



# Are men really more 'oriented' toward short-term mating than women?

A critical review of theory and research

David P. Schmitt  
*Bradley University*

---

Todd K. Shackelford  
*Florida Atlantic University*

---

David M. Buss  
*University of Texas at Austin*

---

## Abstract

According to Sexual Strategies Theory (D.M. Buss and D.P. Schmitt 1993), both men and women possess psychological adaptations for short-term mating. However, men may possess three adaptations that make it seem as though they are generally more 'oriented' toward short-term mating than women: (1) Men possess *greater desire* for short-term sexual relationships than women; (2) Men prefer *larger numbers* of sexual partners over time than women; and (3) Men require *less time* before consenting to sex than women. We review a wide body of psychological theory and evidence that corroborates the presence of these adaptations in men's short-term sexual psychology. We also correct some recurring misinterpretations of Sexual Strategies Theory, such as the mistaken notion that women are designed solely for long-term mating. Finally, we document how the observed sex differences in short-term mating complement some feminist theories and refute competing evolutionary theories of human sexuality.

**Keywords:** Sex differences, Human mating strategies

## Introduction

Of all the ways that men and women psychologically differ, perhaps the most striking differences occur in the realm of sexual desire and romantic relationships. For example, men appear much more interested than women in short-term mating relationships, expressing more sexual desire than women do for brief romantic encounters that lack the emotional depth and temporal commitment associated with long-term, marital relationships (Buss and Schmitt 1993). In a meta-analysis that included 177 empirical studies of sex differences in sexual psychology, Oliver and Hyde (1993) concluded that one of the largest and most consistent differences between men and women involved short-term mating orientation. Specifically, men were much more positive toward short-term, casual sex than women ( $d = 0.81$ ). Not only do men report that casual, low-investment sex is more desirable, permissible, and arousing than women do (Carroll et al. 1985; Fisher et al. 1988; Hendrick et al. 1985; Wilson 1987), men also report that they behaviourally seek and engage in short-term mateships more than women do (Eysenck 1971, 1976; Simpson and Gangestad 1991; Wright and Reise 1997). This sex difference in short-term mating appears to hold true across socio-economic levels, cultural systems, and historical periods (Betzig 1986; Laumman et al. 1994; Symons 1979).

It may seem evident from these and many other studies on short-term mating (see Barash and Lipton 2001) that men are clearly more 'oriented' or interested in short-term mating relationships than women are. However, there are several reasons for doubting this unqualified conclusion. Some evolutionary and feminist theories of human mating (e.g., Gangestad and Simpson 2000; Hrdy 1981) have provided compelling rationale for thinking that women can reproductively benefit from short-term mating relationships. Women may benefit from gaining access to high quality genes (Gangestad and Thornhill 1997), gaining access to protection and immediate resources (Lancaster 1989; Smuts 1992), and evaluating men as prospective long-term partners (Greiling and Buss 2000; Schmitt and Buss 2001). In addition, some evidence indicates that women may possess physiological adaptations to short-term mating (see Baker and Bellis 1995). Thus, it is possible that women are just as 'oriented' to short-term mating as men are, with differences arising only in the adaptive benefits that accrue to men and women (see Buss and Schmitt 1993).

Other evolutionary theorists agree that large sex differences probably do not exist in short-term mating, but do so by arguing that neither men nor women are designed for short-term mating (e.g., Hazan and Zeifman 1999). In their view, sex differences in short-term mating desires are actually only

small in magnitude, and any differences that do exist are primarily the result of statistically misleading research methodologies. Miller and Fishkin (1997) claim that many of the observed sex differences in mating desires are due to a few male outliers who distort the picture of male sexual psychology with extreme self-presentations of short-term mating interest. In their replication of Buss and Schmitt's (1993) findings, Miller and Fishkin noted 'these variables were highly skewed resulting in severe violations of assumption of normality' (p. 220). Rather than adaptive variation in the desire for sexual variety existing between the sexes, Miller and Fishkin hypothesize 'few sex differences in mating strategies' (p. 197). Most men and women are thought to be fundamentally alike in their mating desires: 'In fact, we would expect that whereas most men and women would be seeking a long-term mate, their desire to seek a short-term mate would be minimal' (p. 224). So, contrary to the prevailing view that substantive differences exist between men and women in short-term mating orientation (see Schmitt et al. in press), Miller and Fishkin argue that human male and female mating psychology is essentially identical, and that healthy (i.e., securely attached) men and women should express romantic interest only in long-term mating relationships marked by deep interpersonal trust and emotional interdependence.

The conclusion that men are generally more 'oriented' toward short-term mating than women, therefore, can be questioned on two basic fronts. Some see both women and men as equally short-term oriented, others see both women and men as solely long-term oriented. In this article, we review theoretical rationale and empirical evidence supporting the position that, although short-term mating is a natural component of both men's and women's sexual strategies, men's short-term strategy is more strongly rooted in the desire of sexual variety. We document three psychological adaptations to sexual variety in human males that may generate the commonly observed conclusion that men are more 'oriented' toward short-term mating than women. We also detail how the robust confirmation of sex differences in short-term mating complements some feminist theories and logically falsifies certain alternative theories of human mating psychology. We begin by reviewing some of the classical accounts of sex differences in short-term mating.

### **Classical theories of sex differences in short-term mating**

Most theories of human sexuality lead to the prediction that men should desire short-term mates more than women. For example, social learning theories predict sex differences in short-term mating orientations because boys and girls tend to learn how to sexually behave and feel from same-sex adults (Bandura 1977; Mischel 1966). Because previous generations have

exhibited sex differences in short-term mating, social learning theorists predict that contemporary males and females should differ in their mating orientations as well. Although this perspective accounts for the robust nature of sex differences in short-term mating, this explanation begs the question of why boys and girls across all cultures are differentially socialized (Low 1989), and why boys and girls seem psychologically designed to learn primarily from their own gender (Geary 1998).

Social role theories explain sex differences in short-term mating desires as produced, in part, by 'sexual double standards' (Oliver and Sedikides 1992; Sprecher et al. 1987). Because men are rewarded with power and esteem for sexual promiscuity and women are punished for short-term sexual relationships, psychologists find sex differences in attitudes toward casual sex among adults. Some evidence indicates that this may be changing slightly, such that women are allowed to engage in short-term sex but only when they are 'in love' (Sprecher et al. 1987). Still, men often face social roles and scripts that foster short-term mating, particularly those that instill callous attitudes toward sex (Mosher and Tomkins 1988). For example, Gagnon and Simon (1973) hypothesize that men's greater interest in short-term mating results from a male focus on self-pleasure during adolescence. Adolescent men masturbate in emotional isolation whereas women spend adolescence forming intimate emotional connections among their friends. As a result of learning these different sexual scripts as adolescents, men and women emerge as adults with divergent mating desires.

Feminist theories often use social learning, social roles and sexual scripts to account for sex differences in short-term mating, particularly those that lead to the systematic domination of women by men (Hyde 1996; Pratto and Hegarty 2000). Perhaps as a result, many feminist theories focus on the sexual conflict and aggression that sometimes results from sex differences in short-term mating (e.g., Brownmiller 1975; Smuts 1992), as well as on broader issues of who controls women's sexuality (Gavey 1992). Of particular interest is how sex differences in short-term mating are intimately tied to political, economic, and social equality (Pratto 1996). In general, feminist approaches to the evolution of sexuality have emphasized that women do naturally engage in short-term mating (Hrdy 1981; Tavis 1992), and when they have access to political and economic power in a culture, short-term mating sometimes becomes a more accepted mating behaviour for women (Smuts 1992). What remains in question, however, is why men's short-term mating psychology qualitatively differs from women's short-term mating psychology even after women gain access to resources (Townsend and Levy 1990), and even when women live in relatively egalitarian cultures (Schmitt et al. 2001).

Overall, most psychological theories of human sexuality acknowledge

and provide at least some explanation of men's greater proclivity toward short-term mating. However, classical psychological theories of sex differences in sexual desire may gain additional explanatory power, and be able to respond to as yet unanswered questions, by taking into account the *ultimate origins* of sex differences in sexuality. For example, why have previous generations of men and women differed in their short-term mating desires? Why is there a sexual double standard in most societies? Why do young boys and girls spend their adolescent years engaged in different types of relationship scripts? Why do men and women in egalitarian cultures pursue short-term mating in qualitatively different ways?

### Parental investment theory

One increasingly common approach to understanding the ultimate origins of psychological sex differences is the adaptationist perspective of evolutionary psychology (Buss 1995, 1999; Mealey 2000). According to most evolutionary accounts, many psychological sex differences originate from the fact that, among sexually-reproducing species, each sex possesses a mating psychology that historically led to more successful reproduction than alternative psychological designs for that sex. For example, according to Parental Investment Theory (Trivers 1972), the sexes historically have differed in the amount of parenting time and effort needed to produce viable offspring. As a result, the sexes differ in their evolved parenting and mating psychologies. In some species, males have an evolved psychology of heavy parental investment that leads to high rates of offspring survival (e.g., the Mormon cricket). In other species, females possess the heavy-investing mating psychology (Trivers 1985).

