PART I

Precopulatory Adaptations

1 Men's Sexual Preferences

Daniel J. Miller and Ryan C. Anderson

As originally articulated by Darwin (1871), *sexual* selection, as distinct from natural selection, refers to the evolution of characteristics that provide a *reproductive* advantage to an organism over a rival. The survival of an organism is important insofar as longevity affords opportunities for reproduction (Buss & Schmitt, 1993), hence any characteristic that positively affects the survival of an organism is indirectly enhancing its reproductive ability. Darwin (1871) applied sexual selection to instances in which organisms evolved characteristics whose functions were deleterious to the survival of the organism but improved its mating success relative to rivals (such as the oft-cited example of the peacock's cumbersome tail).

Nearly all individuals exhibit sexual preferences and individuals of the opposite sex are typically motivated to behave in ways that embody such preferences. Indeed, indiscriminate mating is not a documented feature of any human society (Buss & Schmitt, 1993). One can consider sexual preferences to be the product of psychological mechanisms that offer appropriate solutions to recurring evolutionary problems associated with reproduction (Buss & Schmitt, 1993).

These preferences are seldom consciously articulated in humans, but more often expressed as a series of emotions that impel or repel an individual toward or away from another without their conscious awareness (Buss & Schmitt, 1993). The relevant questions then become "What problems do mating or sexual preferences solve?" and "How do they solve these problems?" However, theories of human mating often assume a single process determining who will mate with whom and sometimes consider that male and female mating is identically motivated, precluding the formulation of sex-differentiated predictions (Buss & Schmitt, 1993).

There is considerable overlap in the recurring adaptive problems in the domains of mating faced by men and women, and thus we might expect men and women to display similar preferences in many respects (DeKay & Buss, 1992). However, there are some aspects of mating in which men and women differ and for that reason we expect to see some differences in men's and women's mating strategies and sexual preferences. For example, there is a sexual asymmetry in the minimum parental investment required to produce a child (Trivers, 1972). Women bear the tasks of gestation and lactation, both of

which are physically demanding and effectively preclude one from having other offspring at the same time. Conversely, men's *minimum* parental investment is the act of intercourse and the cost of a single ejaculate. The asymmetry is present even before conception. Female sex cells are larger and more biologically/metabolically valuable than male sex cells, which are relatively small, abundant, and less costly to produce (Bateman & Bennett, 2006). One implication of this asymmetry is that men should show a relative preference for engaging in short-term mating opportunities with a variety of partners and display greater vigor in pursuing such opportunities. This is not to say that women are not interested, or do not engage, in short-term mating, nor that men do not also engage in long-term mating (for a discussion of the adaptive functions of women's short-term mating and men's long-term mating, see Buss & Schmitt, 2019). In fact, humans stand out in the degree to which they engage in long-term pair-bonding and biparenting (Buss & Schmitt, 2016). Instead, the claim is that men will show greater preference for casual sex and partner variety *relative* to women (e.g., Buss & Schmitt, 1993, 2019).

Pursuing a short-term mating strategy results in a number of problems that need to be overcome. As set out by Buss and Schmitt (1993), for men, these include (a) the problem of partner number, (b) the problem of identifying which women are sexually accessible, (c) the problem of identifying which women are fertile, and (d) the problem of minimizing investment in short-term partners. In response to these problems, men evolved specific sexual preferences. For example, men report a preference for markers of sexual accessibility (such as sexual experience) in short-term mates more so than in long-term mates (Buss & Schmitt, 1993), which addresses the problem of partner accessibility.

