

# An Evolutionary Account of Women's Workplace Status

Kingsley R. Browne\*

*Wayne State University, Detroit, MI, USA*

**Although many believe that women's low representation among top executives and lower average income is primarily a result of socialization and discrimination, findings of psychology, biology, and anthropology suggest that evolutionarily derived temperamental sex differences exist that may explain much of these disparities. Stereotypes of men as more competitive and more inclined to take risks than women, and stereotypes of women as more attached to their children and more risk averse than men are true as generalizations. Traits for which average sex differences exist, such as aggressiveness, desire for status, and risk preference, are highly correlated with workplace outcomes. © 1998 John Wiley & Sons, Ltd.**

## INTRODUCTION

The status of women in the workplace, like virtually all other social phenomena today, is typically analyzed under the assumptions of what has been called the 'Standard Social Sciences Model' (SSSM) (Tooby and Cosmides, 1989). According to this model, humans have no essential nature (Hubbard, 1990), and the only 'real' difference between men and women is in reproductive function and, perhaps (Fausto-Sterling, 1992), in physical strength. This model views human behavior as purely a product of social conditioning, and it considers observed temperamental and behavioral sex differences to be products of differential conditioning. Thus, the tendency of men to achieve more high-status positions and to earn more money cannot, under the SSSM, be attributed to inherent differences between men and women, but rather must be ascribed to external forces, such as conditioning by society and discrimination by employers.

The SSSM exalts humans to a unique position in the animal kingdom. Dogs, cats, chimpanzees,

geese, and even earthworms, all have an inherent nature. If a dog is raised in a group of chimpanzees, the dog will never attempt to swing from the trees, and no one expects it to. Human behavior, on the other hand, is viewed not as a product of human nature but of societal conditioning. In other words, man is the maker of man. More precisely, humans are the makers of males and females, for just as there is no essential human nature, there is, under this view, even more emphatically no 'male nature' and 'female nature'.

The extreme behaviorism of John Watson—whose famous assertion 'that there is no such thing as inheritance of capacity, talent, temperament, mental constitution and characteristics' but rather that these traits 'depend on training that goes on mainly in the cradle' (Watson, 1925)—has been largely abandoned by modern psychology. However, its legacy persists in the other social sciences. As a result, suggestions that individual or group differences have a biological origin tend to be met with extreme skepticism, and many would apparently still concur with anthropologist George Murdock's statement that the science of culture is 'independent of the laws of biology and psychology' (Murdock, 1932), a position that Murdock himself subsequently repudiated (Murdock, 1972).

\* Correspondence to: Wayne State University, 468 W. Ferry Mall, Detroit, MI 48202, USA. Tel.: +1 313 577 0476; fax: +1 313 577 2620; e-mail: kbrowne@novell.law.wayne.edu

The findings of evolutionary biology and psychology render the assumptions of the SSSM wildly implausible. Given the conflicting interests of different members of society, a behavioral propensity simply to act as those around one (that is, 'society') are telling one to act is extremely unlikely to have evolved (Tooby and Cosmides, 1989). Moreover, the centrality of mating and reproduction to evolutionary success, coupled with the differential investment of mammalian males and females in offspring, makes behavioral identity of the sexes improbable. The aggressive, competitive, risk-taking behavior of human males is not simply a product of a society that conditions males to be aggressive, competitive risk-takers; it is a general tendency in mammalian species. These sex differences in temperament have substantial implications for the workplace.

An accurate understanding of human psychology is of major importance to those who study and manage organizations (Browne, 1995; Nicholson, 1997). Management of organizations entails shaping, predicting, and responding to human behavior. Anthropologist Lionel Tiger (personal communication) has pointed out that just as one appreciates that an effective zookeeper understands the nature of the zoo's inhabitants, one who wishes to shape human behavior would benefit from an understanding of the nature of that beast.

A few caveats are in order. The sex differences described are average differences between groups and do not characterize all individuals. Some women are more aggressive and competitive than some men; indeed, some women are more aggressive and competitive than *most* men. However, sex differences in workplace outcomes are also group-based phenomena; not all men hold higher positions than all women, and many women achieve positions that are higher than most men. Finally, the argument is not made here that there is no discrimination against women in the workplace. The point is a more modest one: even if there were no sex discrimination, in a free economy substantial sex differences in wages and occupational status would nonetheless persist.

#### NATURAL SELECTION AND THE ORIGIN OF TEMPERAMENTAL DIFFERENCES

The process of evolution through natural selection, although often characterized as the 'survival of the

fittest', is critically concerned not with survival but with reproduction (Daly and Wilson, 1983). The evolutionarily successful animal is one that has many offspring that themselves go on to reproduce rather than one that lives a long time. There are two requirements for natural selection to operate; there must be *heritable variation* and *differential reproductive success* (Trivers, 1985). The genes of those organisms that are more reproductively successful will become increasingly common in the population. Because both male and female animals face a number of similar problems, such as the need for food, water, and protection from predators, many of the adaptations displayed by a species will be common to both sexes. Both male and female cheetahs are fast; both male and female elephants have trunks.