Trivers (1972) observed that there is a relationship between the psychology of parental investment and sex differences in short-term mating. Trivers noted that the heavy-investing sex usually possesses restrained sexual desires. Heavy parental investors are *less* oriented toward short-term mating than low-level parental investors. The evolutionary rationale for this sex difference in short-term sexual desires is twofold. First, because it takes more effort to raise a single offspring for the heavy-investing sex, they are relatively limited in the number of offspring they have the energy to produce in a lifetime. The less-investing sex, however, incurs fewer energetic limitations to the total number of offspring they can produce. For them, the primary constraint to increasing reproductive success is gaining sexual access to large numbers of willing heavy investors. Because of a long evolutionary history of basic differences in these limitations to producing viable offspring, the less-investing sex of most animal species now possesses a sexual psychology, which motivates seeking large numbers of heavy-investing mating partners. Thus, we find that female Mormon crickets, the

less-investing sex of that species, possess more of a short-term mating orientation (Alcock 1993).

A second reason why the heavy-investing sex is usually less oriented toward short-term mating has to do with mate choice and its material consequences. For the heavy-investing sex, a poor mate choice can have dire reproductive consequences. A heavy investor who chooses poorly could be abandoned and forced into the costly and potentially lethal task of raising offspring alone. Because they have more at stake in raising every one of their offspring, heavy investors such as male Mormon crickets possess a sexual psychology in which they express more discriminating sexual tastes and are much more selective about whom they choose as mating partners (Alcock 1993). The less-investing sex, on the other hand, is usually more sexually promiscuous and receptive to brief sexual encounters. A poor mate choice has less effect on them because they can change mating partners quickly, with relatively few investment losses. Low-level investors, therefore, are *more* oriented toward short-term mating than heavy parental investors (Trivers 1972).

In mammals, females are the heavy-investing sex because in order to produce viable offspring they must incur the costs of fertilization, placentation, and gestation. Female mammals also carry the investment load associated with lactation, which can be several years in many species, years during which it is harder for her to produce and invest in additional offspring. Mammalian males, on the other hand, do not shoulder these investment burdens. The minimum level of parental investment by a male is a few minutes of his time and the contribution of his sperm. Because of a long mammalian evolutionary history of fundamental differences in limitations to producing offspring and in the consequences of poor mate choices, modern mammalian males tend to be more oriented toward short-term mating than mammalian females (Trivers 1985).

Although human males often invest heavily in their offspring (Lovejoy 1981; Zeifman and Hazan 1997), there is still a large sex difference in obligatory parental investment, the amount that must be waged to produce a viable offspring. From the perspective of Parental Investment Theory, therefore, the ultimate origin of why human males are more oriented toward short-term mating than human females is relatively straightforward. Men are the lesser investing sex. As a consequence, they have less to lose from a poor mate choice than women, and more to gain in reproductive output by engaging in indiscriminate, short-term sex (see also Alexander and Noonan 1979; Bjorklund and Shackelford 1999; Hinde 1984).

## Sexual Strategies Theory

What are the precise causal mechanisms behind human sex differences in short-term mating orientation? What are the evolved desires of the human mind that make men sexually different from women in the context of short-term mating? Buss and Schmitt (1993) addressed these questions by using a three-step process that has become common among contemporary evolutionary psychologists (Buss 1999). First, they examined the *adaptive problems* that men and women likely faced over human evolutionary history when pursuing mating relationships. Adaptive problems are obstacles that ancestral men and women would have had to overcome to reproduce successfully. One adaptive problem that men, as the less-investing sex, likely faced was gaining access to large numbers of willing sexual partners. For women, large numbers of willing mates would likely not have been a problem, both because there were numerous low-investing males willing to mate with them and because mating indiscriminately with multiple partners would not have increased female fertility (Gangestad and Thornhill 1997).

Second, Buss and Schmitt (1993) hypothesized that certain psychological adaptations may have evolved to solve the key problems of human mating. Over the millions of years of hominid evolution, it seems likely that human nature has been filled with numerous evolved desires – taste preferences, phobias, sexual desires – that promoted human survival and reproduction (Bock and Cardew 1997; Pinker 1997; Tooby and Cosmides 1992). In response to the male adaptive problem of gaining access to large numbers of willing partners, it seems likely that certain adaptive desires for short-term sexual relationships evolved in male mating psychology (Buss 1994).

Third, Buss and Schmitt (1993) conducted several empirical tests for the presence of adaptive desires in men's short-term mating psychology. For example, Buss and Schmitt found that men actively sought short-term mates more than women. They found that men wanted more than twice as many sexual partners as women in a lifetime. Buss and Schmitt found that, on average, men would consent to sex with someone they viewed as desirable after knowing them for only one week. For the average woman, consenting to sex meant waiting at least six months.

Buss and Schmitt (1993) integrated nine hypotheses about the evolved nature of human mating psychology in the form of Sexual Strategies Theory (SST). We focus in this article only on their first hypothesis regarding sex differences in the psychology of short-term mating. According to Hypothesis 1 of SST, 'Because of the lower levels of minimum parental investment incurred by men, short-term mating will represent a larger component of men's sexual strategy than of women's sexual strategy' (p. 210). This hypothesis suggests neither that all men are constantly seeking short-term mating opportunities, nor that all women are exclusively long-term

maters. This is often how SST has been characterized in the mating literature and it is a distorted picture of the theory.

Instead, SST outlines hypotheses that detail the nature of both long-term and short-term mating psychology within each sex. When men and women pursue long-term marital relationships, SST hypothesizes that their mating psychology would be largely similar. For example, both men and women in our ancestral past likely would have increased their reproductive success when mating with long-term mates by choosing partners who were kind and understanding (Buss and Schmitt 1993). Thus, SST accurately explains why both men and women express preferences for long-term mates who are kind and understanding (Buss 1989; Kenrick et al. 1990; Nevid 1984), why men and women effectively attract one another as long-term mates when suggesting that they are kind (Schmitt and Buss 1996), and why men and women find kind marital partners particularly satisfying (Botwin et al. 1997).

When pursuing short-term relationships, however, SST predicts that male and female mating psychology will diverge in several important ways. It is because of these differences in the psychology of short-term mating that Hypothesis 1 of SST states that men will be more oriented toward short-term mating than women. Hence, Hypothesis 1 is a sex difference hypothesis in the context of short-term mating, not a hypothesis about the absolute level of short-term mating within men. More specifically, Hypothesis 1 states that the reason men are more oriented toward short-term mating than women is because of three evolved psychological adaptations that men have and that women do not have. Buss and Schmitt (1993) referred to each of these adaptations as specific predictions from Hypothesis 1. Although they provided only limited tests of each prediction, a large body of evidence exists that corroborates the presence of each adaptation within men's short-term mating psychology. We now turn to reviewing the relevant evidence for each prediction.

### **Prediction 1: sex differences in desiring short-term mating relationships**

Prediction 1 from Hypothesis 1 of SST is that 'Men will express greater desire for, or interest in, short-term mates than will women' (Buss and Schmitt 1993: 210). This prediction does not imply that all men are invariably and eternally short-term maters. Instead, this prediction implies that because men minimally invest less in each of their offspring than women, men will desire and seek short-term mating opportunities more often than do women. Prediction 1 ultimately results from the sexually-dimorphic nature of short-term mating psychology, not from a monomorphic reproductive strategy among males.

Buss and Schmitt (1993) empirically tested Prediction 1 by measuring the extent to which college-aged men and women were currently seeking short-term mates. Using a seven-point Likert-type scale ranging from 1 (currently not at all seeking) to 7 (currently strongly seeking), men reported that they sought short-term mates significantly more than women reported seeking short-term mates. As seen in Figure 1, Schmitt et al. (in press) replicated this finding across four additional samples of undergraduates from Florida,  $t(384) = 9.66, p < 0.001$ , Illinois,  $t(313) = 1.96, p < 0.05$ , New York,  $t(117) = 3.29, p < 0.001$ , and Texas,  $t(215) = 5.86, p < 0.001$ , and in an older sample from Florida with an average age of 40,  $t(186) = 4.71, p < 0.001$ . Many other researchers have found similar evidence that men, more than women, are interested in short-term mating.

