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Sociobiological approaches have made great inroads into psychological science over the last few decades. This has not come without a fight. One of the main fronts on which the battle has been fought is the origins of human sex differences. Evolutionary psychologists have made a strong case that many basic sex differences in our species have an evolutionary origin; the case is now so strong, in fact, that it seems unreasonable to deny a significant evolutionary contribution. A question mark remains, however, over the relative magnitude of the evolved differences. Are we highly dimorphic, polygynous animals like peacocks? Or are we relatively monomorphic, pair-bonding animals like robins? In this chapter, I argue that we are closer to the latter than the former – a fact that makes us somewhat anomalous among the animals. In many species, the males alone compete for mates and the females alone choose from among the males on offer. In our species, in contrast, both sexes compete for mates and both are choosy about their mates. Certainly, males compete more fervently and females are choosier, at least in early courtship and for low-commitment relationships. But the most conspicuous feature of the human mating system is mutual mate choice, coupled with relatively modest levels of overall dimorphism.

At first glance, this might seem to clash with predictions from evolutionary psychology. On closer inspection, though, the pattern makes good Darwinian sense. One of the main driving forces behind the evolution of sex differences is parental investment. Across species, larger sex differences in parental investment are associated with greater levels of dimorphism. In most species, the females invest a great deal, the males little or nothing, and thus sex differences are substantial. But in our species, males often invest in offspring as well (albeit less reliably and to a lesser extent than females). As a result, most sex differences in *Homo sapiens* are comparatively muted.

Contrary to popular opinion, the evolutionary psychological literature strongly supports this assertion. To illustrate, this chapter surveys three main lines of research conducted by evolutionary psychologists, namely sex differences in the desire for casual sex, sex differences in the

strength of certain mate preferences, and sex differences in proneness to sexual vs. emotional jealousy. In each case, I argue that although the differences are real, and although they have an evolutionary origin, they turn out to be relatively modest compared to the differences found in most other species. There is little doubt at this point that humans exhibit meaningful dimorphism in a range of psychological attributes. It is easy, however, to overstate the level of dimorphism, and thus easy to blur the emerging picture of our evolved nature.

28.1 THE EVOLUTION OF SEX DIFFERENCES

Even a cursory glance at the animal kingdom reveals a widespread trend: males and females in most species differ from one another in characteristic ways. Biologists refer to this as *sexual dimorphism*: *di* means two; *morph* means form; thus, dimorphism means “two forms.” (The antonym is *sexual monomorphism*.) Among the most common sex differences are the following. First, males in many species have a stronger, less discriminating sex drive than females and a greater appetite for multiple mates. Second, among the “higher” vertebrates, and particularly the mammals, males are often larger than females. Third, males are typically more physically aggressive than females and possess a range of built-in weapons, including antlers, tusks, and oversized canines. Fourth, males are commonly more ornamented than females: in some species, they’re more colorful, for instance; in others, they have ornamental tail feathers or head crests. Fifth, females are generally choosier than males about their sexual partners. Sixth, females usually contribute more than males to the rearing of offspring. And seventh, females tend to live longer than males.

Where do these differences come from? This is a question that biologists have wrestled with since Darwin’s 1871 book, *The Descent of Man and Selection in Relation to Sex*. The biggest single step toward an answer came in 1972, when Robert Trivers unveiled his *parental investment theory*. According to Trivers, most sex differences trace back to a single “master” difference – namely

that, in most species, one sex invests more into offspring than the other. Wherever this is the case, the maximum number of offspring that the higher-investing sex can produce is curtailed relative to the lower-investing sex (Clutton-Brock & Vincent, 1991). This simple fact has important and far-reaching consequences (Stewart-Williams, 2018).

To see how, imagine a species in which the sex difference in parental investment is especially large: one sex invests a great deal in offspring, the other very little. The first thing to notice is that members of the low-investing sex can potentially have a very high number of offspring, and any trait that increases their chances of doing so stands a good chance of being selected. This includes, most obviously, a strong and indiscriminating sex drive and a desire for multiple, novel sexual partners. It also includes larger body size, greater strength and aggressiveness, and more fearsome weaponry, all of which help their owners to vanquish same-sex rivals and acquire larger numbers of mates.

Meanwhile, members of the high-investing sex typically evolve to be choosy about their sexual partners, preferentially mating with individuals exhibiting signs of good health or good genes. This is because the high investors can have relatively few offspring in their lifetimes, and thus any suboptimal partner choice can potentially deal a much greater blow to their lifetime fitness. Once in place, the mate-choice criteria of the high-investing sex operate as a new selection pressure on the low-investing sex, often resulting in the evolution of sexual ornamentation. To take a hypothetical example, if the high investors prefer to mate with low investors with large noses, then over the generations, the low investors' noses will grow larger and larger: a multigenerational Pinocchio effect. Finally, the high-investing sex typically evolves to live longer. This is partly because members of this sex spend less time engaged in risky competition with same-sex rivals, and partly because – as the sex that looks after the young – their fitness is dependent not simply on siring offspring, but on staying alive to care for them as well (Campbell, 2002).