'Sexual selection' is a special case of natural selection. Sexual selection involves features that give one animal a reproductive advantage over other members of the same sex (Cronin, 1991). The two primary forms of sexual selection are male-male competition and female choice, with a classic example of the former being the elaborate antlers of the stag, and of the latter, the tail of the peacock. Whether by vanquishing rivals or by making himself more attractive to potential mates, the successful male enhances his reproductive success. As a result, the traits that contributed to that success will become more frequent in the species.

Trivers (1972) explained in a classic paper that this competition occurs primarily among males, at least in mammals, because of the differential parental investment provided by the two sexes. Trivers demonstrated that the sex that provides the greater investment in offspring will become a limiting resource for which members of the other sex will compete. Because the nature of mammalian reproduction necessarily entails an immense physiological investment by the mother, men compete for sexual access to women. One result of this asymmetry in parental investment and the resultant competition among males is that male reproductive success is much more variable than that of females (Alexander *et al.*, 1979). In all known human societies, never-married males are more numerous than never-married females (Buss, 1994). Almost all females will reproduce, and the range of offspring number will be modest. Among males, however, substantially more will never reproduce, and among those who do, the range of offspring number can be quite high, since the

marginal cost of each offspring is relatively small (Low, 1994). Men can thus increase their lifetime reproductive success by mating with numerous partners in a way that women cannot (Daly and Wilson, 1983). Because the potential reproductive reward for males is high, and the consequence of being at the bottom of the ladder in the competition for females is genetic death, evolutionary theory predicts a greater taste for risk among males (Rubin and Paul, 1979).

When the male contributes nothing but a sperm cell with its associated complement of genetic material, the female's interest in the male is primarily in the quality of genes that she will obtain through the mating (Trivers, 1972). The biggest, strongest male or the male with the most colorful plumage has the 'good genes' that the female desires. In a number of species, however, the male invests more than just genetic material, whether food, a nest, defense, or direct paternal care. As evolutionary psychologist David Buss (1994) has observed, '[t]he evolution of the female preference for males who offer resources may be the most ancient and pervasive basis for female choice in the animal kingdom'. The long period of dependency of human young, with their need for food and protection, has led to an extraordinarily high level (for mammals) of male parental investment (Kenrick *et al.*, 1990). The attributes that human females desire in mates have been likewise affected.

While male genetic quality is still important to females, the capacity and willingness of a man to provide resources and protection to the woman and her offspring become important (Wiederman and Allgeier, 1992; Buss, 1994). A man's physical strength and bravery provide some assurance of the latter, while his status, industry, wealth, and generosity are relevant to the former. And, of course, if the man is to provide a high level of investment, it is critically important to him that the offspring in which he is investing are in fact his own, making a woman's sexual fidelity of significant concern (Wilson and Daly, 1992).

The asymmetry in minimum parental investment makes it very costly for the mother to defect, binding her to the baby in a way that the father is not (Buss and Schmitt, 1993). By the time of birth, the woman has already made a massive physiological investment in the child, and if the child is to be breast-fed, it needs further investment by the mother that the father cannot

provide. During the gestation period, and largely during the period of lactation as well, the mother's inability to become pregnant means that she cannot directly enhance her reproductive success by engaging in sexual relations (Konner and Worthman, 1980). The father, on the other hand, may enhance his reproductive success by seeking other mating opportunities, whether or not he stays with the mother.

Because of the importance of male parental investment, one of the key predictors of male reproductive success in traditional societies is the man's status and control of resources (Betzig, 1993). Most societies known to anthropologists are polygynous, where some men have multiple wives while others have none, and it is typically men with high-status and substantial resources who have more than one wife (Buss and Barnes, 1986). Unlike the case with men, women do not generally enhance their reproductive success by obtaining high-status and may in fact decrease it (Low, 1992). Women are instead more likely to enhance their reproductive success by providing direct care for their children.

Numerous studies have demonstrated that the preference of women for men of high-status and wealth continues to this day (Buss, 1989, 1994; Ellis, 1992). Women also prefer men who are dominant (though not 'domineering'), which is a trait that is of use in ascending status hierarchies (Keating, 1985; Sadalla *et al.*, 1987). This female preference for dominant males is already apparent in adolescence (Weisfeld *et al.*, 1987). Although some have suggested that women prefer wealthy men only because women have been foreclosed from opportunities to obtain wealth on their own, it turns out that women who make more money tend to value monetary resources and professional status of potential mates more than women who make less money (Buss, 1994). Women also prefer men who are tall and strong, consistent with the protective role of men in our ancestral environment. Men, on the other hand, are relatively indifferent to the status of potential mates, being concerned far more with youth and physical attractiveness (Sprecher *et al.*, 1994; Jensen-Campbell *et al.*, 1995).

The reproductive advantage of high-status men who control resources has left its genetic imprint on men. The reproductive payoff that comes from achievement of status has left them more interested than women in striving for status in hier-

archies and engaging in the kind of risk-taking behavior that is often necessary to reach the top of hierarchies and acquire resources. Similarly, the close tie between female reproductive success and maternal care seems to have created stronger bonds between mother and infant than typically exist between father and infant.

