Men's and Women's Mating Preferences: Distinct Evolutionary Mechanisms?

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Abstract

Have men and women evolved sex-distinct mating preferences for short-term and long-term mating, as postulated by some evolutionary theorists? Direct tests of assumptions, consideration of confounds with gender, and examination of the same variables for both sexes suggest men and women are remarkably similar. Furthermore, cross-species comparisons indicate that humans do not evidence mating mechanisms indicative of short-term mating (e.g., large female sexual skins, large testicles). Understanding human variability in mating preferences is apt to involve more detailed knowledge of the links between these preferences and biological and chemical mechanisms associated with sexual motivation, sexual arousal, and sexual functioning.

Keywords

sex; mating strategies; evolution

For Darwin, evolution via sexual selection occurred when characteristics afforded individuals a reproductive advantage over their rivals, either in competing directly against same-sex competitors (e.g., better weaponry) or in having characteristics that opposite-sex mates preferred (e.g., greater attractiveness). Trivers (1972), in his parental investment theory, argued

that an important factor guiding sexual selection is the relative amount of parental investment that males and females devote to offspring. The sex that invests less in offspring (typically males, who minimally invest sperm, compared with females, who minimally invest eggs, gestation, lactation, and other care) should devote proportionately more mating effort to short-term couplings and less to parental investment. The sex that invests less should also be less choosy in its mate-selection criteria and more apt to engage in samesex competition for mates. Sexual asymmetries in parental investment, according to this approach, should predict sex-differentiated mating preferences and more competition between members of the less-investing sex.

Among psychologists, there are those who have applied parental investment theory to humans (e.g., Buss & Schmitt, 1993; Geary, 2000). Buss and his colleagues, for example, have argued that because men minimally invest sperm, shortterm mating is reproductively more advantageous for men than for women. The claim that men and women have evolved sex-distinct sexual strategies (e.g., such that men spend proportionately more of their mating effort in short-term mating than do women) seems to have permeated the popular culture, as well as the professional literature. However, other psychologists dispute these claims, citing evidence from psychology, primatology, cross-cultural analyses, and neurobiology. In this article, we discuss some recent evidence in this debate.

Part of Buss and Schmitt's (1993) argument is that men and women evolved distinct mechanisms for both short-term and long-term mating. We begin by reviewing relevant evidence from primatology, where similar distinctions between long-term and short-term mating are made.

HUMANS ARE PRIMATES

Are Humans Designed to Be Short-Term Maters?

Among primates (Dixson, 1998), there are those with short-term and those with long-term mating systems.² Two long-term systems are monogamy (one male mates long term with one female; e.g., gibbon, siamang) and polygyny (one male mates long term with two or more females; e.g., gorilla). In both longterm and short-term mating, males and females attract (and sometimes retain) mates by having desirable characteristics. In addition, characteristics that enhance one's competitive advantage among members of the same gender may afford reproductive advantage. In long-term mating, the male is often able to restrict competitors by maintaining proximity to his female mate (or mates) and by physically defending her (their) territory.

Some evolved mating mechanisms (e.g., large female sexual skins, large testicles) indicate that short-term mating played a significant role in a species' evolved mating strategies. For example, among common chimpanzee and bonobo, large female sexual skins attract so many male competitors when a female is fertile that long-term male defense strategies are inadequate (e.g., to ensure that a given male is the biological father of his mate's

offspring). Instead, evolution favors the reproductive success of males who can better compete via mechanisms for enhancing the probability that their sperm, and not that of their competitors, will impregnate the female. Thus, when females have large sexual skins when fertile, males who have more sperm (i.e., larger testicles) or produce sperm plugs (e.g., that might reduce sperm displacement by the next partner) increase their chances of fathering offspring. As indicated in Table 1, chimpanzee females exhibit large sexual skins and chimpanzee males exhibit sperm-competition mechanisms. But humans, and other long-term maters among apes, do not possess such mechanisms.