In most species, the females invest considerably more than the males in offspring. As such, sexual selection often produces what Andrew Thomas and I (2013b) dubbed “MCFC species”: species in which *males compete* for mates and/or *females choose* from among the males on offer.

The MCFC schema applies well to many species, but does it apply to humans? Initially, it certainly seems to. Like other mammals, the obligatory biological expenditure required to produce a single viable offspring is notably higher for women than for men. Most obviously, women bear the biological burden of pregnancy, parturition, and lactation. On top of that, in every culture on record, women provide more hands-on care of offspring than men (Wood & Eagly, 2002). As an alien scientist would predict for a species with such a profile, men are larger, more aggressive, and more inclined to pursue

multiple mates than women. Women, in contrast, are smaller, choosier about their sexual partners, and live longer. In other words, for the most part, humans fit the pattern that describes most sexually dimorphic species. This constitutes a strong argument that the sex differences in our species have an evolutionary origin, rather than being wholly a product of learning or culture (Stewart-Williams, 2018; Stewart-Williams & Thomas, 2013a, 2013b).

At first glance, then, the MCFC model seems to fit well. On closer inspection, however, the fit starts to seem less comfortable. The differences found in our species are not nearly as large or as strongly polarized as those found in most other mammals. Rather than females exercising mate choice and males competing for females, both sexes have species-typical mate preferences (Buss, 1989) and both compete for desirable members of the other sex (Buss, 1988; Campbell, 2002). Rather than males being ornamented and females drab, both sexes have prominent secondary sexual characteristics, including men's beards and V-shaped torsos and women's breasts and “hourglass” figures (Barber, 1995). These are not trivial qualifications; they make human beings a striking exception to the MCFC rule, and extremely unusual within the wider animal kingdom.

The human pattern might initially appear to clash with parental investment theory. For many, Trivers' theory is identified with the claim that, when one sex invests more in offspring than the other, the higher-investing sex evolves to be choosy about its mates, whereas the lower-investing sex evolves to compete for access to the choosier sex. As such, parental investment theory is widely viewed as a theory of sex differences. It is, however, equally a theory of sex similarities, for a natural implication of Trivers' (1972) theory – one which Trivers himself spelled out in some detail – is that when both sexes make comparable investments in offspring, sexual dimorphism is reduced. (More precisely, this happens when the sex difference in maximum reproductive rate is reduced for any of a number of reasons.) This is the case in a wide range of species, including around 90 percent of birds (Griffith, Owens, & Thuman, 2002). Could it be the case for human beings?

If we focus on the minimum biological investment required from each sex to produce a single offspring, it might seem not. But although the *minimum* investment is much lower for men than women, the *typical* investment is not. Human males generally provide at least some post-coital parental input (Gray & Anderson, 2010; Marlowe, 2003), often in the context of relatively durable pair-bonds (Marlowe, 2004). As such, the sex difference in parental investment is diminished, and we should expect a corresponding diminution in the level of sexual dimorphism in reproductively relevant aspects of human psychology.

Most mammals have not taken this path, so why would we? One possibility is as follows. As brain size increased in

the hominin lineage, our young became increasingly costly to rear. They were born in a relatively underdeveloped and helpless state (Martin, 1990) and had an extended childhood (Kaplan, 1994). Consequently, human young required additional care from individuals other than the mother. Often, this came from grandparents (especially maternal grandmothers), siblings (especially older sisters), aunts and grandaunts, and unrelated friends (Hawkes, O'Connell, & Blurton Jones, 1989; Hrdy, 2009; Sear & Mace, 2008). However, it also often came from the father (Marlowe, 2000). As a result of the high cost of rearing young, pair-bonding and biparental care became important elements in humans' reproductive repertoire. Pair-bonds rarely last for life, and there are individual and cross-cultural differences in the extent to which fathers invest in offspring (Hrdy, 2009). Nonetheless, there is good evidence that men everywhere have the capacity to fall in love and form pair-bonds (Jankowiak & Fisher, 1992), and to bond with their offspring (Gettler et al., 2011). Because ancestral men and women both invested heavily in offspring, both evolved to be choosy about their long-term mates, and both evolved to compete for the most desirable mates available. In short, the evolution of large, clever brains turned us into a relatively monomorphic animal. (See Stewart-Williams & Thomas, 2013b, for a more detailed discussion.)

If this is correct, then the lesson of parental investment theory for our species is not that women invest a lot in offspring and men very little, and thus that there must be large sex differences. The lesson is roughly the opposite: that both sexes invest a great deal, and thus that we would expect to find somewhat modest sex differences.

Certainly, in most societies, men have somewhat higher reproductive variability than women – that is, they exhibit greater variability in the number of offspring they sire and thus have a higher maximum reproductive rate (Brown, Laland, & Borgerhoff Mulder, 2009). As a result, men are presumably more sexually selected. Nonetheless, human sex differences are nowhere near as large as those found in classic exemplars of sexual selection, such as peacocks and elephant seals, and the most striking thing about our species is not the differences, but the fact that *both* sexes are quite strongly sexually selected.