For example, if men have a greater desire for short-term sexual relationships than women, one would expect that men's minimum mate preferences – what they require in potential partners in order to mate with them – would be more relaxed than women's minimum mate preferences in the context of short-term mating. Less stringent requirements would lead to

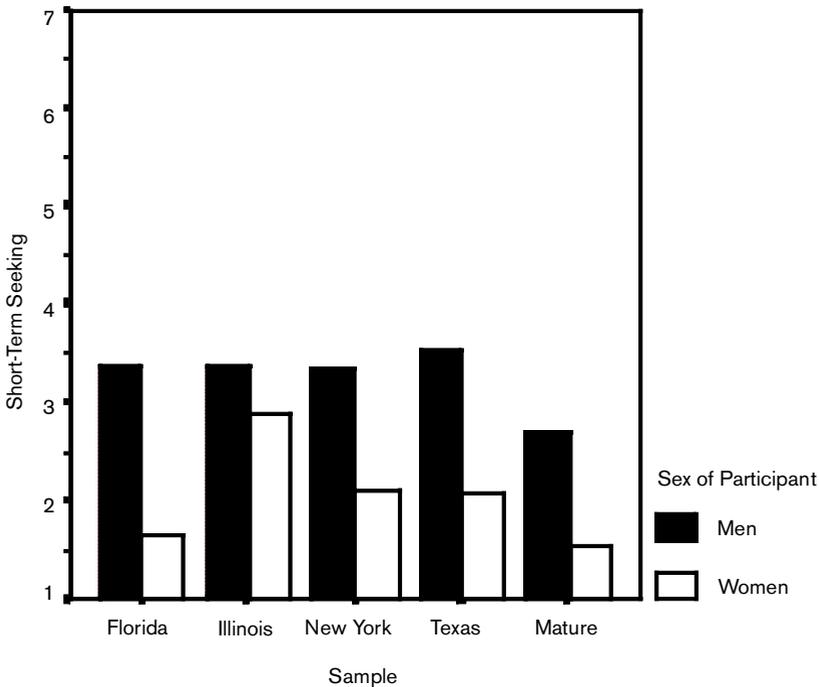


Figure 1 Mean level of seeking short-term mates reported by college-age men and women from Florida (120 men, 268 women), Illinois (103 men, 214 women), New York (35 men, 91 women), and Texas (81 men, 137 women), and among a more mature sample from Florida with an average age of 40 (83 men, 109 women)

more mating opportunities. Kenrick et al. (1990) found precisely these results in comparing the minimum standards that men and women impose before engaging in short-term sexual relationships and long-term marital relationships. They found that, for a one-night stand, women insisted that a potential partner have at least 62% of the kindness of the average man, about the same (63%) as women minimally desired in their potential long-term mates. Men, in contrast, desired 63% of kindness in long-term mates, but their minimum standard sank to 45% in the context of short-term mating. By lowering their standard for short-term mates, men increase the likelihood of short-term mating. Note that it was not the case that men in general relaxed all minimum mate selection standards, only those for short-term sexual opportunities. Other researchers have found this male relaxation occurs across a wide spectrum of personal attributes when in contexts related to short-term mating (Landolt et al. 1995; Nevid 1984; Regan 1998), including the approach of closing time in singles bars (Gladue and Delaney 1990). Men's relaxed short-term mate preferences appear specifically designed to lead to more short-term mating than women's more stringent short-term mate preferences.

The prediction that men desire short-term relationships more than women also leads to the expectation that men will engage in more extra-marital affairs than women. Married people with desires for short-term mating should be more sexually unfaithful than those who are married and do not desire short-term mating relationships. There is abundant empirical evidence supporting this implication of Buss and Schmitt's (1993) Prediction 1. For example, most large studies find that men are much more likely than women to have engaged in extra-marital sex (e.g., Blumstein and Schwartz 1983; Hunt 1974; Kinsey et al. 1948; Kinsey et al. 1953; Weideman 1997). A recent probability sampling of the United States found that men were twice as likely as women to have had an extra-marital affair (Laumman et al. 1994). Similar findings have been reported in other cultures, including a study of over 18,000 men and women in Britain (Johnson et al. 1992). Thus, according to evidence from people's behaviour once in a long-term relationship, it appears that men are more interested than women in short-term mating.

Another avenue for determining whether men desire short-term mates more than women is to compare same-sex romantic couples. If it is the case that men, but not women, possess evolved psychological adaptations for desiring short-term mating relationships, it would follow that gay male couples will experience more sexual infidelity than lesbian couples. Empirically, evidence of this sex difference is strong. In their large study of American couples, Blumstein and Schwartz (1983) found that in the past year, gay men were four to six times more likely to have had affairs than lesbians. Blumstein and Schwartz (1983) concluded that 'virtually all gay

men have other sexual partners' (p. 275), whereas 'For lesbians, sex outside the relationship is often an isolated event' (p. 277). Just as heterosexual men have greater desire and interest in short-term sex partners than heterosexual women, gay men have greater desire and interest in short-term sex partners than lesbians (see also Bailey et al. 1994). As displayed at the top of Table 1, evidence of robust sex differences in currently seeking short-term mates, in relaxed standards in short-term mate preferences, and in rates of infidelity among heterosexual and homosexual couples all corroborate the original Buss and Schmitt (1993) contention that men possess greater desire for short-term mates than women.

### **Prediction 2: sex differences in preferring many sexual partners**

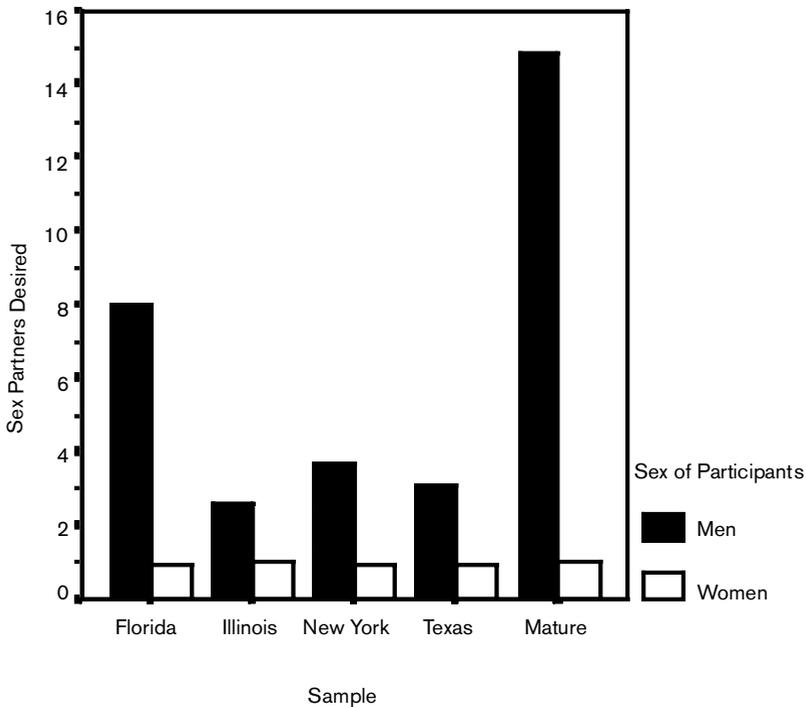
Prediction 2 from Hypothesis 1 of SST is that 'For any given period of time (e.g., a month, a year, a decade, or a lifetime), men will desire a larger number of mates than will women' (p. 210). This prediction is derived from the likely scenario that men over evolutionary history would have benefited reproductively by increasing the number of their sexual partners. The primary constraint to male reproductive success in foraging societies is gaining sexual access to large numbers of fertile women (Symons 1979). In contrast, women in our evolutionary past would not have benefited simply by increasing the number of people with whom they have sex. For women, the *quality* of their partners would have had more of an effect on their reproductive success than the *quantity* of their partners (Ellis 1992; Gangestad and Thornhill 1997).

To test Prediction 2, Buss and Schmitt (1993) measured the extent to which college-aged men and women differ in the number of sex partners they would like to have over various time periods. In every case, men preferred significantly larger numbers of sex partners than women. As seen in Figure 2, Schmitt et al. (in press) replicated this finding across five additional samples. For example, men and women differ in the number of partners they desire over the next year in Florida,  $t(370) = 3.13$ ,  $p < 0.01$ , Illinois,  $t(305) = 3.78$ ,  $p < 0.001$ , New York,  $t(119) = 4.74$ ,  $p < 0.001$ , and Texas,  $t(207) = 5.58$ ,  $p < 0.001$ , and among the more mature sample from Florida,  $t(179) = 2.86$ ,  $p < 0.01$ . Moreover, sex differences in the number of partners desired were significant regardless of whether means, medians, or distributions were examined.

A variety of other research findings support the SST proposal that men have a specialized psychology that leads them to prefer more sex partners than women. Men, more than women, report sexual fantasies involving large numbers of sexual partners (Gil 1990; Gold and Gold 1991; Hardin and Gold 1988; Leitenberg and Henning 1995), particularly strangers (Barclay 1973; Ellis and Symons 1990). Men tend to consume far more

Table 1 Three predictions from Sexual Strategies Theory with supportive data and sample references

<i>Sexual Strategies Theory</i>	<i>Supportive Data</i>	<i>Sample References</i>
<p><b>Prediction 1</b> Men possess greater desire for short-term mates than women</p>	<ol style="list-style-type: none"> <li>(1) Sex differences in currently seeking short-term mates</li> <li>(2) Sex differences in relaxing short-term mate preferences</li> <li>(3) Sex differences in having extra-marital sex</li> <li>(4) Gay males seek short-term mates much more than lesbians</li> </ol>	<p>Schmitt et al. (in press) Kenrick et al. (1990) Laumann et al. (1994) Blumstein and Schwartz (1983)</p>
<p><b>Prediction 2</b> Men prefer larger numbers of sex partners than women</p>	<ol style="list-style-type: none"> <li>(1) Sex differences in the number of future sex partners desired</li> <li>(2) Sex differences in sexual fantasies involving multiple partners</li> <li>(3) Sex differences in consuming short-term-oriented pornography</li> <li>(4) Sex differences in seeking large numbers of prostitutes</li> <li>(5) Gay males desire and seek more sex partners than lesbians</li> </ol>	<p>Schmitt et al. (in press) Leitenberg and Henning (1995) Malamuth (1996) Burley and Symanski (1981) Greenberg (1995)</p>
<p><b>Prediction 3</b> Men require less time before consenting to sex than women</p>	<ol style="list-style-type: none"> <li>(1) Sex differences in reported likelihood of consenting to sex</li> <li>(2) Sex differences in perceiving sexual interest</li> <li>(3) Sex differences in finding first dates attractive</li> <li>(4) Sex differences in the speed of falling in love</li> <li>(5) Sex differences in using direct-to-sex dating tactics</li> <li>(6) Sex differences in consenting to sex with a stranger</li> <li>(7) Sex differences in preferring sexually permissive dates</li> </ol>	<p>Schmitt et al. (in press) Abbey (1982) Rubin et al. (1981) Rubin et al. (1981) Clark et al. (1999) Clark and Hatfield (1989) Oliver and Sedikides (1992)</p>