It is important to emphasize here that the fact that a trait is an *adaptation* to past environments does not necessarily mean that it is currently *adaptive* (Symons, 1990). Our minds and bodies were shaped to a large extent in the environment of the Pleistocene hunter-gatherer, what some have labeled the 'Environment of Evolutionary Adaptedness' ('EEA'). The relatively few human generations since the dawn of agriculture are dwarfed by the number of generations we spent as hunter-gatherers. Thus, in examining the evolutionary origins of a particular trait, the question is not whether it currently results in enhanced reproductive success for its owner, but whether it did so in those thousands of generations in the EEA.

### SEX DIFFERENCES IN TEMPERAMENT

Empirical studies of sex differences in temperament and behavior have yielded results consistent with the predictions of evolutionary theory (Buss, 1995). Men more often than women exhibit a constellation of temperamental traits encompassing aggressiveness, dominance-assertion, competitiveness, achievement orientation, status-seeking, and risk-taking. Women tend more than men to exhibit nurturing and caring behavior for others and to show greater interest in cementing social relationships.

The sexes show substantial differences in attitudes toward competition (Ahlgren, 1983). For example, adding a competitive element to a task tends to enhance the performance of males, while it often has the opposite effect in females (Weinberg and Ragan, 1979). When given a choice of tasks, males are more likely to select the more-difficult task, while females are more likely to select the less-difficult one (Hoyenga and Hoyenga, 1993). In mixed-sex competition, females often exhibit depressed performance levels (Weisfeld *et al.*, 1983, 1986). Men report higher estimations of their own ability than women do, at least within stereotypically male domains (Bennett, 1997), a trait that could be useful in circumstances that

demand a high degree of confidence on the part of the actor (Arch, 1993).

From a young age, boys are interested in 'turf and dominance' (Maccoby, 1990). Cross-cultural studies show that boys engage in more aggression, dominance-seeking, and rough-and-tumble play (Omark and Edelman, 1975; Weisfeld, 1994). The play of boys is quite different from the play of girls, with the former being much more competitive, physical, and rule oriented and the latter tending to be more cooperative and without winners and losers (Lever, 1976, 1978). These differences in play styles make sense in evolutionary terms (Low, 1989). In our ancestral environment, women enhanced their reproductive success by cooperating with sisters and co-wives; open conflict or changes in coalitions would not enhance their success. Men, on the other hand, enhanced their reproductive success by alternately cooperating and competing with other men as the situation required. A man's assertion of dominance over other men would have a reproductive benefit that a woman's assertion of dominance over other women would not.

Males also exhibit a greater preference for risk than do females. Physically risky recreational activities, such as car racing, sky diving and hang-gliding, are disproportionately male activities (Veevers and Gee, 1986). Men exhibit a riskier style of driving, and are less likely than women to wear seatbelts (Hersch, 1996). Even among relatively young children, boys are more physically daring (Ginsburg and Miller, 1982). Warfare and big-game hunting, the riskiest activities of traditional societies, are almost everywhere all-male activities (Buss, 1994).

Males' risk-preference is not limited to physical risk. Elizabeth Arch has suggested that sex differences in achievement motivation may be attributable in part to differences in risk preference (Arch, 1993). Achievement opportunities are often associated with uncertainty and possible loss of resources or group support. A person whose aversion to failure exceeds his appetite for success will be inclined not to risk failure in achievement situations. Since in our ancestral environment there probably would have been little reproductive benefit to risk-taking in women, a preference for risk and competition would have been a net disadvantage, since it would expose the woman to loss without a concomitant potential for payoff.

In contrast to boys, girls tend from an early age to be nurturing and interested in maintaining social relationships with others (Maccoby and Jacklin, 1974; Feingold, 1994). Girls tend to be 'person-oriented', while boys tend to be 'object oriented'. Psychologists Katharine and Kermit Hoyenga have observed that '[w]omen's prosocial dominance means that their concepts of self are centered more around relationships with others, whereas men's egoistic dominance means that their self-concepts are centered more around task performances and skills' (Hoyenga and Hoyenga, 1993). In one study, 50% of women but only 15% of men agreed with the statement, 'I'm happiest when I can succeed at something that will also make other people happy' (Moir and Jessel, 1989).

Although these sex differences in behavior are widely acknowledged, adherents of the SSSM insist that they are a consequence of differential socialization of boys and girls (Fausto-Sterling, 1992). Boys are competitive risk-takers because that is what society tells them to be, and girls are cooperative and nurturing because that is what they are told to be. However, there are a number of reasons to think that something much more fundamental is responsible:

*The differences described appear to be cross-cultural universals* (Blurton Jones and Konner, 1973; Freedman and DeBoer, 1979; Williams and Best, 1990). The arbitrary differential socialization that SSSM proponents rely on would have to be uniform across cultures, which is theoretically possible but highly unlikely. Anne Fausto-Sterling argues that male dominance arose, presumably arbitrarily, in a small population that was the progenitor of all living humans and has been 'faithfully passed down from generation to generation a thousand times over' (Fausto-Sterling, 1992). Given the array of languages, religions, and kinship systems that humans have developed, one must wonder why it is that the supposedly arbitrary pattern of male dominance alone has been so faithfully transmitted.