This is not the impression one often gets from popular media depictions of evolutionary psychology, however, or even sometimes from the evolutionary psychological literature itself. In the following sections, I'll examine the relative magnitude of human sex differences in each of three important domains and consider whether they're as large as people sometimes claim. I'll begin with sex differences in the desire for casual sex.

28.2 KEEPING IT CASUAL

One of the central topics in evolutionary psychology is male–female differences in sexual strategies – that is, the extent to which individuals pursue long-term versus short-

term relationships. To many laypeople, and many psychologists in other areas, evolutionary psychology's position on this issue is fully encapsulated in William James's nitrous oxide-fueled rhyme:

Higgamous Hoggamous,
Woman's monogamous.
Hoggamous Higgamous,
Man is polygamous!

Evolutionary psychology is often chided for this (supposed) claim. Furze et al. (2011), for instance, ask: "Is it true that men are promiscuous and women are not? The data tell a different story" (p. 55). The data do indeed tell a different story – but so do evolutionary psychologists. According to prominent theories in the field, such as Sexual Strategies Theory (Buss & Schmitt, 1993) and Strategic Pluralism Theory (Gangestad & Simpson, 2000), men as well as women often pursue long-term relationships, and women as well as men sometimes pursue short-term relationships. The sex difference is one of degree rather than kind, and applies largely to short-term mating. This is a point evolutionary psychologists have made repeatedly over the course of several decades. In fact, as David Buss (2003) notes, "Given our explicitness on this issue, when a critic describes the theory as proposing that 'men are promiscuous, women are monogamous,' one can only wonder about the person's scholarship, training, or eyesight" (p. 225). Nonetheless, the case can be made that evolutionary psychologists have sometimes inadvertently given the impression that the differences in mating strategies are much larger than their own data indicate. In this section, I'll discuss some examples and consider how large the difference really is.

28.2.1 Reproductive Variability

Let's start with the sex difference in reproductive variability. This difference is, as mentioned, closely linked to the level of sexual dimorphism in a species: the bigger the sex difference in reproductive variability, the more dimorphic the species. How large is this difference in *Homo sapiens*?

The impression one often gets is that the difference is extremely large. It is common to hear, for instance, that for men the maximum number of offspring is virtually unlimited or runs into the thousands, whereas for women it is unlikely to stretch much above a dozen (e.g., Dawkins, 1989, p. 142; Miller, 2000, p. 86). The natural inference is that sex differences in human sexuality must be correspondingly large. This inference is reinforced by one of the most famous statistics in evolutionary psychology: the official world record for the number of offspring sired by any one man. The record holder is Ismail the Bloodthirsty, the Sharifian emperor of Morocco from 1672 to 1727, who had hundreds of wives and concubines and reputedly sired 888 children (Gould, 2000). In contrast, the official world record for a woman is 69, which, although perhaps more surprising than the male record, illustrates the fact that

the reproductive ceiling for women is considerably lower than that for men.

All of this fosters the impression that men have vastly greater reproductive variability than women, and thus that men must have evolved a vastly greater desire for multiple sexual partners. This would be a shaky conclusion, however. Although it is true that men can, in principle, sire hundreds or even thousands of offspring, in practice this is vanishingly rare. Ismail and his ilk are outliers among outliers; that's why their stories are so attention-grabbing. Furthermore, the extreme form of harem polygyny practiced by these despotic leaders was only possible in early large-scale civilizations, which allowed small numbers of individuals to monopolize extreme levels of power. For most of our evolutionary history, we lived in small-scale forager societies. Consequently, more representative levels of reproductive variability can be found in the ethnographies of these groups. A comprehensive survey by Brown and colleagues (2009) revealed that, among foragers, there is often relatively little difference in men and women's reproductive variability. Averaging across groups, men did have somewhat greater reproductive variability than women, as we would expect. But the size of the sex difference was often small, and sometimes there was no difference at all. Indeed, in a handful of groups, there was slightly more female than male variability. Thus, in the type of environment in which we spent most of our evolution, the sex difference in reproductive variability was nowhere near the magnitude suggested by Ismail the Bloodthirsty and his ilk (see also Betzig, 2012; Labuda et al., 2010). Because the difference in reproductive variability was relatively small, we might predict that sex differences in sexual psychology would be relatively small as well.

28.2.2 Opportunistic Males

This seems like a reasonable expectation; there is, however, at least one reason to question it. In his important 1979 book *The Evolution of Human Sexuality*, Donald Symons argued that, even if opportunities for low-investment couplings or harem polygyny were rare throughout most of human evolution, the inclusive fitness benefits of these activities would have been so great for males that males may have evolved to take advantage of any such opportunities, just in case they ever arose. As a result, men may have a much stronger desire than women for short-term sex and multiple partners, even though most men have few opportunities to satisfy such desires, and some men have none.