Another important way in which men and women differ is around parental confidence. A mother can be more confident of her maternity than a father can be of his paternity. Unwitting investment in genetically unrelated offspring following a partner's infidelity carries substantial costs (in terms of time, energy, resources, and alternative mating opportunities; Kaighobadi, Shackelford, & Goetz, 2009). Given these significant costs, we should expect men to have evolved specific preferences to avoid partner infidelity – for example, valuing fidelity and sexual inexperience in long-term partners (however, if a man is also pursuing short-term mating, the problem of identifying sexually accessible women may outweigh these concerns; Buss & Schmitt, 2019). Indeed, a number of behavioral and psychological adaptations to mitigate sperm competition (attributable to female partner infidelity) have been observed (see Pham & Shackelford, 2014). For example, time spent apart since last copulation is positively associated with men's perceptions of their partner's attractiveness and a desire to copulate (which would have the effect of placing one's sperm in competition with that of a potential rival; Shackelford et al., 2002) and men at greater risk of sperm competition are more likely to engage in sexual behaviors that displace rival semen that may

be present in a long-term partner's reproductive tract (e.g., frequent thrusting during intercourse; Goetz et al., 2005).

In the remainder of this chapter, we review evidence for men's sexual preferences (e.g., self-reports of attitudes toward casual sex, the contents of sexual fantasies, the results of field studies). Where appropriate, we remark on whether these findings support predictions derived from evolutionary theories.

1.1 Physical Attributes Men Find Attractive

A considerable literature has described the importance of physical attractiveness for female mate value (Buss, 1989; Eastwick & Finkel, 2008; Singh, 1993). For women, physical attractiveness has been described as a "single ornament of mate value" (Fink & Penton-Voak, 2002, p. 158) and is thought to be a reliable and honest indicator of genetic quality (indicating the likely robustness of any offspring produced; Thornhill & Grammer, 1999). But which physical attributes do men find attractive? This section reviews some of these findings. Most men are attracted to women, with those reporting predominately same-sex attraction comprising fewer than 5 percent of respondents in most surveys (Bailey et al., 2016). Accordingly, this discussion focuses on the physical attributes men find attractive in women.

Fertility refers to a woman's *present* ability to reproduce (Buss & Schmitt, 1993). Compared to men, women's fertility is more sharply age-graded (Buss & Schmitt, 2016), peaking around the early to mid-twenties before declining thereafter until menopause (O'Connor, Holman, & Wood, 1998). Accordingly, men can go some way to solving the problem of determining female fertility by expressing a mating preference for women who are young and healthy (evidence suggests that men do show a preference for younger partners; see Buss & Schmitt, 2019). Some physical indicators of youth and health include a small nose, small feet, hairless skin (Barber, 1995), full lips, lustrous hair, and good muscle tone. Behavioral manifestations such as physical enthusiasm, high activity level, and a spritely gait also reliably correlate with youth and health (Buss & Barnes, 1986).

A woman's body fat distribution is a reliable correlate of her youthfulness and likely long-term health (Singh, 1993). Of special importance appears to be waist-to-hip ratio (WHR). Pubertal development triggers the expansion of the pelvic bone and distribution of fat to the gluteofemoral region (thighs and buttocks), resulting in a decreased WHR. Conversely, following menopause more adipose tissue is distributed in the abdomen, resulting in an increased WHR (Björkelund, Lissner, Andersson, Lapidus, & Bengtsson, 1996). Accordingly, a lower WHR signals the period during which a woman is typically fertile. Additionally, a lower WHR appears to be linked to higher levels of estrogen and progesterone, which are both associated with fecundity (Jasieńska, Ziomkiewicz, Ellison, Lipson, & Thune, 2004).

A number of studies have reported a male preference for a WHR of around 0.70 (Braun & Bryan, 2006; Henss, 2000; Singh, 1994; Singh & Young, 1995), although the universality of this finding has been challenged. For example, Marlowe and Wetsman (2001) found that men in a foraging society preferred a higher WHR. The authors explain this preference by suggesting that it has arisen in a society where there is essentially no risk of obesity. While body mass index (BMI) and WHR are positively associated, work by Singh, Dixson, Jessop, Morgan, and Dixson (2010) suggests that the preference for a low WHR ratio does not simply reflect a preference for a lower BMI. They tested this by showing participants before and after images of women who had undergone a cosmetic surgical procedure in which fat was removed from the abdomen and placed in the buttocks (thereby lowering the WHR without impacting BMI). The cross-cultural sample rated the postoperative pictures as more attractive.