*Many of the sex differences have origins very early in development* (Goldberg and Lewis, 1969). For example, boys are rougher and more prone to fighting at an age before they rely on same-sex role models (Maccoby and Jacklin, 1980), and they prefer same-sex playmates before they can reliably identify which children are the same sex as themselves (Maccoby, 1987). A recent study by

Anne Campbell at Durham University found that 3-month-old boys, but not girls, demonstrated a significant interest in same-sex babies (*New Scientist*, 1997). Also demonstrating that 'maleness' and 'femaleness' is more than simply conforming to societal expectations is a long-term study of an individual who had been raised as a female after his penis was accidentally destroyed at age 8 months (Diamond and Sigmundson, 1997). Despite being surgically reconstructed and raised as a girl, the child rejected girls' toys, clothes, and activities and preferred those of boys. Sometime between the ages of 9 and 11 years, he came to understand that he was not a girl. He was given hormones and constructive surgery and at age 25 married a woman.

*Studies looking for differential socialization have found less of it than many assume.* A meta-analysis of 172 studies dealing with differential socialization examined eight major variables (Lytton and Romney, 1991). While the researchers found clear sex differences in encouragement of sex-typed activities and perceptions of sex-stereotyped characteristics, they found no differences in such variables as achievement encouragement, encouragement of dependency, disciplinary strictness, or amount of parental interaction. In fact, children may be *more* sex-typed in their preferences than their parents (Kohlberg, 1966). Although it is often asserted that boys engage in dominance behavior over girls because adults reinforce those behaviors, studies find that the presence of an adult actually reduces boys' dominance behavior (Powlishta and Maccoby, 1990).

*Temperamental traits are subject to substantial genetic influence.* Behavioral-genetics studies routinely reveal substantial genetic contributions to the temperamental traits described, such as social potency, achievement, aggression, social closeness, and masculinity/femininity (Loehlin *et al.*, 1988; Tellegen *et al.*, 1988). Even vocational interests tend to show a high heritability, with one large-scale study finding that one-half to two-thirds of the variance in vocational and recreational interests was attributable to genetic variation (Lykken *et al.*, 1993; see also Grotevant *et al.*, 1977). Of course, the fact that individual differences are attributable to genetic differences does not prove that differences between groups have a genetic cause. However, it does demonstrate that the traits are potentially subject to natural selection.

*There is substantial evidence that these temperamental traits are mediated by sex hormones.* Sex hormones have been shown to have two kinds of effects. Most important is what has been called the 'organizing effect', which is the influence of hormones on the developing fetal brain. Exposure of either a male or female brain to testosterone during a critical period *in utero* results in the masculinizing of behavior (Ellis, 1986; Reinisch *et al.*, 1991). Circulating hormones also have an 'activational effect', which is a proximate influence on an individual's behavior. Levels of circulating testosterone have been found to be positively correlated with aggression (Dabbs *et al.*, 1987; Gladue, 1991), and negatively correlated with prosocial personality (Harris *et al.*, 1996). A recent study found that the extent of sex-typed behavior, temperament, and interests exhibited by normal women is correlated with the levels of testosterone they were exposed to during their second trimester *in utero* combined with levels of circulating testosterone they experience as adults (Udry *et al.*, 1995).

*Attempts to eliminate sex-typing seem to yield little in the way of behavioral change in children.* Although it is widely assumed that children can be educated out of their sex-typed behaviors, empirical studies suggest that such interventions are not very successful. One study, for example, found that teaching children that both sexes can perform particular jobs decreased the children's stereotyped views of the jobs but did not affect their own highly sex-typed preferences (Bigler and Liben, 1990). Indeed, such attempts may actually be counterproductive and lead to an increase in stereotyping (Matteson, 1991).

*The experience of the Israeli kibbutzim demonstrates the resistance of sex-typing to modification.* The Israeli kibbutz movement was founded on a radical sexual egalitarianism (Tiger and Shepher, 1975; Spiro, 1996). The founders believed that if women could be emancipated from domestic responsibilities, especially childcare, and if the sexual division of labor could be eliminated, sexual equality—in the sense of identity of outcome—would result. A system of communal rearing replaced the nuclear family, with the children living in children's houses apart from their parents. Economic and political roles of men and women were expected to be identical. As it turned out, however, the generations born in the kibbutzim reverted to more traditional sex-roles, and, largely

because of pressure from women, the children's houses have all but disappeared and children are back with their parents (Spiro, 1996).

In sum, sex differences in temperament and behavior have deep roots and are relatively intractable. The question now presented is what effects these differences have on workplace outcomes.