What should we make of Symons' conjecture? To begin with, it is worth noting that the basic argument would not just apply to humans. In most species, the obligatory physiological investment in offspring is much smaller for males than females; as such, males in most species could, in principle, increase their reproductive success through opportunistic mating. It is not the case, though, that males

in every species are equally opportunistic. This is because there are costs and benefits to any strategy, and the balance of costs and benefits for an opportunistic strategy differs from species to species. For male chimpanzees and bonobos, there is little to gain from paternal care because of high levels of promiscuous mating and low paternity certainty. For male owl monkeys, on the other hand, investing in offspring has clearly paid reproductive dividends, as this is their obligate strategy (Huck et al., 2014).

How does the Darwinian cost-benefit analysis come out for humans? It is easy to see the advantage of short-term mating for men (i.e., increasing offspring number at little biological cost), and this is often emphasized in discussions of the topic. But it is also important to factor in the selection pressures running in the opposite direction. In many forager societies, infants and young children are much less likely to survive without two investing parents (Dwyer & Minnegal, 1993; Hill & Hurtado, 1996). Assuming – as seems reasonable – that this was the case throughout our evolutionary history, it would have made it less profitable for most of our male ancestors to spend all their time pursuing new sexual conquests. To the extent that male parental care was necessary to bring a child to nutritional independence, this would have weakened the selection pressure for a polygynous male psychology. Clearly, it did not eliminate it altogether. It seems probable, however, that the average level of polygynous desire found in men is lower than we would expect if we focused only on the benefits of polygynous mating and overlooked the costs.

28.2.3 Sizing Up the Effect Size

The above argument is a theoretical one. The final court of appeal, though, is the evidence. What does the evidence tell us? First, a number of studies have found that, on average, men and women are similarly interested in forming long-term relationships and have comparably high standards for their long-term mates (Buss & Schmitt, 1993; Kenrick et al., 1994; Stewart-Williams, Butler, & Thomas, 2017). We are therefore notably monomorphic in a long-term mating context. In a short-term context, in contrast, we exhibit a higher level of dimorphism. Various lines of evidence point to this conclusion. In one large cross-cultural survey, David Schmitt (2005) looked at sex differences in *sociosexual orientation* (SO): people's willingness to engage in sex outside the confines of a committed relationship. In every one of more than 50 nations examined, the mean SO score was higher for men than for women. In the same survey, Schmitt and colleagues (2003) found that, in all the major world regions, the average number of sexual partners desired across the lifespan was higher for men than for women (although note that the averages for both sexes varied a lot across regions, and that the average for women in some regions was higher than the average for men in others). As well as self-

report data, the sex difference in short-term interest has been documented in studies looking at people's responses to apparently real sexual solicitations (Clark & Hatfield, 1989) and in observations of real-world consumer behavior (e.g., the consumption of pornography vs. romance novels; Symons, 1979).

These data are the tip of a large iceberg, in light of which it is no longer reasonable to deny that the sexes differ in this domain. It is still reasonable to worry, though, that the magnitude of the difference is sometimes overstated. First, it is important to emphasize that the data do not support some of the more extravagant claims made by evolutionary psychologists. This includes Symons' (1979) claim that, "With respect to human sexuality, there is a female human nature and a male human nature and these natures are extraordinarily different" (p. 11). Claims like this gloss over the fact that the distributions for men and women on virtually every trait strongly overlap (Hyde, 2005). To suggest that men and women have distinct and discrete sexual psychologies, based on average differences in overlapping distributions, is to misdescribe the data.¹

But even some less extreme claims may require reining in. Evolutionary psychologists often point out that the sex difference in the willingness to engage in casual sex is one of the largest sex differences known to psychological science. This is true. It is possible, though, that even our largest differences are relatively modest when human beings are considered shoulder to shoulder with other animals. One of the largest cross-cultural studies of sex differences in sexuality supports this suggestion. In an online survey of 53 nations, Lippa (2009) reported an average d value of 0.74 for the sex difference in SO, which is close to the customary cutoff point for a large effect size: 0.8. As a point of comparison, however, consider a morphological sex difference: the sex difference in height. This is a difference we all have an intuitive grasp of; we know that it's there, but we also know that there is a great deal of overlap between the sexes, and that the difference is nothing like that found in highly dimorphic animals such as gorillas or elephant seals. Importantly, the sex difference in height in Lippa's study ($d = 1.63$) was *more than twice the magnitude* of the SO difference in the same sample. Furthermore, the human SO difference is comparable to that of the size difference in gibbons (0.8; calculated from data in Schultz, 1941, reported by Geissmann, 1993). This means that, if humans are highly dimorphic for SO, gibbons must be highly dimorphic for size. Gibbons, however, are the archetypal example of

a sexually monomorphic primate. Certainly, the SO difference is large *for a human sex difference*. But this is not because it's a large difference in any absolute sense; it's because this relatively small difference is being compared with differences that are even smaller still.