Researchers suggesting that humans have evolved short-term mating mechanisms have pointed to arguments that there are kamikaze sperm that are designed to kill the sperm of human male competitors. But *in vitro* analyses of spermatozoa from multiple human males (Moore, Martin, & Birkhead, 1999) do not support this claim. Overall, human mating characteristics, discussed here and elsewhere, fit the pattern of primates whose primary or secondary mating systems are long-term and not short-term ones (Dixson, 1998).

Parenting and Mating-System Differences

Primatologists have argued that Trivers's theory does not apply well to primates. One reason may be that "traditional examination of male mating and parental investment has overlooked the wide and costly array of physiological and social mechanisms" that are involved in male primate investment, including the defense of troop members and territory (Fuentes, 2000, p. 602). Including these additional mechanisms in conceptualizations of parental investment would suggest much less sexual asymmetry in investment among primates than among other mammals.

There are many primate species in which males do not typically provide direct care of offspring. Nevertheless, males among some of these species can and will do so. For example, gorilla males, who are polygynous, will assume primary parental caregiving (e.g., nurturing and rearing the infant themselves) when a mate or sister has been killed. That is, the underlying evolved mechanisms for directly providing parental care are present. In any event, with more symmetry in parental investment, the sexes might be expected to

have more similar mate preferences.

EVOLVED SEX-DISTINCT MATING PREFERENCES?

Trivers's argument concerning the role of male and female asymmetries in parental investment leads some psychologists (e.g., Buss & Schmitt, 1993) to argue (e.g., sexual strategies theory) for a variety of sex-distinct mating preferences for men and women. Other psychologists, influenced by attachment theory (e.g., Miller & Fishkin, 1997; Miller, Pedersen, & Putcha, 2002) or positing the influence of cultural factors (Eagly & Wood, 1999), argue for relatively few, less pronounced, or no sexdistinct evolved mating preferences in humans. What is the evidence?

Sex Differences in Jealousy

According to Buss and Schmitt (1993), because men need to guard against cuckoldry (investing in nonbiological offspring) and women need to guard against losing a mate's resources, men should focus more on signs of *sexual* infidelity in their partner, whereas

		Short-term maters					
Variable	Humans	Gibbons/siamangs (monogamous)	Orangutans (polygynous)	Gorillas (polygynous)	Chimpanzees (promiscuous)		
Testicle weight (g)/							
body weight (kg)	0.79	0.83–1.00	0.33-0.74	0.09-0.18	2.68–2.83		
Copulatory plugs	No	No (4 species)	Unknown	Unknown	Yes		
Sexual skin	No visible swelling or skin (concealed ovulation)	Very small sexual skins (gibbon) (unknown if siamang females have sexual skins)	No visible swelling or skin (concealed ovulation)	Sexual swelling at midcycle, visible on close inspection; no sexual skin	Very large sexual skins, visible at a considerable distance, that attrac multiple males		

women should react more strongly to cues that signal emotional infidelity. This prediction was tested and supported by Buss and his colleagues. But both Harris and Christenfeld (1996) and DeSteno and Salovey (1996) suggested that the two types of infidelity are equally upsetting to men and women, and that the sex difference is the result of an artifact (i.e., a sex difference in which type of infidelity more strongly signals the other). They separately found that once this artifact is controlled for, there is not a sex difference.

Sex Differences in Preferences for Mate Resources

Buss and Schmitt (1993) also argued that there are evolved sex differences in men's and women's desire for a mate who has or appears able to procure resources. For example, they argued that in choosing a long-term mate, women more than men-should value ambition, good earning capacity, professional degrees, and wealth. Across 37 cultures, Buss found that women, more so than men, desired such resource-acquisition cues in long-term mates. But might cultural factors explain these effects? Eagly and Wood (1999) assessed a variety of indicators of women's power, such as access to educational and financial equality, across these 37 cultures. They found that in those cultures where women enjoyed less power, there were stronger sex differences in preferences for these resource cues.