*Figure 2* Mean number of sexual partners desired in the next year reported by college-age men and women from Florida (120 men, 268 women), Illinois (103 men, 214 women), New York (35 men, 91 women), and Texas (81 men, 137 women), and among a more mature sample from Florida with an average age of 40 (83 men, 109 women)

pornography involving short-term sex with large numbers of unfamiliar partners than do women (Malamuth 1996; Salmon and Symons 2001). Although prostitution occurs across virtually all known human cultures (Burley and Symanski 1981), men are always the primary consumers of sexual prostitution whether the prostitutes are men or women (Burley and Symanski 1981; Symons 1979). In addition, a primary consideration among men is that prostitutes serve to satisfy a male need for sexual variety (Bess and Janus 1976). If women have a psychological preference for large numbers of sex partners, they too should experience sexual fantasies involving large numbers of unfamiliar partners, consume pornography focused on short-term sex, and solicit prostitutes to satisfy their need for sexual variety. Typically, women do none of these things (Buss 1994).

Another testimony to sex differences in short-term mating psychology comes from analysing the psychological differences between gay males and lesbians. Bailey and his colleagues (1994) found that gay men have more permissive attitudes toward having large numbers of sex partners than

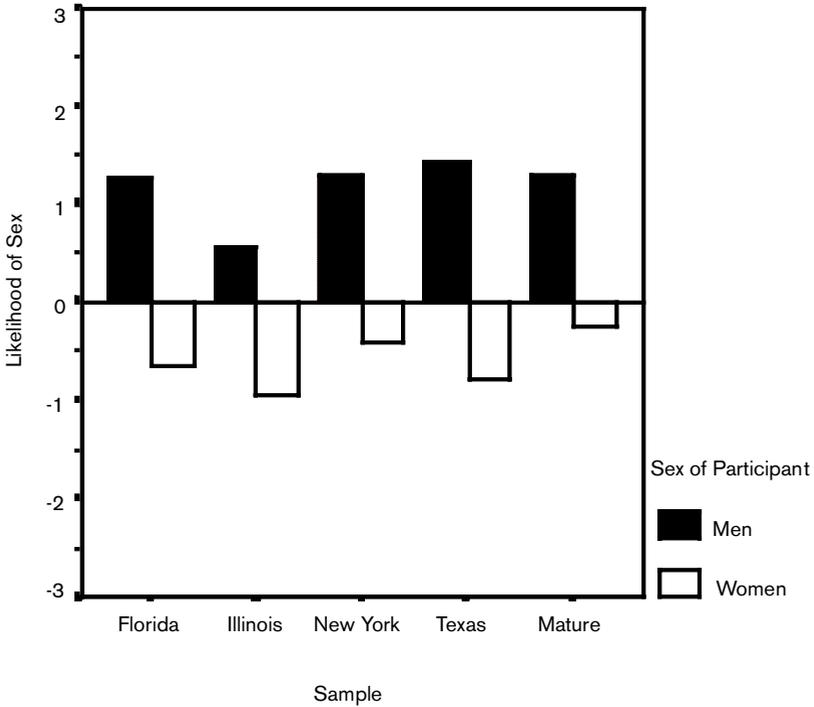
do lesbians. Moreover, behavioural differences exist between gay males and lesbians in terms of having sex with large numbers of partners. For example, gay males report having had more past sexual partners than lesbians (Blumstein and Schwartz 1983). In studies of gay males in San Francisco during the 1970s and 1980s (see Greenberg 1995; Ruse 1988), nearly 50% of gay men reported having over 500 sex partners in their lifetime. None of the lesbian couples reported as many past partners (Bell and Weinberg 1978). It seems likely that men, more than women, desire large numbers of sexual partners. As displayed in the middle of Table 1, a wide body of evidence corroborates the original Buss and Schmitt (1993) finding that men prefer more sex partners than women.

### **Prediction 3: sex differences in time required before having sex**

Prediction 3 from Hypothesis 1 of SST is that 'Men will be willing to engage in intercourse after less time has elapsed in knowing a potential partner than will women' (p. 210). This prediction is anchored in the logic that men over evolutionary history who pursued short-term sexual relationships would have benefited reproductively by preferring to mate relatively quickly and with low associated costs. Men who took an extended period of time to evaluate a short-term partner before consenting to sex would likely have been out-reproduced in our ancestral past by those men who were willing to mate with more expediency. Women, in contrast, typically would not have benefited from mating quickly. As with other species in which females invest more than males in their offspring, human females should take longer than men should before consenting to sex.

To test this prediction, Buss and Schmitt (1993) measured the extent to which college-aged men and women would consent to having sex with a desirable member of the opposite sex after certain periods of time had elapsed in knowing the potential mating partner. Men were more likely than women to consent to sex after knowing a potential partner for time periods ranging from 1 hour to 2 years. As seen in Figure 3, Schmitt et al. (in press) replicated this finding across five other samples. For example, men were more likely than women to consent to sex after knowing someone for only one month in Florida,  $t(385) = 10.71$ ,  $p < 0.001$ , Illinois,  $t(313) = 6.85$ ,  $p < 0.001$ , New York,  $t(124) = 5.24$ ,  $p < 0.001$ , and Texas,  $t(216) = 8.72$ ,  $p < 0.001$ , and among the more mature sample from Florida,  $t(183) = 5.86$ ,  $p < 0.001$ .

A diverse range of research findings lend converging support to the notion that men have a specialized psychology that leads them to consent to sex more quickly than women. For example, men are sexually attracted to women relatively quickly. Men interpret friendly behaviour by women as seductive and flirtatious (Abbey 1982), men find first dates more



*Figure 3* Likelihood of consenting to sexual intercourse with a desirable person after knowing them for one month reported by college-age men and women from Florida (120 men, 268 women), Illinois (103 men, 214 women), New York (35 men, 91 women), and Texas (81 men, 137 women), and among a more mature sample from Florida with an average age of 40 (83 men, 109 women)

attractive than do women (Rubin et al. 1981), and men fall in love more quickly than do women (Rubin et al. 1981). Recently, Clark, Shaver, and Abrahams (1999) found that, once attracted, men were much more likely to use quick and direct techniques for initiating romantic encounters, whereas women were more likely to use passive and prolonged techniques for initiating romantic encounters. Clark et al. (1999) remarked that these sex differences were not the result of a few outlying men, and noted that their findings flatly contradicted the suppositions of Miller and Fishkin (1997).

One of the most convincing experimental demonstrations of sex differences in the time needed before consenting to sex comes from Clark and Hatfield (1989). In a series of studies, they had male and female confederates approach someone of the opposite sex on college campuses and comment, 'I have been noticing you around campus, I find you to be very attractive,' and then ask one of three questions: (1) 'Would you go out with me tonight?' (2) 'Will you come over to my apartment tonight?' or (3) 'Would

you go to bed with me tonight?' In experiments conducted in 1978 and 1982, Clark and Hatfield found that men and women responded very differently to these requests. Men were slightly more interested than women in dates with strangers (56% v. 50%), men were significantly more interested than women in coming over to a stranger's apartment (69% v. 6%), and men were substantially more interested than women in having sex with a stranger (75% v. 0%).

Although safety fears could have been a contributing factor to these sex differences, no female participant reported fear as a reason for refusal, and further studies showed that safety was not a causal issue for short-term sex refusal. A follow-up study by Clark (1990), for example, found that having friends call the participants over the phone, attest to the kindness and integrity of another good friend of the opposite sex who is coming to town, and then ask the participant to have sex with that good friend produced similar sex differences in consenting to short-term sex. From these and other studies it seems that men more than women are willing to have sex with someone after knowing that person for a brief period of time.

Support for Prediction 3 also comes from the finding that men, more than women, prefer sexually permissive partners for short-term relationships (Oliver and Sedikides 1992). This finding supports Prediction 3 because preferring sexual permissiveness in short-term mates functions to lower the time needed to obtain sexual access to short-term mates (Buss and Schmitt 1993). If women have a psychological adaptation for minimizing the time needed before having sex, one would expect them also to prefer short-term mates who are easily and quickly accessible for sex. Studies using surveys (Buss and Schmitt 1993; Oliver and Sedikides 1992) as well as experimental methods (Schmitt et al. 2001) have shown women tend not to exhibit such a preference. As displayed in Table 1, a large body of evidence corroborates the original Buss and Schmitt (1993) finding that men are willing to engage in intercourse more quickly than women.