## WOMEN'S WORKPLACE STATUS

The division of labor by sex is a human universal (Brown, 1991). Although different cultures have different views about which tasks are 'men's work' and which are 'women's work', the division is significant to each culture (D'Andrade, 1966). Moreover, there are some consistent patterns. For example, in all or almost all cultures hunting is considered men's work, and cooking is considered women's work. While some of the patterns are no doubt due to physical capacity, this is not always true. For example, carrying water is almost always women's work, and manufacture of musical instruments is almost always men's work.

Modern western societies are currently creating what anthropologists call an 'evolutionarily novel environment'—an environment that differs substantially from that in which our hominid ancestors evolved. No longer, at least prescriptively, are most tasks performed by one or the other sex. Rather, men and women increasingly find themselves in workplace environments in which they work side-by-side and compete for status in the same hierarchies. Not surprisingly, the injection of women into previously all-male institutions sometimes results in consequences not desired by the proponents of sexual integration. One such consequence is an increase in opportunities for sexual harassment (Browne, 1997). Another, which is the primary subject of this article, is a disparity in outcomes between men and women in occupational status and compensation (Hoyenga, 1993; Browne, 1995).

The lesser likelihood of women's achieving the highest positions in the corporate world and their lesser average earnings are commonly attributed to the twin evils of discrimination by employers and a society that makes childcare and other domestic obligations the primary responsibility of women (Williams, 1991; Federal Glass Ceiling Commission, 1995). Many contemporary femi-

nists seem to share the view of the kibbutz founders that sex-blind hiring practices and emancipation of women from an unfair domestic burden are both necessary and sufficient conditions for the achievement of workplace parity (Finley, 1986; Littleton, 1987; Okin, 1989). Although it is usually only implicit, this view depends heavily on the SSSM: all human beings are interchangeable, and the extent to which men and women differ in their activities and preferences is a consequence of societal pressures acting upon a sex-neutral *tabula rasa* (see for example Marini and Fan, 1997).

If the foregoing description of temperamental sex differences is correct, however, the sex-neutral *tabula rasa* assumption is wrong. One must then consider the possibility that the traits for which inherent differences have been described—aggressiveness, competitiveness, dominance-assertion, risk-taking, and nurturance—are responsible, at least in part, for sex differences in workplace outcomes.

### Women Executives

The Glass Ceiling Commission, sponsored by the US Government, concluded largely without evidence that the dearth of women at the highest levels of corporate hierarchies was due to discrimination and 'white male attitudes' (Federal Glass Ceiling Commission, 1995). It gave no consideration at all to the possibility that temperamental sex differences might be responsible and little more to the possibility that different choices of men and women might be implicated.

The Commission would have done well to consider studies of executives to find what contributes to success. Had it done so, it would have discovered that a whole constellation of temperamental traits is involved: aggressiveness, competitiveness, ambition, drive, and the willingness to take risks (Lord *et al.*, 1986). These traits explain within-sex differences in success as well as between-sex differences (Bartlett and Miller, 1985; Morrison *et al.*, 1992). A study of career achievement in women found, for example, that the more masculine the woman (in terms of assertiveness, competitiveness, and dominance) the greater her achievement (Wong *et al.*, 1985). On the other hand, career achievement was negatively correlated with femininity (nurturance, accommodating warmth, and eagerness to soothe hurt feelings).

Studies of workplace success demonstrate that competitiveness and risk-taking are important traits of the successful executive (Grey and Gordon, 1978). As one group of researchers concluded, 'for most businesses, a person gets to the top by taking risks and having them work out for the best' (MacCrimmon and Wehrung, 1990). It may not be an accident that women tend disproportionately to occupy jobs with lower career risk—jobs in the public or non-profit sectors and, within corporations, staff rather than line positions (Federal Glass Ceiling Commission, 1995). One should not, of course, overlook the downside of risk; by definition, some risk-takers lose out. Thus, although there are more men who are spectacular successes, there are also more who are flamboyant failures.

The other side of fear of failure is motivation to succeed, which in the business world often entails a single-minded commitment to career, a pattern that men are more likely than women to display (Eccles, 1987). An in-depth study of a Fortune 500 company found that differences in promotion rates of men and women were attributable largely to sex differences in attitudes toward relocation, long hours, and the desire to achieve higher positions (Hoffman and Reed, 1982). Consistent with many other studies, the largest difference was between married men and married women. Marriage, and especially children, increased promotion-seeking behaviors in men while decreasing them in women.

Achieving the highest positions in organizations requires a tremendous investment. Attainment of partnership in large law firms, for example, generally requires years of intensive dedication to the work of the firm; it is not, as some seem to believe (Epstein, 1995), simply a benefit 'conferred' on lawyers because the partnership committee likes them or thinks that the candidate is 'like them'. For a variety of reasons, including an unwillingness to subordinate the rest of one's life (especially family life) and an aversion to the competitive aspects of law firm life, women leave law firms at a disproportionate rate (Mansnerus, 1993). Even after achieving partnership, women tend to be more dissatisfied than men with their positions.