In sum, sex differences in human mating strategies are real but relatively modest. This is exactly what we would expect on the assumption that, although ancestral humans engaged in some polygynous and short-term mating, our primary reproductive pattern was pair-bonding and biparental care.

28.3 MATE PREFERENCES

Another arena in which evolutionary psychologists have explored – and sometimes overstated – sex differences is mate preferences. The most famous findings here concern differences in the importance placed on physical attractiveness in a mate (the average is higher for men) and differences in the importance placed on wealth and status (the average is higher for women). These differences are found not only in university students, but in people of varying walks of life and ages (Sprecher, Sullivan, & Hatfield, 1994), and not only in self-report studies, but in studies of real-world behavior (Feingold, 1992). Furthermore, the differences have been found in a diverse array of cultures, included modern industrialized nations (Buss, 1989; Lippa, 2007), preindustrialized nations, and small-scale bands and tribes (Gottschall et al., 2004). This cross-cultural convergence is just what we would expect if the differences had an evolutionary origin.

How large are the differences, though? People often assume that, according to evolutionary psychologists, they are extremely large: that women are only interested in a man's social standing and the size of his wallet, for instance, and that men are only interested in "physically beautiful but dumb women" (McCaughy, 2007, p. 118). The actual claims of evolutionary psychologists are much more measured and moderate. Nonetheless, even they sometimes talk as if there are discrete sex differences in mate criteria. Cartwright (2008), for instance, wrote that "Females are predicted to look for high status males who are good providers, whereas males are predicted to look for young, healthy and fertile females who are good child bearers" (p. 270). Similarly, Kanazawa (2003) observed that, "In every society, men prefer young and attractive women for mates, and women prefer wealthy and powerful men" (p. 292). Such descriptions suggest substantial, dichotomous differences. The evidence for these differences, however, invariably consists of relatively modest differences in the central tendencies of highly variable and overlapping distributions. There is thus a mismatch between the data and the verbal descriptions of the data: we are comparing apples but concluding oranges.

¹ The strongest response to this argument comes from Marco Del Giudice and colleagues (2012), who claim that, although the sex difference in any given trait may be modest, when we consider several, related traits simultaneously, the resulting multivariate differences are notably larger. For a critique of this claim, see the appendix in Stewart-Williams and Thomas (2013b, pp. 167–168), and for a response to this critique, see Del Giudice (2013). Note that, regardless of the utility of the multivariate approach, it is fair to say that humans are less dimorphic than most mammals and than most nonhuman species.

Of course, when it comes to preferences for specific physical features, the differences often are genuinely dichotomous. It is not the case, for example, that heterosexual men and women both like protruding breasts in a mate, but that men like them more; instead, men like them and women do not. However, when it comes to traits such as good looks and social standing, the differences are nowhere near as stark. Let's consider each of these cases in turn.

28.3.1 Looking Good

One of the most famous findings in evolutionary psychology concerns the importance people place on good looks in a prospective mate. As mentioned, in most samples, men rate looks as more important than do women (Buss, 1989; Feingold, 1990; Lippa, 2007). Although this is a consistent and well-replicated finding, there is still some question about how it should fit into our picture of the species. The quotations above give the impression that a mate's physical appearance is of the utmost importance to men but relatively unimportant to women. This is not what the data indicate, however.

First, although the average level of importance placed on physical attractiveness in a mate is higher for men than for women, this does not necessarily mean that attractiveness is the undisputed central concern of most men. Indeed, some of the most famous research in evolutionary psychology suggests otherwise. Buss (1990) conducted a large and extremely influential cross-national study examining what young adults want in a long-term partner. Averaging across the study's 37 samples, men ranked good looks 10th out of 18 traits, after love, dependable character, emotional stability/maturity, pleasing disposition, good health, education/intelligence, sociability, desire for home and children, and refinement/neatness. In contrast, women ranked good looks 13th. Certainly, in some studies, good looks appear higher on the agenda for men (e.g., Li, 2002; Lippa, 2007). Nonetheless, it is interesting and instructive that in Buss's research – the research that first attracted widespread attention to the idea that men evolved to put more weight than women on good looks – this trait appeared so far down the list, and yet many people concluded that good looks are men's primary concern. The findings did not support the generalization.

On the flip side of this coin, the common claim that men are interested in good looks whereas women are interested in resources and status seems to imply that a mate's looks are relatively unimportant to women. Again, however, this is not what the data tell us. Although on average good looks are *more* important to men, both sexes commonly place a fair amount of weight on good looks in a partner, and thus the sex difference is not especially large. Buss et al. (1990) had respondents rate the importance of good looks on a 0–3 scale, with the anchors *irrelevant*, *desirable*, *important*, and *indispensable*. Collapsing across the 37 samples, the average for both sexes fell between *desirable* and *important*. The male average was close to *important*

(1.91), whereas the female average was right in the middle (1.46). Notably, there was less than a half-point difference between the averages for each sex.