It seems almost indisputable that men are more oriented toward short-term mating than women, but we would argue that this is true only in a limited way. That is, we suggest men seem more oriented toward short-term mating because their short-term mating psychology is different from women's short-term mating psychology. The multiple sources of empirical evidence summarized in Table 1, couched in the evolutionary biological rationale outlined earlier, suggest that the specific reason men seem more oriented toward short-term mating is because they possess three psychological adaptations to short-term mating that are different from the mating adaptations of women. Men possess adaptations that motivate: (1) a *greater desire* for short-term sexual relationships, (2) a preference for *larger numbers* of sexual partners, and (3) the requiring of *less time* before consenting to sex than women. Buss and Schmitt (1993) viewed these specialized adaptations,

in combination, as the ultimate source of observed sex differences in short-term mating orientation. Nevertheless, several misunderstandings of SST persist within the literature on human mating that obfuscate this critical point of SST.

### **Misunderstandings of Sexual Strategies Theory**

SST is an evolutionary psychological theory about the polymorphic nature of human mating psychology. Predictions from SST concerning *between-sex* differences in sexual psychology have been validated across different cultures (Bailey et al. 2000; Knodel et al. 1997; Walter 1997) and with diverse research methods (e.g., Hassebrauck 1998; Malamuth 1996; Schmitt and Buss 2000; Speed and Gangestad 1997; Sprecher et al. 1994; Weiderman and Dubois 1998). What has often been overlooked, however, is that SST also is a theory about the within-sex differences in long-term and short-term mating psychology. For example, when men pursue short-term sexual relationships, their mate preferences and sexual desires (Regan 1998), their tactics of romantic attraction (Schmitt and Buss 1996), their use of interpersonal deception (Tooke and Camire 1991), their actual mate choice (Buss 1994), and their feelings of relationship satisfaction and commitment (Shackelford and Buss 1997) are very different from when they pursue long-term mating relationships. The temporal context of mating relationships, therefore, is an essential ingredient in understanding the sexual psychology of human males (see also Gangestad and Simpson 2000).

According to SST, the same should be true of women's mating psychology. For example, when women seek long-term partners, their mate selection psychology is dominated by desires for relationship commitment, parenting skills, and long-term resource potential (Buss and Schmitt 1993). In contrast, when women seek short-term relationships their psychology may be motivated by gaining access to high quality genes (Gangestad and Thornhill 1997), gaining access to protection and immediate resources (Hrdy 1981; Smuts 1992), and evaluating men as prospective long-term partners (Greiling and Buss 2000). SST should be considered a theory about the differences between *and* within men's and women's mating psychologies.

The view that both men and women possess a diverse range of reproductive strategies is consistent with several features of modern feminism (Buss 1996). Indeed, several evolutionary feminists have argued that short-term mating may be a critical component of women's natural mating psychology (Smuts 1996). Adopting the view that women should not engage in short-term mating essentially strips women of an important reproductive tool, one that is especially adaptive in certain reproductive environments (Lancaster 1989).

Unfortunately, SST has often been portrayed as a theory concerning only differences between monolithic male (i.e., short-term) versus female (i.e., long-term) mating psychology. One reason why some interpret SST this way may be that in the context of short-term mating, the sexual psychology of men and women does differ dramatically. Men's short-term mating adaptations involving a desire for short-term relationships, a preference for large numbers of sexual partners, and needing less time before consenting to sex lead men to actively pursue and engage in more short-term mating than do women. Women have short-term mating adaptations too, but women pursue short-term mateships in a different way and for different reasons than men (Scheib 1997). These two different short-term mating psychologies are what ultimately lead to the expectation and finding that men expend more of their total mating effort on short-term mating than do women (Buss 1997; Gangestad and Thornhill 1997).

Another reason why SST may be mistakenly characterized as positing only sex differences in mating strategies is because, in contrast to alternative theories of human mating, SST is one of the few to broadly account for sex differences in sexual psychology. For example, many theories have been put forth that assume humans are only long-term mates (e.g., Lovejoy 1981; Zeifman and Hazan 1997). Other theories have suggested that both men and women are relatively short-term sexual strategists (Fisher 1992; Silverstein 1996). In comparison to theories that assume all humans follow identical mating strategies, the sex difference component of SST stands out. The fact that sex differences have been observed by so many researchers, however, also provides a compelling argument for why SST is more likely to be correct than alternative evolutionary theories of human mating.

### **Alternative evolutionary theories of human mating**

According to one alternative theory, Attachment Fertility Theory (AFT), the basic human mating strategy of men and women alike, consists of the desire to mate with a single sex partner for life (Miller and Fishkin 1997). Miller and Fishkin (1997) theorize, as have Bowlby (1969), Hazan and Shaver (1994), and others, that all humans have been designed by evolution to develop a secure attachment style in childhood. This basic interpersonal orientation normally manifests itself in adulthood in a healthy desire for a high-investment, long-term marital union. In this view, human pairbonding is based on an endorphin-oriented psychophysiological system that underlies emotional trust, sexual satisfaction, and the increased survivability of offspring (for an alternative account of human pairbonding mechanisms, see Chisholm 1996 or Belsky 1997). Those people who express short-term mating desires are, from this perspective, pathological deviations from the 'natural' human strategy of long-term mating.

There are several theoretical reasons why a more accurate characterization of the design of the human mind is probably one in which healthy men and women possess both short-term and long-term mating psychologies (Kirkpatrick 1998, 1999). First, the reproductive benefits of having both short-term and long-term sexual strategies within one's mating repertoire are substantial (Buss and Schmitt 1993). For example, some evidence suggests that when one type of mating strategy becomes too prevalent in a population, the reproductive advantages of engaging in the other sexual strategy can be large (Gangestad and Simpson 1990; Simpson 1999). Second, AFT is theoretically grounded in the notion that a two-parent, high-investment mating system has been the norm throughout human evolution. However, studies of modern hunter-gatherer cultures suggest that our ancestral past was not an idyllic scene of heavy investment families with two parents equally engaged in childcare and emotional nurturance. Instead, foraging cultures vary dramatically in the extent to which fathers invest in children, and in most cultures we find a diverse array of sexual strategies (Draper and Harpending 1982, 1988; Lancaster 1989). Moreover, research on family stress and the timing of menarche suggests that women may be adaptively channeled to short-term mating in certain environments (Belsky 1999; Gangestad and Simpson 2000; Surbey 1990).

There also are many empirical reasons for thinking that humans are not designed solely for long-term mating. Like other primates, humans show evidence of physiological design for short-term mating. The relative size and external location of human testes, the shape of the human penis, and body size sexual dimorphism in humans, all suggest that sexual promiscuity was at least part of our ancestral mating system (Baker and Bellis 1995). Recent evidence in reproductive physiology suggests that the quality of different types of sperm and varying features of ejaculation show evidence of being designed for men to compete with and destroy other men's sperm in a human female's reproductive tract (Baker and Bellis 1995). The pattern and timing of female orgasm is suggestive of short-term adaptations in women (Gangestad and Thornhill 1997). In addition, humans have a psychology of infidelity and jealousy that appears to be finely attuned to the short-term mating behaviour of spouses (Betzig 1989; Buss et al. 1992; Daly et al. 1982; Shackelford 2000). If men and women have been long-term mates throughout human evolutionary history, why do we have adaptations designed to function in the context of short-term mating? The evidence reviewed here and summarized in Table 2 suggests that the proposition that humans have been designed by evolution solely for long-term mating is unlikely to be true, and is much weaker than the alternative proposition of SST that humans have been designed for pursuing both short-term and long-term sexual strategies (see also Gangestad and Simpson 2000).

*Table 2* Five additional reasons for thinking that short-term mating is a basic human mating strategy

<i>Evidence of short-term mating</i>	<i>Sample references</i>
(1) Theoretically, both sexes can reproductively benefit from short-term mating	Greiling and Buss (2000) Barash and Lipton (2001)
(2) Short-term reproductive strategies emerge in adaptive ways across human cultures	Draper and Harpending (1988) Schmitt et al. (2001)
(3) Possible physiological adaptations to short-term mating (e.g., patterns of female orgasm)	Baker and Bellis (1995) Gangestad and Thornhill (1997)
(4) Powerful sexual jealousy seems designed to counter short-term infidelities	Shackelford (2000) Buss (2001)
(5) People who pursue short-term mates are not psychologically unhealthy or of low mate value	Mikach and Bailey (1999) Schmitt (2001)

Upon re-examination, the critical data reported by Miller and Fishkin (1997) actually support this conclusion. They demonstrated that men who had a short-term mating orientation (defined as having an insecure attachment style) preferred larger numbers of short-term mates. Women who had a short-term mating orientation did not exhibit these characteristics. From Miller and Fishkin's (1997: 222) Figure 8.2, it seems that women with a short-term mating orientation desired the same number of partners as women with a long-term mating orientation. If humans who have an insecure attachment style are unhealthy, pathological short-term maters, then why do women who are insecure not desire large numbers of sexual partners? From the perspective of SST, this finding makes sense. Women who engage in short-term mating do not seek out larger numbers of partners because it is not part of their evolved short-term psychology. Rather, women who pursue a short-term sexual strategy may be motivated to seek out high-quality genetic partners, partners that may one day make good long-term mates, and partners with immediate resources (Gangestad and Simpson 2000; Greiling and Buss 2000; Scheib 1997).