Although the dearth of female executives is routinely attributed to discrimination, the evidence that it is due largely to current discrimination by employers is weak. As Felice Schwartz,

founder of Catalyst, Inc., observed, 'I don't know of a CEO in the country who wouldn't like to have at least one or two really talented women at high levels in his company' (Schwartz, 1992). In fact, the few empirical studies of sex differences in the likelihood of promotion have produced mixed findings, some finding a male advantage, some a female advantage, and some finding no difference at all (Hersch and Viscusi, 1996).

### Women's Wages

Full-time women workers in the US earn approximately 75¢ for every dollar earned by men (O'Neill and Polachek, 1993), although a substantial portion of the compensation disparity disappears if fringe benefits are included in the earnings analysis (Solberg and Laughlin, 1995). Although some writers view this disparity as a consequence of wage discrimination against women (Hunter, 1993), most who have examined the question closely do not believe that the bulk of the disparity is caused by discrimination (Goldin and Polachek, 1987; O'Neill, 1990).

Many of the contributors to women's lesser earnings are similar to the factors that cause women not to achieve the highest corporate ranks in proportion to their numbers (Goldin, 1990). Studies repeatedly show that women work fewer hours than men (Fuchs, 1988). Not surprisingly, there is a strong correlation between hours worked and financial reward (Harrell and Alpert, 1989). Similarly, women tend to occupy less-risky jobs (Filer, 1985), thus depriving themselves of the 'risk premium' that accompanies more dangerous work (Viscusi, 1983). In the US, for example, over 90% of workplace deaths are males (*New York Times*, 1993). Women also tend to work in jobs having more pleasant working conditions, despite the fact that by accepting disagreeable features of a job one can earn higher compensation (Filer, 1985).

Much of the disparity between male and female wages is attributable simply to the difference in priority placed upon compensation. Men are more likely than women to rate compensation as one of the most important attributes of a job, while women are more likely to value such non-wage features as opportunity to help others, shorter commute, and flexible hours (Walker *et al.*, 1982; Bridges, 1989; Gati *et al.*, 1995). Placing a high priority on wage rates, for both men and

women, tends to result in higher pay (Long, 1995).

A substantial portion of the wage differential is a consequence of sex differences in both quantity and quality of human capital, such as job-relevant experience and education (O'Neill and Polachek, 1993; Eide, 1994; Marini and Fan, 1997). To be sure, most studies that have compared wage rates in predominantly male and predominantly female jobs have found a residual sex-composition effect even after controlling for a wide array of general human-capital variables (England, 1992; Kilbourne *et al.*, 1994). This residual differential is often attributed to a systematic devaluation of work performed by women. However, a recent study (Tam, 1997) suggests that this consistent sex-composition effect is due not to devaluation of the work women do, but rather to differences in 'specialized human capital', a variable that has typically not been included in wage studies. When occupation-specific training and industry-specific effects are controlled, the sex-composition effect completely disappeared.

Even within narrow occupational classifications sex differences in workplace behavior exist. For example, male physicians tend to be more oriented toward high income than females. They are more likely to work in private practice and work longer hours, while female physicians are more likely to work in salaried positions with regular, and shorter hours (Weisman *et al.*, 1986; Shye, 1991; Redman *et al.*, 1994). Similarly, male lawyers work longer hours and are more likely to be in private practice than women, and, among lawyers in private firms, men are more likely than women to work in the high-paying large firms (Wood *et al.*, 1993). Women are substantially more likely to hold salaried positions working for lower-paying institutions, such as government and legal services. Although a recent study found a substantial unexplained compensation gap between men and women among lawyers within a given practice type and specialty (Huang, 1997), the study did not control for two of the most significant contributors to lawyer income—hours worked and, in private firms, value of business brought into the firm.

Productivity within the academy is consistent with productivity without. Studies of scholarly output regularly show that men, on average, publish substantially more than women, whether or not the women have children (Persell, 1983; Cole

and Zuckerman, 1987; Long, 1992; Leibenluft *et al.*, 1993; Primack and Stacy, 1997).

Often obscured in the discussions of compensation disparities is the fact that although men tend disproportionately to hold the highest-status positions, they also tend to occupy the lowest-status positions (England, 1979; Gottfredson, 1981). Consequently, jobs held by women are on average of slightly higher status than jobs held by men. Moreover, although women tend to hold many of the lowest-paying jobs, men tend to hold the least-attractive jobs in terms of salary, work environment, security, and physical demands (Farrell, 1993).

The reduced investment of women in the workplace is clearly related to their greater domestic commitment. Despite recent reductions in the rate at which women leave the labor force, they still leave at approximately three times the rate of men (O'Neill and Polachek, 1993). Motherhood tends to decrease both the number of hours worked and earnings (Fuchs, 1988; Long, 1995). Conversely, married men earn more than married women, and men whose wives do not work for pay earn even more (Jacobsen and Rayack, 1996). Although the vociferousness of some critics might suggest otherwise, women's job satisfaction is as high as that of men (Murray and Atkinson, 1981; Kalb and Hugick, 1990), suggesting that they are happy with the workplace/family accommodations they have reached.