Breasts also factor into men's perception of female attractiveness. For example, one eye-tracking study found that men were more likely to fixate on the breast and waist areas than on the face or legs when looking at digitally manipulated photographs of a forward-facing nude woman (Dixson, Grimshaw, Linklater, & Dixson, 2011). The study also found that participants looked at the breast area for longer and more frequently than the waist area (although WHR manipulations had a stronger influence on ratings of attractiveness than did breast size manipulation). As with the gluteofemoral region, the onset of puberty causes adipose tissue to be deposited in the breasts (Dixson, Grimshaw, et al., 2011). Much like a lower WHR, larger breasts are associated with higher estrogen and progesterone levels (Jasieńska et al., 2004).

While Western cultural stereotypes posit that men prefer large breasts, the literature on breast size preference is inconsistent. For example, some studies indicate that men prefer large breasts, while others indicate a preference for medium-sized or smaller breasts (for an overview, see Dixson, Vasey, et al., 2011). One cross-cultural study found that men in Brazil, the Czech Republic, and Namibia preferred medium-sized breasts, while men in Cameroon showed a preference for large breasts (Havlíček et al., 2017). Interestingly, all four samples showed a clear preference for firm, as compared to pendulous, breasts, which the authors argue may act as a marker of residual reproductive value (an individual's expected reproductive output into the future). Other factors such as breast symmetry (Dixson, Vasey, et al., 2011) or areolar pigmentation (Dixson, Duncan, & Dixson, 2015) may interact with size to influence men's perceptions of breast attractiveness.

While breasts are highly sexualized (at least in Western cultures), so are the buttocks. One small study of Argentinian men asked participants to indicate, along one continuous scale, the importance they place on breasts and buttocks when assessing attractiveness (with the mid-point on the scale indicating that they weighted breasts and buttocks equally when assessing attractiveness).

They found a bimodal distribution, with a slight skew toward buttocks (Dagnino, Navajas, & Sigman, 2012). Another study comparing Brazilian and Czech men found that, while all the men surveyed preferred medium to large breasts and buttocks, the Brazilian men preferred larger breasts and buttocks than the Czech men (although the groups did not differ in terms of preferred WHR; Valentova, Bártová, Štěrbová, & Varella, 2017). A woman's stance may also play a role in how the buttocks are perceived. One study presented participants with computer-generated images of female bodies in which the back curvature was altered (direction of the curvature was toward the belly button). It was found that increasing the arch of the back increased perceptions of attractiveness, with participants also looking longer and fixating more on the hip region of the female image (Pazhoohi, Doyle, Macedo, & Arantes, 2018). The authors note that this arched pose signals sexual proceptivity in other species and that it may cause the buttocks to appear fuller.

1.2 Attitudes Toward, and Desire for, Casual Sex and Sexual Variety

We now turn our attention from the physical characteristics of women that men find attractive to men's attitudes toward sex. As stated above, given the asymmetry in minimum parental investment, we would expect men to pursue short-term mating more vigorously than women. As evidence of this, we may expect men to have a more permissive attitude toward, and show a greater desire for, casual sex. In response to the problem of partner number associated with adopting a short-term mating strategy, we may expect men to desire more sexual partners.

Men do have more permissive attitudes toward casual sex. Petersen and Hyde (2010) conducted a meta-analysis of over 800 studies (published between 1993 and 2007) reporting on sexual attitudes and behaviors to investigate the "gender similarities hypothesis" (which posits that "males and females are similar on most, but not all, psychological variables," Hyde, 2005, p. 581). They also analyzed seven large nationally representative data sets. Studies were analyzed in terms of gender differences across fourteen sexual behaviors and sixteen sexual attitudes, with Cohen's *d* values computed to demonstrate the magnitude of these differences. Of the sixteen sexual behaviors that were assessed, the largest difference that was observed was for attitudes toward engaging in casual sex, with men being more permissive than women in this regard ($d = 0.45$).[1]

1 For reference, Cohen (1988) suggests that *d* values of 0.20, 0.50, and 0.80 can be considered to represent small, medium, and large differences, respectively. Cohen's *d* values are reported where possible to give the reader a sense of the magnitude of the differences being discussed.