Even in hunter-gatherer societies, women's economic power (e.g., role in hunting and procuring meat and fish) may historically have differentiated cultures where men and women had comparable authority³ from those where they did not (Boehm, 1999). But in band living, men are equals, meat is shared, and individual hunting

ability is obscured. With little if any variability in men's resources within the band, resource cues among males are unlikely to have become the basis for an evolved mating preference in females. With the advent of agriculture less than 10,000 years ago, however, more widespread and larger resource differentials among men were created. Understanding how societal structures and dynamics affect sexbased resource differentials and resultant mating preferences remains an important issue demanding further research.

Testing Theoretical Assumptions

Buss and Schmitt (1993) did not directly test many of sexual strategies theory's assumptions. We consider two examples. First, Buss and Schmitt argued that men should seek more short-term sexual partners than women. But when they asked men and women how many partners they ideally desired over various time periods, they did not ask their participants how many of these were short-term, intermediate-term, or long-term sexual partners. When we (Pedersen, Miller, Putcha-Bhagavatula, & Yang, 2002) directly examined desires for all three types of relationships,⁴ we found that virtually all men (98.9%) and all women (99.2%) wanted to eventually settle down in a long-term mutually exclusive sexual relationship, typically within 5 years into the future. Moreover, over this 5-year period, the typical man and woman each desired no short-term partners.

Second, according to sexual strategies theory, "because of a fundamental asymmetry between the sexes in minimum levels of parental investment, men devote a larger proportion of their total mating effort to short-term mating than do women" (Buss & Schmitt, 1993, p. 205). But Buss and Schmitt did not directly test this critical proportional assumption. When we did, we found that men and women did not differ either in the proportion of time or in the proportion of money they expended in shortterm mating relative to their total mating effort (Miller et al., 2002).

In addition, Buss and Schmitt (1993) pointed to mean differences between men and women in the desirability of characteristics for a short-term versus a long-term mate as another example of sex-distinct mating mechanisms. But a closer look at the 30 variables (covering 17 of 22 predictions) Buss and Schmitt reported shows that they compared short-term versus longterm preferences on different variables for men than for women (see Table 2). How can one tell if a mean difference in preferences between short-term and long-term contexts among men supports the argument that men and women have distinct mating mechanisms if the same data are not consistently reported for women?

To address this issue, we (Miller et al., 2002) collected new data on nearly all of these preference items for both men and women. With few exceptions, if there was a significant difference between preferences in the short-term and longterm contexts for one gender, there was a significant difference in the same direction for the other gender. In fact, across the data, what men desired most in a mate women also desired most in a mate. What men found most undesirable in a mate women also found most undesirable in a mate. This vielded extraordinarily high correlations between men's and women's ratings for both shortterm and long-term sexual partners. Furthermore, we and other researchers have identified a variety of confounds with gender in predicting mating preferences, including age, ethnicity, relationship status, sexual experience, and per-

	Means reported				t tests reported			
	Men		Women		Short vs.		Men vs. women	
Preference items provided by Buss and Schmitt (1993)	Short term	Long term	Short term	Long term	Men	Women	Short term	Long term
Already in a relationship	Х		Х				Х	
Promiscuous	Х	Х	Х	Х	Х		Х	
Physically attractive ^a	Х	Х	Х	Х	Х			
Good looking	Х	Х	Х	Х	Х			
Physically unattractive	Х	Х	Х	Х	Х			
Sexually experienced	Х	Х			Х			
Sex appeal	Х	Х			Х			
Prudishness	Х	Х			Х			
Sexual inexperience	Х	Х			Х			
Low sex drive	Х	Х			Х			
Wants a commitment ^b	Х	Х			Х			
Faithfulness	Х	Х			Х			
Sexual lovalty	Х	Х			Х			
Chastity ^{a,c}	Х	Х			Х		?	
Unfaithful ^c	Х	Х			Х		?	
Sleeps around a lot ^c	Х	Х			Х		?	
Spends a lot early on			Х	Х		Х		
Gives gifts early on			Х	Х		Х		
Has extravagant lifestyle			Х	Х		Х		
Stingy early on			Х	Х		Х		
Physical strength						Х	Х	Х
Good financial prospects ^d			Х	Х		Х		?
Promising career ^{d,e}			Х	Х		Х		?
Likely to succeed ^{d,e}			Х	Х		Х		?
Likely to earn ^{d,e}			Х	Х		Х		?
Has reliable career ^{d,e}			X	X		X		?
Unable to support you d			X	X		X		
Financially poor ^c			X	X		X	?	?
Lacks ambition ^c			X	X		X	?	?
Uneducated ^c			х	Х		Х	?	?

