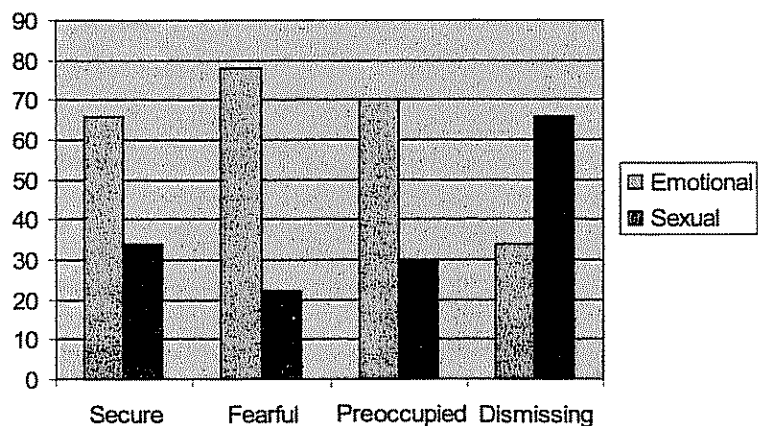


FIGURE 6.3. Percentage of respondents in each attachment-style category who were more distressed by sexual or by emotional infidelity. Data from Levy and Kelly (2006).

to endorse sexual jealousy. Simple chi-square analyses were significant for the relationship between overall attachment style and jealousy for both sexes.

To determine the relative strength of effect of each variable, as well as the significance of the moderating effect, we (Levy & Kelly, 2006) performed a series of sequential logistic regression analyses, which revealed that sex and attachment style were both significant predictors of jealousy individually and, after accounting for the effects of the other variable, consistent with independent main effects for each. The interaction term led to significant improvement in the model over and above sex and attachment style variables, suggesting significant moderation of the sex-jealousy relationship by attachment style. The full model, containing both variables and the interaction term, was statistically reliable when compared with a constant-only model, $\chi^2(7, n = 411) = 75.70, p < .001$, and performed well, correctly classifying 75% of cases according to jealousy type.

IMPLICATIONS AND CONCLUSIONS

Levy and Kelly's (2006) findings suggest that observed sex differences in jealousy are more complex than simple evolutionary models imply. Although Buss and colleagues (Buss et al., 1992; Buss, Larsen, & Westen, 1996) found that men are more likely than women to find sexual infidelity more distressing than emotional infidelity, there is no evidence that this replicable sex difference is due solely to biological sex. Levy and Kelly's findings indicate that adult romantic attachment style plays an important part in determining which kind of infidelity elicits more jealousy. Secure individuals, including secure men, are more likely to find emotional infidelity than sexual infidelity distressful, whereas dismissing individuals, especially dismissing men, are more likely to find sexual infidelity to be the bigger problem. The psychological and cultural/environmental mechanisms underlying sex differences in jealousy may be more important than evolutionary psychologists have supposed. Nevertheless, our findings do not completely rule out Buss's hypothesis, because a significant sex difference in jealousy type remained even after controlling for the contribution of attachment style. Both sex and attachment style differences made significant unique and interactive contributions to the distress caused by sexual and emotional infidelity. However, it is also important to keep in mind that sex differences may not operate as Buss and colleagues suggest but could be the function of a variable that covaries with sex, such as gender role identification (Rabinowitz & Valian, 2000).

We are not opposed to evolutionary perspectives in general: Attachment theory is, in fact, an evolutionary, ethological theory. However, we are concerned with the way evolutionary theory has been applied to explain a

broad array of complex human behaviors in close relationships, such as romantic attraction, parenting, gender differences, and emotions such as jealousy. We believe that current discussions of evolved sex differences in jealousy could easily lead to a misunderstanding of evolutionary theory.

First, evolutionary theory holds that an organism's survival potential is enhanced by being supple and responsive to the environment rather than being as rigid as evolutionary psychologists typically portray it. Organisms need to be sensitive to cues from the environment, as well as flexible and adaptable in response to a wide range of environmental phenomena (Buller, 2005). For example, if maternal rejection is induced by a competitive social situation, offspring who develop aggressive, nonaltruistic, or "dismissing" personality styles may do better than those who are altruistic and cooperative (Belsky, 1999; Chisholm, 1999). On the other hand, infants brought up in a supportive social environment may benefit from developing a more altruistic, cooperative, and "secure" personality style. Therefore, it would not make evolutionary sense for either men or women to be locked into a particular mode of behavior (i.e., sexual jealousy vs. emotional jealousy).