More recently, the Third National Survey of Sexual Attitudes and Lifestyles (NATSAL-3), a large probability survey conducted in Britain (data collected from 2010 to 2012), also indicated that men have more permissive attitudes toward casual sex, with 26% of men, but only 15% of women, categorizing one-night stands as rarely wrong/not wrong at all (Clifton, Fuller, & Philo, n.d., Table 81). Interestingly, the magnitude of this difference was largest among people aged sixteen to twenty-four years (34% of men vs. 17% of women) and smallest among people aged forty-five to fifty-four years (26% of men vs. 21% of women).

Men's mating effort is more directed toward engaging in casual sex than is women's. Male Tinder users report being more motivated to use Tinder for casual sex than female Tinder users (Sevi, Aral, & Eskenazi, 2018; Sumter, Vandenbosch, & Ligtenberg, 2017). Compared to women, men more frequently report sex as a primary motivation for engaging in friends with benefits relationships (Lehmiller, VanderDrift, & Kelly, 2011; Stein, Mongeau, Posteher, & Veluscek, 2019) and men perceive sexual activity as a goal of first dates to a greater extent (Mongeau, Serewicz, & Therrien, 2004).

In terms of desire for sexual variety, Schmitt (2003) investigated this topic among samples drawn from fifty-two nations across ten world regions (North America, South America, Western Europe, Eastern Europe, Southern Europe, the Middle East, Africa, Oceania, South/Southeast Asia, and East Asia). Participants were asked how many different sex partners they would like to have over different time intervals (e.g., in the next month, next thirty years). Across all time intervals, men desired more sexual partners than women (d = 0.40–0.49). Additionally, compared to women, men in all world regions desired more sexual partners within the next month (d = 0.37–0.53).[2] These differences held across all levels of relationship status and sexual orientation. Across all world regions, men were more likely to consent to sex after knowing someone for only a month (d = 0.48–1.20) and men were more likely to be actively seeking short-term mates (d = 0.31–0.67).

Hughes, Aung, Harrison, LaFayette, and Gallup (2021) employed an experimental methodology to investigate sex differences in desire for sexual variety. Participants were presented with a mating opportunity task in which they were shown ten facial photographs of opposite-sex individuals and given ten hypothetical copulation opportunities to distribute as they saw fit (e.g., they could have sex with the same person ten times, have sex with ten different people, have sex with two people five times, etc.). Different conditions were

2 It has been observed that sampling distributions in number of desired sex partners tend to be highly skewed and that this may affect comparisons of mean level differences (as these types of comparisons tend to be influenced by outlying values; Pedersen, Miller, Putcha-Bhagavatula, & Yang, 2002). For this reason, Schmitt (2003) also carried out nonparametric tests of median level differences, with a similar pattern of findings observed.

created with different photograph compositions (e.g., in one condition all ten photographs were of younger attractive individuals; in another there was a mix of attractive, average, and unattractive individuals). Across all conditions, men distributed their mating opportunities more widely than women did (d = 0.38–0.98). In a second experiment, participants were presented with pairs of faces and asked which individual they would prefer to have sex with. The images presented were manipulated such that some faces were presented multiple times, while others were novel. Compared to women, men selected a higher proportion of novel faces (d = 0.65). Finally, participants were asked their opinion on romantic partners changing their physical appearance (e.g., dyeing hair). Men found romantic partners frequently altering their appearance to be more appealing (d = 0.37).