Table 2. Variables for which Buss and Schmitt (1993) reported means and t tests in their study of college men's and women's preferences for short-term and long-term mates

Note. Xs indicate results that were reported, and ?s indicate that differences were mentioned or implied but not presented. Empty cells indicate no results were mentioned.

^aBuss and Schmitt (1993) alluded to earlier work in which *t*-test comparisons between men and women in long-term relationships but not short-term relationships were reported for other (e.g., cross-cultural) samples.

^bBuss and Schmitt (1993) noted that a "context difference was also found but was not nearly as strong [for women]"(p. 213, material in brackets added). But they provided no *t* tests for women nor a test of the Context × Sex interaction alluded to. That is, Buss and Schmitt must have collected data on this variable for women as well as for men, but it is not clear from their description if this difference was significant for women and more significant for men than women.

^cNo *t* tests were provided for men versus women, but Buss and Schmitt (1993) noted in the text that there were significant sex differences for these preferences.

^dMen and women did not provide personal assessments on these preferences, but made stereotype judgments about men and women (e.g., indicating "how desirable the 'average male' or 'average female' would find each attribute in short-term and long-term mating contexts"; Buss & Schmitt, 1993, p. 223).

^eBuss and Schmitt (1993) did not provide *t* tests of sex differences but claimed that they performed the tests and found sex differences.

ceptions of the quality of care provided by one's parents.

Note that typically, in our own work and the work of other scientists, the findings reported by Buss and his colleagues were replicated. By collecting additional data and conducting new analyses of data that went beyond those provided by Buss and his colleagues, however, we and other scientists have been able to develop a fuller and different overall story than that provided by sexual strategies theory. For example, in contrast to Buss and his colleagues, we did not find overall support for sexual strategies theory when we collected and examined data on the same variables for both genders.

In short, comparative analyses with other primates provide little evidence for biological mechanisms uniquely designed for shortterm mating for humans. Emerging reviews and psychological evidence also challenge the claim that there are sex-distinct evolved mating mechanisms involving mating preferences.

FUTURE DIRECTIONS

Understanding evolutionary design, as part of and apart from the effects of cultural diffusion and innovation, is one of the biggest challenges for evolutionary approaches. Social constraint and culture-developing mechanisms are part of the evolutionary design of larger-brained primates. But these mechanisms produce cultural products that can bias mating or sex differences in behavior. For example, alcohol is often used to reduce sexual inhibitions in shortterm mating. But alcohol was not produced in the Pleistocene.⁵ An important methodological challenge is to not confound cultural products and evolved design, yet understand cultural mechanisms, and adaptation to environmental change, as part of that evolved design. It also behooves researchers to guard against sexual stereotypes and confounds. Even scientists can wear cultural blinders that can bias the collection, presentation, and interpretation of data.

Another challenge is to better specify psychological mechanisms and, where possible, tie them to related brain structures and biological and chemical processes. Researchers also need to better delineate the processes by which these mechanisms predict outcomes (e.g., preferences, decisions, behaviors). For example, primates

may provide higher levels of paternal care and investment than most other mammals. Is this related to the greater sex-related plasticity found in primate brains (Dixson, 1998)? In nonprimate mammals, monogamous species have greater overlap in underlying biological and chemical mechanisms for males and females than do promiscuous species, with the former also providing higher levels of paternal care (Insel, 1997). However, in a variety of species, including humans, the brain shows sex differences (e.g., differences in the size of various portions of the brain) that might affect sex-related behaviors. Whether and how these sex differences influence or are influenced by behavior, or might interact with hormones, remains unclear.