The argument that different work preferences of men and women are simply—or even mostly—a function of employers' attitudes toward the two sexes is difficult to credit. As Polachek (1995) has pointed out, a discrimination analysis cannot explain major features of the wage gap, such as the fact that single women have approximate wage parity with men, while married women do not; that the presence of children in the family increases the wage gap; and that longer birth-spacing intervals exacerbate the gap. No account of employer discrimination suggests that employers make distinctions based upon these criteria.

One might also expect that if women face discrimination in the labor market they might choose to avoid discrimination, with its attendant wage gap, through self-employment. As it turns out, however, the wage gap between self-employed men and women is greater than that among employees (Moore, 1983; Lustgarten, 1995), al-

though concededly there could be 'spillover' effects that cause discrimination in the labor market to affect returns to self-employment (Coate and Tennyson, 1992), or discrimination by consumers (Borjas and Bronars, 1989). Moreover, the same factors that increase the gap for female employees, such as being married and having children, exert the same effect on women who are self-employed.

Further suggesting that employer decisions are unlikely to be the sole cause of occupational disparities is the fact that even when men and women are not constrained by preferences of others, they make very different choices. The leisure preferences of males and females are quite different (Gibbons *et al.*, 1997), with men having a greater preference for competitive recreational activities. Significantly, men and women who prefer competitive leisure activities are more likely to exhibit work-related competitiveness as well (Kirkcaldy and Cooper, 1992). Men and women also like different kinds of books and movies. Similarly, a visit to a computer store, a wine store, or a gun shop on a Saturday afternoon will reveal an overwhelmingly male clientele. A visit to a sewing store will show just the opposite. It would probably be surprising if groups having substantially different leisure preferences had exactly the same occupational preferences.

At bottom, the claims of those invoking discrimination to explain sex differences in workplace outcomes might themselves be accused of paternalism and sexism. They view women as passive pawns who are shuffled around in the workplace at the whim of male employers, and they ascribe women's occupational outcomes not to their own choices but to those of men. Moreover, they regard women as a disrespected group notwithstanding the fact that the stereotype of women is more favorable than that of men (Eagly, 1989, 1991; Fiebert and Meyer, 1997).

#### WHAT DOES THE EVOLUTIONARY ACCOUNT TEACH US?

Current workplace arrangements are a predictable result of behavioral sexual dimorphism allowed to operate in the context of a free market in labor. They are not necessarily inevitable in all economic systems, however. For example, the gap is substantially smaller in Australia than in the US, due

largely to Australia's centralization of wage determination, high rates of unionization, generally lower wage inequality, and, most recently, comparable-worth policies (Kidd and Shannon, 1996).

The typically male traits of competitiveness, status-seeking, and risk-taking are related to workplace success independent of sex. People who are inclined to strive for status and resources tend to be rewarded with status and resources to a greater extent than those whose priorities lie elsewhere. Because of the long-standing association between male status and reproductive success, the former group is disproportionately male. This finding is replicated worldwide (Lynn, 1993).

Likewise, we should not be surprised when we find mammalian mothers who are loath to be separated from their helpless young, or at least unwilling to be separated from them as much as a single-minded commitment to career might require. It is simply a fact of life, easily understandable in evolutionary terms, that mothers are more tightly bound to their young children than are fathers (Rossi, 1977). Moreover, men's investment in their offspring tends to take a different form from women's, being characterized by the provisioning of mother and child rather than direct childcare.

One need not invoke animus toward women to explain the willingness of employers to provide greater rewards to employees who make greater career investments. *Ceteris paribus*, an economically rational, profit-maximizing employer will prefer an employee who works longer hours, is more willing to travel or relocate for advancement, and whose career is not interrupted by lengthy absences for childbirth and child-rearing.

The mere fact that the status quo can be explained in evolutionary terms—or even the fact that most women are generally satisfied with it—does not, of course, mean that it is good or should not be modified. An evolutionary explanation for a behavior or social institution does not suggest that it is 'good' or 'right' (Browne, 1984). A number of psychologists, for example, believe that rape is an alternative reproductive strategy for low-status males that is a product of natural selection (Thornhill and Thornhill, 1983). Such a conclusion is in no sense, however, an endorsement of rape. Similarly, the relatively high rate of stepchild infanticide probably has evolutionary roots (Daly and Wilson, 1988; Jones, 1997), yet that does not suggest that we should be more

tolerant of stepparents who kill their children than of natural parents who do so. Questions of social policy must ultimately be resolved through extra-scientific means.

Nonetheless, the origins of the differences should be quite relevant to policy-makers. Many people may be concerned not so much with differential workplace outcomes as with the processes assumed to be responsible for them. Differences in outcomes may be less objectionable to some, or perhaps not objectionable at all, if they are found to be products of different choices rather than discrimination. Moreover, the fact that sex differences are to be expected even in the absence of discrimination suggests that the current practice of inferring discrimination from the mere existence of statistical disparities should be abandoned (Browne, 1993).