1.3 Number of Sexual Partners Reported

While men have a more positive attitude toward engaging in casual sex, does this manifest in behavior? As Buss and Schmitt (2019) point out, a behavioral preference is unlikely to evolve if it does not sometimes result in the related behavior occurring. Multiple large nationally representative surveys have found evidence that men have (or at least report having) more sexual partners than women across their lifetimes. For example, the Second Australian Study of Health and Relationships (ASHR-2; data collected from 2012 to 2013) reports the median number of opposite-sex sexual partners over the lifetime to be seven for men and four for women (Rissel et al., 2014). Additionally, a higher percentage of male than female participants reported having ten or more opposite-sex partners (37% vs. 20.1%). Similar sex differences were observed on the NATSAL-3, where the median number of opposite-sex sexual partners over the lifetime was six for men and four for women, with 33.9% of men reporting ten or more lifetime opposite-sex partners compared to 19.9% of women (Mercer et al., 2013). The 2006–2008 National Survey of Family Growth (NSFG; data collected in the United States) reports a median 5.1 lifetime opposite-sex partners for men and 3.2 for women, with 39.5% of men reporting seven or more lifetime partners compared to 24.3% of women (Chandra, Mosher, Copen, & Sionean, 2011). Petersen and Hyde's (2010) aforementioned meta-analysis also indicates that men have more sex partners than women (smaller studies: d = 0.36; large data sets: d = 0.15), a greater incidence/frequency of casual sex (smaller studies: d = 0.38; large data sets: d = 0.18), and a greater incidence/frequency of extramarital sex (smaller studies: d = 0.33; large data sets: d = 0.12).

In a way, these results are perplexing. In a closed heterosexual system (putting aside, for now, instances of homosexuality), each new sex partner for a man should be a new sex partner for a woman (see Wiederman, 1997). There have been a number of hypotheses advanced to account for this logical

inconsistency. For example, it has been suggested that men systemically exaggerate their reports upward, while women under-report, possibly as a response to cultural double standards around engaging in casual sex (Hyde, 2014). It has also been suggested that men and women engage in different accounting strategies when responding to questions of this nature (e.g., men are more likely to estimate while women are more likely to precisely count) and that men are more likely to report extreme values than women (Mitchell et al., 2019). Rissel et al. (2014) note that men may be more inclined to access the services of female sex workers (an assumption which seems to be borne out by research; see Section 1.4), who, in turn, are less likely to be sampled on surveys. They also posit that men may be more likely than women to engage in casual sex while abroad (and given that these are national surveys, sex partners from abroad would not be sampled).

Mitchell et al. (2019) used NATSAL-3 data to investigate some of these proposed explanations. They found that capping responses at the ninety-ninth percentile (to exclude the most extreme scores) and statistically adjusting for accounting strategy (counting vs. estimating) and attitudes toward casual sex accounted for some, but not all, of the gender difference in reported number of lifetime partners. Specifically, these adjustments took the mean difference between men's and women's reported lifetime opposite-sex partners from 7.02 to 2.63 (a two-thirds reduction).

Of course, if men show a greater preference for casual sex than women do, we may expect gay men to, on average, have more sexual partners than their heterosexual counterparts, given that gay men would not be constrained by female partners' relative disinterest in casual sex. An advantage of comparing number of sexual partners reported by gay and heterosexual men is that it eliminates possible gender differences in responding to these types of questions.[3] The NATSAL-3 revealed that men who have sex exclusively with women reported a median of six lifetime partners (with 37% of these participants reporting ten or more partners), compared to a median of seventeen lifetime partners among men who have sex with men (with 68% of these participants reporting ten or more partners; Mercer et al., 2013). Self-identified gay men interviewed as part of the ASHR-2 had a median of twenty-two lifetime same-sex partners, with 69.5% of these participants reporting ten or more same-sex partners (Grulich et al., 2014). This is compared to a median of eight lifetime opposite-sex partners among self-identified heterosexual men, with 44.7% of these participants reporting more than ten lifetime opposite-sex partners (Rissel et al., 2014).

3 Prah et al. (2016) note that the use of convenience samples of gay men (e.g., approaching participants in gay venues) tends to overrepresent men who engage in risky sexual behaviors, so we have therefore limited this discussion to nationally representative surveys.