Second, every human activity invariably involves inherited biological components, but evolution is possible only where there is variation among individuals. Any explanation that implies that an intraspecies or intragender behavior is invariant runs counter to basic principles of evolutionary theory.

Third, the existence of a behavior does not necessarily indicate that it evolved through natural selection. Cultural evolution does not depend on genetic change; it depends primarily on the development of new ideas and occurs much more quickly than biological evolution. Thus dramatic changes in how men and women behave have occurred during the past 25,000 years, although virtually no genetic changes have occurred during that time. Anthropological evidence, for example, suggests that patriarchy is a relatively recent phenomenon (Lerner, 1986) and thus cannot be accounted for by genetic explanations.

Fourth, evolutionary theory does not minimize the importance of environments to the extent implied in the explanations common in evolutionary psychology. Evolutionary psychological models tend to inflate the explanatory weight of biological processes. Instead of accepting such reductionistic notions, we need to look more closely at the environments in which genes and the processes they influence function. Both intrasex and interattachment-style variations for both kinds of jealousy we studied suggest that men have the same biological potential for emotional jealousy as do women and, conversely, that women have the same biological potential for sexual jealousy as do men. If evolutionary models are going to be of maximal value, they must specify the conditions and processes of organism-environment interactions through which genotypes are transformed into phenotypes. Genotypes are never expressed independently of environment.

In contrast, an attachment theory perspective provides a broad yet parsimonious explanation of sex differences in type of jealousy perceived as

most distressing. Unlike simple evolutionary explanations, attachment theory can explain both between- and within-sex differences, as well as differentiate between environmentally and genetically based interpretations.

Another advantage of an attachment theoretical perspective on sex differences in jealousy is that it offers suggestions for prevention and intervention. An important goal of theoretical understanding is to enable change. That male sexual jealousy has been implicated as the leading cause of spouse battering and homicide across many cultures (Daly & Wilson, 1988) highlights the importance of understanding the dynamics of sexual jealousy. Unfortunately, the evolutionary perspective put forth by Buss and his colleagues offers little advice for reducing sexual jealousy in men. At its worst, it supplies a quietist justification for male violence by viewing it as rooted in nature. An attachment perspective, however, offers an understanding of jealousy that is rooted in internal working models of self and relationships based on past experiences. This perspective suggests a number of ways to reduce and prevent sexual jealousy in both men and women through establishing and enhancing secure attachment relationships throughout the lifespan. Good ideas about how to accomplish these goals can be found in writings by clinicians (e.g., Bowlby, 1988; Slade, 1999) and researchers (e.g., Gillath, Shaver, & Mikulincer, 2005; Mikulincer & Shaver, 2001).

In conclusion, jealousy is a complex and multidetermined emotional reaction (White & Mullen, 1989). Although evolutionary psychology can contribute to explaining between-sex differences in the elicitation of emotional versus sexual jealousy, it is limited in a number of respects. First, the evolutionary psychology perspective cannot systematically explain within-sex differences. Second, it cannot explain the full complexity of the emotional experience of jealousy. We believe that attachment theory offers a coherent and parsimonious explanation of kinds of jealous reactions with greater scope and better predictive power than explanations based in evolutionary psychology. Approaching the study and amelioration of jealousy from an attachment perspective helps us understand its sources, points to new research possibilities, offers suggestions for educational and clinical interventions, and promises to alleviate important social problems. Our own work leaves open a number of questions, such as why dismissing attachment is more common among men than women, which suggests that avoidant parenting interacts with either genetic factors or with societal sex-role stereotypes. If these remaining questions are tackled by researchers, we will be able to provide an even better set of guidelines for parents, educators, and clinicians.

NOTE

1. We do not want to suggest that secure individuals are not interested in the sexual aspects of relationships. In fact, research has shown that secure men and dismiss-

ive men report having comparable amounts of sex; however, secure men report having this sex in long-term committed relationships as a way of expressing intimacy and increasing closeness, whereas dismissive men report having sex in multiple, short-term uncommitted relationships as a way of conquering and coercing others (Brennan & Shaver, 1995; Davis, Shaver, & Vernon, 2004; Schachner & Shaver, 2004).

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