AFT and related theories also predict that short-term mating in men and women is associated with poor developmental experiences that cause lasting harm. According to this view, those who seek brief sexual relationships have failed to develop the 'secure' form of parent-child attachment that normally progresses into exclusive long-term mating in adulthood. Short-term mating by either gender, in this view, would have deleterious effects on survival and reproduction, and is regarded as a manifestation of developmental psychopathology, 'dysfunctional early attachment relationships [those that are not

secure] are a common precursor of adult sexual deviance' (Zeifman and Hazan 1997: 255). Thus, 'it seems that a propensity to spend more of one's time seeking short-term relationships rather than long-term ones may have been a "fallout" of a failure to interface with human's adapted for social environment (e.g., responsive paternal and maternal caregivers)' (Miller and Fishkin 1997: 228). However, Mikach and Bailey (1999) found that women who have very large numbers of sex partners did not report having suffered higher stress during childhood, nor were they lower on general mate value than women with fewer sex partners. Moreover, Schmitt (2001) recently documented that short-term mating is not linked to the roots of psychological dysfunction found in insecure attachment (i.e., low self-esteem and high levels of anxiety; see Bartholomew and Horowitz 1991). In contrast, those who reported actively seeking short-term mates had higher self-esteem, lower neuroticism, and scored lower on key psychopathology scales theoretically embedded in insecure attachment. Schmitt (2001) noted the same findings have been reported in both Western and non-Western cultures, including Ethiopia, Lebanon, Japan, and Bangladesh. Schmitt (2001) concluded that although insecure attachment and short-term mating are somewhat related, it is clear that they do not share a common core of developmental disturbance as predicted by AFT.

Another aspect of AFT that is troublesome has to do with the implications it has for same-sex couples. If it were true that short-term mating is essentially an abnormal state relative to our common human nature, then Blumstein and Schwartz's (1983) finding that 'virtually all' gay men have affairs would suggest that most gay men are insecurely attached and pathologically motivated toward short-term mating. We consider such a position untenable. It seems much more likely that gay men are, in fact, nearly identical to heterosexual men in their mating psychology (Bailey et al. 1994; Weinrich 1987), including the three specific adaptations postulated by Hypothesis 1 of SST. The reason gay men are more actively engaged in short-term mating than lesbians is because their mating partners are other men, who also have a short-term psychology guided by desires for large numbers of sexual partners, not because most gay men are interpersonally and emotionally deviant individuals.

The fundamental difference between monomorphic theories of human mating and SST lies in whether we have one evolved mating psychology that solved all the reproductive problems of our ancestral past, or whether we have a psychology of human mating that is diverse and contingent on different developmental experiences (Belsky et al. 1991; Chisholm 1996, 1999; Surbey 1990) and social contexts (Gangestad and Simpson 1990, 2000; Simpson 1999; Simpson et al. 1999). We agree that humans possess an evolved long-term mating psychology similar to the one posited by AFT. However, given the voluminous literature on sex differences in short-term

mating, the detailed rationale provided by evolutionary psychology, and the specific studies reviewed in this article, it is likely that humans have an evolved short-term mating psychology as well. In men, this short-term psychology is guided by at least three specialized adaptations that lead to a greater desire for short-term sexual relationships, to a preference for large numbers of sexual partners, and to needing relatively little time before consenting to sex.

## Conclusion

Most psychological theories of human sexuality expect men to be more oriented toward short-term mating than women. According to SST, men possess three psychological adaptations that make them appear more oriented toward short-term mating than women. Men possess *greater desire* for short-term mating relationships than women. Men prefer *larger numbers* of sexual partners over time than women. Men require *less time* before consenting to sex than women. We reviewed a considerable body of evidence corroborating the presence of these adaptations in men's evolved mating psychology. This evidence was consistent with many feminist accounts of the evolution of human sexuality. Although some evolutionary theorists continue to assert that men and women are naturally long-term maters, we reviewed evidence that directly falsifies these alternate explanations. By all accounts, SST remains the more viable evolutionary theory of human mating.

## Authors' note

David P. Schmitt, Department of Psychology, Bradley University; Todd K. Shackelford, Division of Science – Psychology, Florida Atlantic University; David M. Buss, Department of Psychology, University of Texas at Austin.

Correspondence should be sent to David P. Schmitt, Department of Psychology, Bradley University, Peoria, IL 61625, USA. Electronic mail may be sent via the Internet to: [dps@bradley.edu](mailto:dps@bradley.edu)

## References

- Abbey, A. (1982) 'Sex differences in attributions for friendly behavior: do males misperceive females' friendliness?', *Journal of Personality and Social Psychology* 32: 830–8.
- Alcock, J. (1993) *Animal Behavior*, 5th edn, Sunderland, MA: Sinauer Associates, Inc.
- Alexander, R.D. and Noonan, K.M. (1979) 'Concealment of ovulation, parental care, and human social evolution', in N.A. Chagnon and W.W. Irons (eds),

- Evolutionary Biology and Human Social Behavior*, North Scituate, MA: Duxbury, pp. 436–53.
- Bailey, J.M., Gaulin, S., Agyei, Y., and Gladue, B.A. (1994) 'Effects of gender and sexual orientation on evolutionary relevant aspects of human mating psychology', *Journal of Personality and Social Psychology* 66: 1081–93.
- Bailey, J.M., Kirk, K.M., Zhu, G., Dunne, M.P., and Martin, N.G. (2000) 'Do individual differences in sociosexuality represent genetic or environmentally contingent strategies? Evidence from the Australian twin registry', *Journal of Personality and Social Psychology* 78: 537–45.
- Baker, R.R. and Bellis, M.A. (1995) *Human Sperm Competition*, London: Chapman & Hall.
- Bandura, A. (1977) *Social Learning Theory*, Englewood Cliffs, NJ: Prentice Hall.
- Barash, D.P. and Lipton, J.E. (2001) *The Myth of Monogamy*, New York: W.H. Freeman.
- Barclay, A.M. (1973) 'Sexual fantasies in men and women', *Medical Aspects of Human Sexuality* 7: 209–12.
- Bartholomew, K. and Horowitz, L.M. (1991) 'Attachment styles in young adults: a test of a four-category model', *Journal of Personality and Social Psychology* 61: 226–44.
- Bell, A.P. and Weinberg, M.S. (1978) *Homosexualities*, New York: Simon & Schuster.
- Belsky, J. (1997) 'Attachment, mating, and parenting: an evolutionary interpretation', *Human Nature* 8: 361–81.
- Belsky, J. (1999) 'Modern evolutionary theory and patterns of attachment', in J. Cassidy and P.R. Shaver (eds), *Handbook of Attachment*, New York: Guilford, pp. 141–61.
- Belsky, J., Steinberg, L., and Draper, P. (1991) 'Childhood experience, interpersonal development, and reproductive strategy: an evolutionary theory of socialization', *Child Development* 62: 647–70.
- Bess, B.E. and Janus, S.S. (1976) 'Prostitution', in B.J. Sadock et al. (eds), *The Sexual Experience*, Baltimore: Williams & Wilkins.
- Betzig, L. (1986) *Despotism and Differential Reproduction: A Darwinian View of History*, Hawthorne, NY: Aldine de Gruyter.
- Betzig, L. (1989) 'Causes of conjugal dissolution: a cross-cultural study', *Current Anthropology* 30(5): 654–76.
- Bjorklund, D.F. and Shackelford, T.K. (1999) 'Differences in parental investment contribute to important individual differences between men and women', *Current Directions in Psychological Science* 8: 86–9.
- Blumstein, P. and Schwartz, P. (1983) *American Couples*, New York: William Morrow.
- Bock, G.R. and Cardew, G. (eds). (1997) *Characterizing Human Psychological Adaptations*, Chichester, UK: John Wiley.
- Bowlby, J. (1969) *Attachment and Loss. Vol. 1: Attachment*, New York: Basic Books.
- Botwin, M.D., Buss, D.M., and Shackelford, T.K. (1997) 'Personality and mate