Looking at the literature more broadly, meta-analyses tend to yield reliable but modest effects. Feingold (1990), for instance, found an average effect size of $d = 0.54$ for the sex difference in importance placed on physical attractiveness. This is conventionally described as a medium effect. To put it into perspective, though, an effect size of this magnitude is around two-thirds that of the size difference in monomorphic gibbons, and implies around 80 percent overlap between the male and female distributions. If you were to select pairs of men and women at random, the woman would be more interested than the man in a mate's looks in around a third of pairs. This is a minority, certainly, but not a trivial one; it is, after all, closer to 50 percent than to zero (Stewart-Williams & Thomas, 2013a).

One might object that the evidence cited thus far consists solely of self-report data, and that such data cannot always be trusted. But when we look at actual mating behavior, the same pattern emerges. It is not the case that physical attractiveness has no currency for men on the mating market. Attractive men have more sexual partners than less attractive men, clearly implying that a mate's looks are important to women (Gangestad & Thornhill, 1997). Furthermore, this is not the case only for short-term sexual relationships. Men and women mate assortatively on attractiveness even in long-term pairings (Feingold, 1988). This suggests that, although there is an average sex difference in the importance placed on physical attractiveness, both sexes nonetheless base their long-term mating decisions to an important extent on this attribute.

The modest sex difference in the preference for physical attractiveness actually makes good sense when placed under a Darwinian microscope. A strong case has been made that the facial and bodily attributes that humans evolved to find attractive correlate with qualities such as youthfulness, fertility, and good health (Henderson & Anglin, 2003; Shackelford & Larsen, 1997). Good health, in turn, signals good genes and/or an absence of potentially transmissible diseases. These things are relevant to both sexes, not just to men. Recall that, across species, the more that members of a given sex invest in offspring, the choosier they tend to be about their long-term sexual partners. If we were a species in which only one sex invested heavily in offspring, the expectation would be that good looks would be a concern only to that sex (although note that this would be the females, not the males). Given, though, that both sexes commonly invest in offspring in our species, the expectation would be that *both* sexes would consider good looks important.

Indeed, given that human females have typically invested more, the puzzle is that it is *males* that put more weight on this trait. The adaptive rationale for this apparent anomaly is that women have a narrower window of fertility than men, as a result of menopause, and thus that

a partner's youthfulness is more important to men's reproductive success than it is to women's (Buss, 1989; Symons, 1979). This asymmetry would definitely lead us to expect a difference. However, it would not necessarily lead us to expect a large one. Although men do not experience the complete cessation of fertility in middle age that women do, their fertility declines more precipitously than was once believed. To begin with, men's testosterone levels tend to nosedive with age (Harman et al., 2001), which may lead to a reduction in courtship effort and intrasexual competition. In addition, the quality and quantity of men's sperm declines throughout adulthood (Kong et al., 2012). The implication is this: the sex difference in age-related fertility is smaller than previously thought, which provides a theoretical rationale for thinking that the sex difference in the importance of physical attractiveness will be smaller than previously thought. Once again, a small sex difference is not inconsistent with an evolutionary perspective. It is exactly what an evolutionary perspective predicts.

28.3.2 Wealth and Status

Next, consider the claim that women evolved to seek wealthy, high-status mates. Again, a mountain of research suggests that there is indeed a sex difference in this domain. Buss (1989), for instance, found that women placed more weight on good financial prospects in a long-term mate in 36 of his 37 cross-cultural samples; Pérusse (1993) found that high-status males in a French Canadian city had more sexual partners than their lower-status compatriots; and Betzig (1989) found that one of the most common causes of divorce across cultures was the husband's failure to provide resources. In addition, historical and anthropological data indicate that men who have more power, more status, and more wealth tend also to have younger wives, more wives, more affairs, and more offspring than men lower on the totem pole (Betzig, 1986; Hawkes, 1991). The effects of women's status and wealth on men are much less pronounced.

It is hard to deny, then, that sex differences in the preference for resources and status are real. As some of the first discoveries in the newly minted field of evolutionary psychology, they assumed a central position in our picture of women's mating predilections. But even if resources and status do tend to be more important to women than men, we need to ask again how important they actually are. Often, they are fairly *unimportant*. Starting with resources, in Buss's classic study, women ranked good financial prospects 12th out of 18 traits, after love, dependable character, emotional stability/maturity, pleasing disposition, education/intelligence, sociability, good health, desire for home and children, ambition/industriousness, refinement/neatness, and similar education. Men, in contrast, placed it just one rung lower, at number 13. Likewise, in Lippa's (2007) survey, women ranked "money" 20th out of 23 traits and "prosperity" 22nd (men ranked these traits 21st and 23rd, respectively). Importantly, this put these pecuniary

variables *below* good looks for women: good looks were in eighth place, challenging the common assumption that wealth always trumps good looks for women. Real-world studies bolster the challenge. In an analysis of Lonely Hearts Personal Ads, for instance, Pawlowski and Dunbar (2001) found that, although more women than men requested resources, fewer women requested resources than requested physical attractiveness (24 vs. 33 percent). Note that none of this would have surprised Darwin, who once wrote of a society in which "very ugly, though rich men, have been known to fail in getting wives" (1871, p. 667).