Hormonal patterns, however, are more clearly related to some sexual behaviors. For example, hormonal fluctuations throughout the monthly human female cycle seem related to the timing of male and female sexual initiation (proceptivity) or sexual motivation. Such sex differences are similar to those found across many primate species with diverse mating systems, varying from short-term to long-term ones (Dixson, 1998). For example, in all nonsimian primates, unlike other mammals, females are receptive to sex throughout their cycles, but actively seek sex just prior to ovulation, when levels of testosterone and estradiol surge. Because similar sex differences are found across primates with varying mating systems, these sex differences are unlikely to shed much light on differences in mating systems.

But exploring how hormonal fluctuations covary with mating preferences for both men and women might provide exciting insight into variability both within and between individuals. In such investigations, however, scientists should not consider men's and women's preferences and behaviors in isolation. Emerging research, for example, suggests that mutual influence between men and women, hormonally and pheromonally, affects sexual outcomes (Miller & Fishkin, 1997).

Spurred on by the development of Viagra, scientists have undertaken considerable work on humans' sexual dysfunction and sexual arousal. This work suggests that the sexual circuitry system and the biological and chemical processes affecting sexual functioning and enjoyment—is surprisingly similar in men and women (Goldstein, 2000). The balance of serotonin (which plays a role in inhibiting sexual arousal) to oxytocin (which serves as the sexual-excitation neurotransmitter) is critical to sexual function and affects sexual enjoyment. Psychological factors (e.g., anxiety, anger, comfort, liking, attraction, love), for both men and women, impact the biological and chemical processes affecting inhibition and excitation. Thus, higher levels of emotional bonding are associated with higher levels of sexual enjoyment (Miller & Fishkin, 1997), and anxiety is predictive of reduced sexual enjoyment and functioning. Psychological factors that influence sexual functioning may be key to understanding fluctuations in mating preferences within and between individuals (Miller et al., 2002). Given the observed similarities between men's and women's patterns of mating preferences, sexual circuitry, and sexual enjoyment, however, sexdistinct mating preferences related to sexual arousal and functioning do not seem promising. But, because the wiring of the sexual circuitry system may be species-specific (Insel, 1997), differences across species in these evolved biological, chemical, and psychological systems might shed light on differences in expressed mating preferences and behaviors.

In all this complexity, one thing is clear: Scientists studying mating systems, and sex differences within them, have to more carefully consider the systems of relevant mechanisms (both shared across species and unique to humans) and how these, in combination, interact with environments to affect mating preferences and behaviors.

Recommended Reading

Dixson, A.F. (1998). (See References) Pedersen, W.C., Miller, L.C., Putcha-Bhagavatula, A.D., & Yang, Y. (2002). (See References)

Notes

1. Address correspondence to Lynn Carol Miller, Annenberg School for Communication, University of Southern California, Los Angeles, CA 90089-0281; e-mail: Lmiller@rcf.usc.edu.

2. Mating systems are not absolute. Rather, each is composed of a set of mechanisms that increase the probability of particular mating outcomes. Primatologists classify primates as having primary, and sometimes secondary, mating systems. Thus, the occurrence of occasional extrapair mating, by itself, does not alter the species' mating classification (e.g., as primarily long-term maters).

3. For example, where females and males hunt boar with dogs (e.g., the Agta of the Philippines), the sexes have

economic and political parity (Boehm, 1999).

4. In our study, we employed the same terminology used by Buss and Schmitt (1993) to define these three types of relationships to subjects. Specifically, short-term relationships were defined as "a 1-night stand, brief affair, etc." (p. 210). Intermediate-term relationships were defined as "dating, going steady, brief marriages, or intermediate-length affairs" (p. 204). Long-term mates were defined as "a marriage partner" (p. 210).

5. Mating preferences are fundamental facets of evolutionary processes. Changing them might take tens of thousands of years or more. That is why when scientists search for evolutionary adaptations, they typically consider what humans were like during the Pleistocene era, which ended more than 10,000 years ago. At that point in time, and for most of human evolution, *Homo sapiens* were nomadic huntergatherers.

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