- preferences: five factors in mate selection and marital satisfaction', *Journal of Personality* 65: 107–36.
- Brownmiller, S. (1975) *Against Our Will: Men, Women, and Rape*, New York: Bantam.
- Burley, N., and Symanski, R. (1981) 'Women without: an evolutionary and cross-cultural perspective on prostitution', in R. Symanski (ed.), *The Immoral Landscape: Female Prostitution in Western Societies*, Toronto: Butterworth, pp. 239–74.
- Buss, D.M. (1989) 'Sex differences in human mate preferences: evolutionary hypotheses tested in 37 cultures', *Behavioral and Brain Sciences* 12: 1–49.
- Buss, D.M. (1994) *Evolution of Desire*, New York: Basic Books.
- Buss, D.M. (1995) 'Psychological sex differences: origins through sexual selection', *American Psychologist* 50: 164–8.
- Buss, D.M. (1996) 'Sexual conflict: evolutionary insights into feminism and the "battle of the sexes"', in D.M. Buss and N.M. Malamuth (eds), *Sex, Power, and Conflict: Evolutionary and Feminist Perspectives*, New York: Oxford University Press, pp. 296–318.
- Buss, D.M. (1997) 'Sexual strategies theory: historical origins and current status', *Journal of Sex Research* 34: 19–31.
- Buss, D.M. (1999) *Evolutionary Psychology*, Needham Heights, MA: Allyn & Bacon.
- Buss, D.M. (2001) *The dangerous passion*. New York: The Free Press.
- Buss, D.M. and Schmitt, D.P. (1993) 'Sexual Strategies Theory: an evolutionary perspective on human mating', *Psychological Review* 100: 204–32.
- Buss, D.M., Larsen, R.J., Westen, D., and Semmelroth, J. (1992) 'Sex differences in jealousy: evolution, physiology, and psychology', *Psychological Science*, 3: 251–5.
- Carroll, J.L., Volk, K.D., and Hyde, J.S. (1985) 'Differences between males and females in motives for engaging in sexual intercourse', *Archives of Sexual Behavior* 14: 131–9.
- Chisholm, J.S. (1996) 'The evolutionary ecology of attachment organization', *Human Nature* 7: 1–38.
- Chisholm, J.S. (1999) 'Attachment and time preference: relations between early stress and sexual behavior in a sample of American university women', *Human Nature* 10: 51–83.
- Clark, R.D. (1990) 'The impact of AIDS on gender differences in willingness to engage in casual sex', *Journal of Applied Social Psychology* 20: 771–82.
- Clark, R.D. and Hatfield, E. (1989) 'Gender differences in receptivity to sexual offers', *Journal of Psychology and Human Sexuality* 2: 39–55.
- Clark, C.L., Shaver, P.R., and Abrahams, M.F. (1999) 'Strategic behaviors in romantic relationship initiation', *Personality and Social Psychology Bulletin* 25: 707–20.
- Daly, M., Wilson, M., and Weghorst, S.J. (1982) 'Male sexual jealousy', *Ethology and Sociobiology* 3(1): 11–27.
- Draper, P. and Harpending, H. (1982) 'Father absence and reproductive strategy: an evolutionary perspective', *Journal of Anthropological Research* 38: 255–73.

- Draper, P. and Harpending, H. (1988) 'A sociobiological perspective on the development of human reproductive strategies', in K. MacDonald (ed.), *Sociobiological Perspectives on Human Development*, New York: Springer-Verlag, pp. 340–72.
- Ellis, B.J. (1992) 'The evolution of sexual attraction: evaluative mechanisms in women', in J.H. Barkow, L. Cosmides, and J. Tooby (eds), *The Adapted Mind*, New York: Oxford University Press, pp. 267–88.
- Ellis, B.J. and Symons, D. (1990) 'Sex differences in sexual fantasy: an evolutionary psychological approach', *Journal of Sex Research* 27: 527–56.
- Eysenck, H.J. (1971) 'Personality and attitudes to sex: a factorial study', *Personality* 1: 355–76.
- Eysenck, H.J. (1976) *Sex and Personality*, London: Open Books.
- Fisher, H. (1992) *The Anatomy of Love*, New York: Norton.
- Fisher, W.A., Byrne, D., White, L.A., and Kelley, K. (1988) 'Erotophobia–erotophilia as a dimension of personality', *Journal of Sex Research* 25: 123–51.
- Gagnon, J.H. and Simon, W. (1973) *Sexual Conduct*, Chicago: Aldine.
- Gangestad, S.W. and Simpson, J.A. (1990) 'Toward an evolutionary history of female sociosexual variation. Special issue: Biological foundations of personality: evolution, behavioral genetics, and psychophysiology', *Journal of Personality* 58: 69–96.
- Gangestad, S.W. and Simpson, J.A. (2000) 'The evolution of human mating: trade-offs and strategic pluralism', *Behavioral and Brain Sciences* 23: 573–87.
- Gangestad, S.W. and Thornhill, R. (1997) 'Human sexual selection and developmental stability', in J.A. Simpson and D.T. Kenrick (eds), *Evolutionary Social Psychology*, Mahwah, NJ: Erlbaum, pp. 169–95.
- Gavey, N. (1992) 'Technologies and effects of heterosexual coercion', *Feminism and Psychology* 2: 325–51.
- Geary, D.C. (1998) *Male, Female: The Evolution of Human Sex Differences*, Washington, DC: American Psychological Association.
- Gil, V.E. (1990) 'Sexual fantasy experiences and guilt among conservative Christians: an exploratory study', *Journal of Sex Research* 27: 629–30.
- Gladue, B.A. and Delaney, J.J. (1990) 'Gender differences in perception of attractiveness of men and women in bars', *Personality and Social Psychological Bulletin* 16: 378–91.
- Gold, S.R. and Gold, R.G. (1991) 'Gender differences in first sexual fantasies', *Journal of Sex Education and Therapy* 17: 207–16.
- Greenberg, D.F. (1995) 'The pleasures of homosexuality', in P.R. Abramson and S.D. Pinkerton (eds), *Sexual Nature/Sexual Nurture*, Chicago: University of Chicago Press, pp. 223–56.
- Greiling, H. and Buss, D.M. (2000) 'Women's sexual strategies: the hidden dimension of short-term mating', *Personality and Individual Differences* 28: 929–63.
- Hardin, K. and Gold, S. (1988) 'Relationship of sex, sex guilt, and experience to written sexual fantasies', *Imagination, Cognition, and Personality* 8: 155–63.
- Hassebrauck, M. (1998) 'The visual process method: a new method to study physical attractiveness', *Evolution and Human Behavior* 19: 111–23.

- Hazan, C., and Shaver, P.R. (1994) 'Attachment as an organizational framework for research on close relationships', *Psychological Inquiry* 5: 1–22.
- Hazan, C. and Zeifman, D. (1999) 'Pair bonds as attachments: evaluating the evidence', in J. Cassidy and P.R. Shaver (eds), *Handbook of Attachment*, New York: Guilford, pp. 336–54.
- Hendrick, S., Hendrick, C., Slapion-Foote, M.J., and Foote, F.H. (1985) 'Gender differences in sexual attitudes', *Journal of Personality and Social Psychology* 48: 1630–42.
- Hinde, R.A. (1984) 'Why do the sexes behave differently in close relationships?', *Journal of Social and Personal Relationships* 1: 471–501.
- Hrdy, S.B. (1981) *The Woman That Never Evolved*, Cambridge, MA: Harvard University Press.
- Hunt, M. (1974) *Sexual Behavior in the 1970's*, Chicago: Playboy Press.
- Hyde, J.S. (1996) 'Where are the gender differences? Where are the gender similarities?', in D.M. Buss and N.M. Malamuth (eds), *Sex, Power, and Conflict: Evolutionary and Feminist Perspectives*, New York: Oxford University Press, pp. 107–18.
- Johnson, A.M., Wadsworth, J., Wellings, K., Bradshaw, S., and Field, J. (1992) 'Sexual lifestyles and HIV risk', *Nature* 360: 410–412.
- Kenrick, D.T., Sadalla, E.K., Groth, G., and Trost, M.R. (1990) 'Evolution, traits, and the stages of human courtship: qualifying the parental investment model. Special issue: Biological foundations of personality: evolution, behavioral genetics, and psychophysiology', *Journal of Personality* 58: 97–116.
- Kinsey, A., Pomeroy, W., and Martin, C. (1948) *Sexual Behavior in the Human Male*, Philadelphia: W.B. Saunders.
- Kinsey, A., Pomeroy, W., Martin, C., and Gebhard, P. (1953) *Sexual Behavior in the Human Female*, Philadelphia: W.B. Saunders.
- Kirkpatrick, L.A. (1998) 'Evolution, pair-bonding, and reproductive strategies: a reconceptualization of adult attachment', in J.A. Simpson and W.S. Rholes (eds), *Attachment Theory and Close Relationships*, New York: Guilford, pp. 353–93.
- Kirkpatrick, L.A. (1999) 'Individual differences in attachment and reproductive strategies: commentary on Buss & Greiling', *Journal of Personality* 67: 245–58.
- Knodel, J., Low, B., Saengtienchai, C., and Lucas, R. (1997) 'An evolutionary perspective on Thai sexual attitudes and behavior', *Journal of Sex Research* 34: 292–303.
- Lancaster, J.B. (1989) 'Evolutionary and cross-cultural perspectives on single-parenthood', in R.W. Bell and N.J. Bell (eds), *Interfaces in Psychology*, Lubbock: Texas Tech University Press, pp. 63–72.
- Landolt, M.A., Lalumiere, M.L., and Quinsey, V.L. (1995) 'Sex differences in intra-sex variations in human mating tactics: an evolutionary approach', *Ethology and Sociobiology* 16: 3–23.
- Laumann, E.O., Gagnon, J.H., Michael, R.T., and Michaels, S. (1994) *The Social Organization of Sexuality*, Chicago: University of Chicago Press.
- Leitenberg, H. and Henning, K. (1995) 'Sexual fantasy', *Psychological Bulletin* 117: 469–96.