All of these arguments apply with equal force to the preference for social status in a mate. In Buss et al.'s 1990 paper, women ranked status 13th out of 18 traits. Importantly, this put status *in equal place* with good looks, again challenging the notion that a mate's looks are vastly less important to women than less tangible assets. Corroborating this conclusion, Lippa (2007) found that women ranked status 21st out of 23 traits, but good looks 8th. Of course, the fact that status is not the be-all and end-all for most women does not imply that there is no sex difference in this domain. There demonstrably is. In one meta-analysis, Feingold (1992) found an effect size of $d = 0.69$ for socioeconomic status, conventionally described as a medium to large difference. Putting this into perspective, however, it is worth noting, first, that this difference is still somewhat smaller than the size difference in monomorphic gibbons; second, that it represents around 70 percent overlap between the male and female distributions; and third, that if one were to take pairs of men and women at random, the man would be more interested than the woman in a mate's socioeconomic status in nearly one in three pairs – again, a minority, but a nontrivial one.

It seems, then, that as with wealth, the strong focus on women's preference for status in a mate is somewhat misleading. Remember: my argument for this conclusion does not involve selectively citing the work of opponents of evolutionary psychology or unrepresentative findings. It rests instead on some of the largest studies ever conducted on the subject. The Buss study in particular is a seminal work in evolutionary psychology, conducted by one of the field's main proponents. Nonetheless, the data suggest much more modest sex differences in mate preferences than are sometimes claimed.

28.4 JEALOUSY

Let's consider one final example: romantic jealousy. According to evolutionary psychologists, the emotion of jealousy was "designed" by natural selection to motivate mate guarding. The best-known idea associated with this approach focuses on sex differences in the triggers of jealousy, and stems from the notion that the primary function of mate guarding differs by sex. For men, the primary function is avoiding being cuckolded; for women, the primary function is avoiding the loss of an investing mate to

another woman (Buss et al., 1992; Daly, Wilson, & Weghorst, 1982; Symons, 1979). This leads to the prediction that concerns about *sexual* infidelity will loom larger for men, whereas for women concerns about *emotional* infidelity will loom larger. The sexually differentiated jealousy hypothesis is usually contrasted with non-evolutionary explanations, according to which jealousy is an immature emotion, a sign of insecurity, or an arbitrary invention of specific cultures (summarized in Buss, 2000).

Let me say first that I think it is much more plausible that jealousy is a product of natural selection than an invention of culture, that it is part of the basic design of human nature, and that its evolutionary function is to motivate mate guarding (Stewart-Williams, 2018). Aside from anything else, other socially monogamous animals, including gibbons and many pair-bonding birds, attempt to prevent their partners from fraternizing with other-sex individuals, just as jealous humans do (Reichard, 2003). This suggests that ensuring partner fidelity is an important selection pressure in pair-bonding species, and one that can and does lead to the evolution of psychological adaptations designed to counter the threat. There also appear to be genuine sex differences in this realm, as we will see in the following sections. Nonetheless, the magnitude of these differences, as with those we have already considered, is easily and often overstated.

28.4.1 Sophie's Choice

The most common method of testing the sexually differentiated jealousy hypothesis is to ask participants to imagine that their long-term partner is involved with someone else, and then to ask which would upset them more: their partner having sex with the other person or their partner developing a deep emotional attachment to the other person. This is sometimes known as the *Sophie's choice dilemma*. Buss and colleagues' (1992) first foray into this area yielded fairly typical results: 60 percent of young men nominated sexual infidelity as the more upsetting option as opposed to only 17 percent of young women. This basic pattern has been found in a range of countries in the West, in Asia, and in South America (Bendixen, Kennair, & Buss, 2015; Buss, Shackelford, & Kirkpatrick, 1999; Buunk et al., 1996; de Souza et al., 2006; Geary et al., 1995) and in real-world responses to revelations of infidelity (Kuhle, 2011). It has also been found in at least one small-scale, natural fertility society (Scelza, 2014). A recent meta-analysis concluded that the sex difference is real and robust (Sagarin et al., 2012).

How, though, should we characterize this difference? One way would be to say that heterosexual men generally worry more about their partner having sex with another man than forming a close bond with him, whereas heterosexual women worry more about their partner forming a close bond with another woman than having sex with her. Buunk et al. (1996), for instance, noted that men "exhibit greater psychological and physiological distress

to sexual than to emotional infidelity of their partner, and women . . . exhibit more distress to emotional than to sexual infidelity (p. 139). To many, this might appear to be a direct description of the data.

But it's not. This is most obvious when we focus on men. In the initial Buss et al. (1992) study, 60 percent of men nominated sexual infidelity as the more upsetting option. We cannot conclude that men in general are more concerned about sexual than emotional infidelity when only a little more than half of men fit this description. Granted, we would be on safer ground saying that women exhibited a clear preference: 83 percent chose emotional infidelity as the most upsetting option. However, given that the proportion of men choosing sexual infidelity was closer to 50 percent than to 100 percent, it is closer to the truth to say that men were evenly split than to say that they were more worried about sexual infidelity.

Given these results, to claim that men are more worried about sexual than emotional infidelity is to commit what I call the *majority rules fallacy*. This is the fallacy of treating the majority tendency as if it characterizes the group as a whole. It is, in effect, a misplaced democratic process: a majority of men – a small majority – "votes" for sexual infidelity as the more upsetting option, and thus that tendency is "elected" to the position of human nature: men in general are more upset by sexual infidelity. This is not accurate, however; some men are, but many are not.

We can push the point further. Several studies explicitly *contradict* the claim that most men are more upset by sexual infidelity. In one study, a majority of German men (around 75 percent) reported that they would be more upset by *emotional* infidelity (Buunk et al., 1996). Similar results have been found in China (Geary et al., 1995) and Japan (Buss et al., 1999). It was still the case, in all of these studies, that *more men than women* chose sexual infidelity as the most upsetting option. However, *most* men did not. One cannot legitimately conclude that men in general are more concerned about sexual infidelity when, in some samples, a greater number of men report that they would be more concerned about *emotional* infidelity.

Again, this is not to deny that there is a sex difference or to deny that this difference has an evolutionary origin. The point is simply that the difference is not accurately described by statements such as "men find sexual infidelity more upsetting, women emotional infidelity." A more accurate description would be that "a *larger proportion* of men than women find sexual infidelity more upsetting, whereas a larger proportion of women are more upset by emotional infidelity." If these statements look like two different ways of saying the same thing, we need to look more closely. The first formulation exaggerates the sex difference by ignoring the variation within each sex. Furthermore, even if we treat it as a statement about the majority preference, it is false for some samples (e.g., Buunk et al.'s German sample). The second formulation, in contrast, is a weaker but more accurate claim, which

acknowledges the distribution of preferences within groups of individuals, rather than projecting a singular preference onto most individuals within each of those groups.

28.4.2 Stacking the Deck

One might respond that, even if we characterize the difference in terms of the relative proportions of men versus women who are more upset by each option, there is still a rather sizeable sex difference. The problem, though, is that using a forced-choice methodology, although it does not create a sex difference out of thin air, is likely to inflate whatever difference there is. As Buss (2000) himself noted, the original reason for adopting the Sophie's choice paradigm was that, if participants are asked to rate how upset they would be about sexual versus emotional infidelity using continuous, free-response measures, there is often a ceiling effect; virtually everyone reports being extremely upset by both, and thus it is difficult to detect any sex differences. However, this in itself is surely an important fact about human nature: *most* men and women are upset by *both* aspects of infidelity. Consistent with this interpretation, Lishner and colleagues (2008) reran the basic Buss et al. forced-choice dilemma, but added a third option: "Both of the above options would upset me equally." A majority of men *and* women chose this option.

To be clear, sex differences in jealousy *can* often be detected using continuous measures (Bendixen et al., 2015; Pietrzak et al., 2002; Sagarin et al., 2012). Importantly, though, these differences are usually much more modest than the Sophie's choice differences. In a meta-analysis of 45 studies using continuous self-report measures, Sagarin et al. (2012) found an average sex difference of $g^* = 0.258$. (g^* is an effect size measure comparable to Cohen's d .) Similarly, in studies looking at people's physiological reactions to thoughts of a partner's sexual versus emotional infidelity, including changes in heart rate, blood pressure, and corrugator brow contraction, the sex differences tend to be much more modest than those derived from the standard forced-choice items (e.g., Baschnagel & Edlund, 2016; Buss et al., 1992).

A reasonable conclusion, then, is that although jealousy was very probably favored by natural selection for somewhat different reasons in each sex (i.e., avoiding being cuckolded vs. avoiding being left holding the baby), at a proximate and phenomenological level, it is overwhelmingly similar in both sexes (Harris, 2013; Stewart-Williams, 2018). There *are* average differences, but these are swamped by the cross-sex commonality – namely that sexual infidelity and emotional infidelity are both highly upsetting to most members of both sexes.

28.5 SUMMING UP

It is widely assumed that, because the obligatory biological investment of human females is so much greater than that

of males, parental investment theory implies that there will be large sex differences in our species. If parental investment theory really *did* predict that men and women will be radically different, then the data gathered by evolutionary psychologists would falsify this prediction and falsify the theory, because the data show that there are generally *not* large sex differences. The data do not falsify the theory, however, because parental investment theory does not predict large sex differences for our species. Although the obligatory male investment in offspring is low, the typical investment is much higher. As such, we should generally expect modest sex differences in sexuality in our species. Certainly such differences do exist, and certainly these differences suggest a long history of mild effective polygyny (i.e., greater male than female reproductive variability). However, the best data and theory in evolutionary psychology suggest that these differences are relatively minor, as a result of the fact that our species is relatively biparental.

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