- Lovejoy, O. (1981) 'The origin of Man', *Science* 211: 341–50.
- Low, B.S. (1989) 'Cross-cultural patterns in training of children: an evolutionary perspective', *Journal of Comparative Psychology* 103: 313–19.
- MacKinnon, C.A. (1979) *Sexual Harassment of Working Women*, New Haven, CT: Yale University Press.
- Malamuth, N.M. (1996) 'Sexually explicit media, gender differences, and evolutionary theory', *Journal of Communication* 46: 8–31.
- Mealey, L. (2000) *Sex Differences: Developmental and Evolutionary Strategies*, San Diego, CA: Academic Press.
- Mikach, S.M. and Bailey, J.M. (1999) 'What distinguished women with unusually high numbers of sex partners?', *Evolution and Human Behavior* 20: 141–50.
- Miller, L.C. and Fishkin, S.A. (1997) 'On the dynamics of human bonding and reproductive success: seeking windows on the adapted-for human–environment interface', in J.A. Simpson and D.T. Kenrick (eds), *Evolutionary Social Psychology*, Mahwah, NJ: Erlbaum, pp. 197–235.
- Mischel, W. (1966) 'A social-learning view of sex differences in behavior', in E.E. Maccoby (ed.), *The Development of Sex Differences*, Stanford, CA: Stanford University Press, pp. 56–81.
- Mosher, D.L. and Tomkins, S.S. (1988) 'Scripting the macho man: hyper-masculine socialization and enculturation', *Journal of Sex Research* 25: 60–84.
- Nevid, J.S. (1984) 'Sex differences in factors of romantic attraction', *Sex Roles* 11: 401–11.
- Oliver, M.B. and Hyde, J.S. (1993) 'Gender differences in sexuality: a meta-analysis', *Psychological Bulletin* 114: 29–51.
- Oliver, M.B. and Sedikides, C. (1992) 'Effects of sexual permissiveness on desirability of partner as a function of low and high commitment to relationship', *Social Psychology Quarterly* 55: 321–33.
- Pinker, S. (1997) *How the Mind Works*, New York: Norton.
- Pratto, F. (1996) 'Sexual politics: the gender gap in the bedroom, the cupboard, and the cabinet', in D.M. Buss and N.M. Malamuth (eds), *Sex, Power, and Conflict: Evolutionary and Feminist Perspectives*, New York: Oxford University Press, pp. 179–230.
- Pratto, F. and Hegarty, P. (2000) 'The political psychology of reproductive strategies', *Psychological Science* 11: 57–62.
- Regan, P.C. (1998) 'Minimum mate selection standards as a function of perceived mate value, relationship context, and gender', *Journal of Psychology and Human Sexuality* 10: 53–73.
- Rubin, Z., Peplau, L.A., and Hill, C.T. (1981) 'Loving and leaving: sex differences in romantic attachments', *Sex Roles* 1: 821–36.
- Ruse, M. (1988) *Homosexuality*, Oxford: Basil Blackwell.
- Salmon, C. and Symons, D. (2001) *Warrior Lovers: Erotic Fiction, Evolution, and Female Sexuality*, London: Weidenfeld & Nicolson.
- Scheib, J.E. (1997) 'Context-specific mate choice criteria: women's trade-offs in the contexts of long-term and extra-pair mateships', paper presented to the

- Annual Meeting of the Human Behavior and Evolution Society, June, University of Arizona, Tucson, AZ.
- Schmitt, D.P. (2001) 'Short-term mating and psychopathology: a test of competing evolutionary theories', manuscript submitted for publication.
- Schmitt, D.P. and Buss, D.M. (1996) 'Strategic self-promotion and competitor derogation: sex and context effects on the perceived effectiveness of mate attraction tactics', *Journal of Personality and Social Psychology* 70: 1185–204.
- Schmitt, D.P. and Buss, D.M. (2000) 'Sexual dimensions of person description: beyond or subsumed by the Big Five?', *Journal of Research in Personality* 34: 141–77.
- Schmitt, D.P. and Buss, D.M. (2001) 'Human mate poaching: tactics and temptations for infiltrating existing mateships', *Journal of Personality and Social Psychology* 80: 894–917.
- Schmitt, D.P., Alcalay, L., Allik, J., Auster, I., Bennett, K., Bianchi, G., and 94 additional co-authors (2001) 'The desire for sexual variety across 54 cultures: do sex and individual differences reveal basic human mating strategies?', manuscript in preparation.
- Schmitt, D.P., Couden, A., and Baker, M. (2001) 'The effects of sex and temporal context on feelings of romantic desire: an experimental evaluation of Sexual Strategies Theory', *Personality and Social Psychology Bulletin* 27: 833–47.
- Schmitt, D.P., Shackelford, T.K., Duntley, J., Tooke, W., and Buss, D.M. (in press) 'The desire for sexual variety as a key to understanding basic human mating strategies', *Personal Relationships*.
- Shackelford, T.K. (2000) 'Reproductive age women are over-represented among perpetrators of husband-killing', *Aggressive Behavior* 26: 309–17.
- Shackelford, T.K. and Buss, D.M. (1997) 'Marital satisfaction in evolutionary psychology perspective', in R.J. Sternberg, M. Hojjat et al. (eds) *Satisfaction in Close Relationships*, New York: Guilford, pp. 7–25.
- Silverstein, L.B. (1996) 'Evolutionary psychology and the search for sex differences', *American Psychologist* 51: 160–1.
- Simpson, J.A. (1999) 'Attachment theory in modern evolutionary perspective', in J. Cassidy and P.R. Shaver (eds), *Handbook of Attachment*, New York: Guilford, pp. 115–40.
- Simpson, J.A. and Gangestad, S.W. (1991) 'Individual differences in socio-sexuality: evidence for convergent and discriminant validity', *Journal of Personality and Social Psychology* 60: 870–83.
- Simpson, J.A., Gangestad, S.W., Christensen, P.N., and Leck, K. (1999) 'Fluctuating asymmetry, sociosexuality, and intrasexual competitive tactics', *Journal of Personality and Social Psychology* 76: 159–72.
- Smuts, B. (1992) 'Male aggression against women: an evolutionary perspective', *Human Nature* 3: 1–44.
- Speed, A. and Gangestad, S.W. (1997) 'Romantic popularity and mate preferences: a peer-nomination study', *Personality and Social Psychology Bulletin* 23: 928–35.

- Sprecher, S., McKinney, K., and Orbuch, T.L. (1987) 'Has the double standard disappeared? An experimental test', *Social Psychology Quarterly* 50: 24–31.
- Sprecher, S., Sullivan, Q., and Hatfield, E. (1994) 'Mate selection preferences: gender differences examined in a national sample', *Journal of Personality and Social Psychology* 66: 1074–80.
- Surbey, M.K. (1990) 'Family composition, stress, and the timing of human menarche', in T.E. Zeigler and F.B. Bercovitch (eds), *Socioendocrinology of Primate Reproduction*, New York: John Wiley, pp. 11–32.
- Symons, D. (1979) *The Evolution of Human Sexuality*, New York: Oxford University Press.
- Tavris, C. (1992) *The Mismeasure of Women*, New York: Simon & Schuster.
- Tooby, J. and Cosmides, L. (1992) 'The psychological foundations of culture', in J. Barkow, L. Cosmides, and J. Tooby (eds), *The Adapted Mind*, New York: Oxford University Press, pp. 19–136.
- Tooke, W. and Camire, L. (1991) 'Patterns of deception in intersexual and intrasexual mating strategies', *Ethology and Sociobiology* 12: 345–64.
- Townsend, J.M. and Levy, G.D. (1990) 'Effects of potential partners' physical attractiveness and socioeconomic status on sexuality and partner selection', *Archives of Sexual Behavior* 19: 149–64.
- Trivers, R. (1972) 'Parental investment and sexual selection', in B. Campbell (ed.), *Sexual Selection and the Descent of Man, 1871–1971*, Chicago: Aldine, pp. 136–79.
- Trivers, R.L. (1985) *Social Evolution*, Menlo Park, CA: Benjamin/Cummings.
- Walter, A. (1997) 'The evolutionary psychology of mate selection in Morocco: a multivariate analysis', *Human Nature* 8: 113–37.
- Weiderman, M.W. (1997) 'Extramarital sex: prevalence and correlates in a national survey', *Journal of Sex Research* 34: 167–74.
- Weiderman, M.W. and Dubois, S.L. (1998) 'Evolution and sex differences in preferences for short-term mates: results from a policy capturing study', *Evolution and Human Behavior* 19: 153–70.
- Weinrich, J.D. (1987) *Sexual Landscapes*, New York: Charles Scribner's Sons.
- Wilson, G.D. (1987) 'Male–female differences in sexual activity, enjoyment, and fantasies', *Personality and Individual Differences* 8: 125–7.
- Wright, T.M. and Reise, S.P. (1997) 'Personality and unrestricted sexual behavior: correlations of sociosexuality in Caucasian and Asian college students', *Journal of Research in Personality* 31: 166–92.
- Zeifman, D. and Hazan, C. (1997) 'Attachment: the bond in pair-bonds', in J. Simpson and D.T. Kenrick (eds), *Evolutionary Social Psychology*, Hillsdale, NJ: Erlbaum, pp. 237–63.