Recognition that men and women have different utility functions that are to some extent biologically ingrained also means that some assumptions about potential policy responses may be erroneous. One commonly urged policy initiative is expansion of availability of 'quality, affordable day care', the assumption being that what is holding women back is their primary responsibility for providing care for their children. Certainly, some women would benefit from this expansion, as, of course, would some men. However, it is not close to being the panacea that some apparently believe. The problem of women whose workplace/family conflict keeps them out of the corporate presidency is not going to be solved by increasing the availability of inexpensive daycare. These women typically earn enough to pay for surrogate childcare already. It is their refusal to view the functions of motherhood as fully delegable, rather than their inability to pay for childcare, that prevents their single-minded pursuit of career goals. Similarly, many women work part-time not because they lack the childcare to work full-time—indeed, they might be better able financially to afford daycare if they did work full-time—but because they want to have a level of involvement in the lives of their children that is simply incompatible with full-time work. It also should not be forgotten that, even in the absence of children, women tend to show less labor-market commitment than men.

Recognition of temperamental sex differences with evolutionary roots is not the last word, but rather the first step, in the discussion of public

policy. There is still ample room for disagreement about policy implications. Laissez-faire proponents will likely draw free-market implications, while those given more to governmental action will presumably settle on more interventionist approaches. From wherever one rests on the spectrum, however, one's conclusions are more likely to be sound if they are based upon an accurate view of human nature.

## REFERENCES

- A. Ahlgren (1983). Sex differences in the correlates of cooperative and competitive school attitudes. *Developmental Psychology*, **19**, 881–888.
- R.D. Alexander *et al.* (1979). Sexual dimorphisms and breeding systems in pinnipeds, ungulates, primates, and humans. In *Evolutionary Biology and Human Social Behavior* (edited by N.A. Chagnon and W. Irons), North Scituate, MA: Duxbury, pp. 402–435.
- E.C. Arch (1993). Risk-taking: a motivational basis for sex differences. *Psychological Reports*, **73**, 3–11.
- R.L. Bartlett and T.L. Miller (1985). Executive compensation: female executives and networking. *American Economic Review Papers and Proceedings*, **75**, 266–270.
- M. Bennett (1997). Self-estimates of ability in men and women. *Journal of Social Psychology*, **137**, 540–541.
- L. Betzig (1993). Sex, succession, and stratification in the first six civilizations: how powerful men reproduced, passed power on to their sons, and used power to defend their wealth, women, and children. In *Social Stratification and Socioeconomic Inequality Vol. 1* (edited by L. Ellis), Westport, CT: Praeger.
- R.S. Bigler and L.S. Liben (1990). The roles of attitudes and interventions in gender-schematic processing. *Child Development*, **61**, 1440–1452.
- N.G. Blurton Jones and M.J. Konner (1973). Sex differences in behaviour of London and Bushman children. In *Comparative Ecology and Behaviour of Primates* (edited by R.P. Michael and J.H. Crook), London: Academic Press, pp. 689–750.
- G.J. Borjas and S.G. Bronars (1989). Consumer discrimination and self-employment. *Journal of Political Economy*, **97**, 581–605.
- J.S. Bridges (1989). Sex differences in occupational values. *Sex Roles*, **20**, 205–211.
- K.R. Browne (1984). Biology, equality, and the law: the legal significance of biological sex differences. *Southwestern Law Journal*, **38**, 617–702.
- D.E. Brown (1991). *Human Universals*, New York: McGraw-Hill.
- K.R. Browne (1993). Statistical proof of discrimination: beyond 'damned lies'. *Washington Law Review*, **68**, 477–558.
- K.R. Browne (1995). Sex and temperament in modern society: a Darwinian view of the glass ceiling and the gender gap. *Arizona Law Review*, **37**, 971–1106.
- K.R. Browne (1997). An evolutionary perspective on sexual harassment: seeking roots in biology rather than ideology. *Journal of Contemporary Legal Issues*, **8**, 5–77.
- D.M. Buss (1989). Sex differences in human mate preferences: evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, **12**, 1–49.
- D.M. Buss (1994). *The Evolution of Desire: Strategies of Human Mating*, New York: Basic Books.
- D.M. Buss (1995). Psychological sex differences: origins through sexual selection. *American Psychologist*, **50**, 164–168.
- D.M. Buss and M. Barnes (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, **50**, 559–570.
- D.M. Buss and D.P. Schmitt (1993). Sexual strategies theory: an evolutionary perspective on human mating. *Psychological Review*, **100**, 204–232.
- S. Coate and S. Tennyson (1992). Labor market discrimination, imperfect information and self employment. *Oxford Economic Papers*, **44**, 272–288.
- J.R. Cole and H. Zuckerman (1987). Marriage, motherhood and research performance in science. *Scientific American*, **256**, 119–125.
- H. Cronin (1991). *The Ant and the Peacock: Altruism and Sexual Selection from Darwin to Today*, Cambridge: Cambridge University Press.
- J.M. Dabbs, Jr. *et al.* (1987). Saliva testosterone and criminal violence in young adult prison inmates. *Psychosomatic Medicine*, **49**, 174–182.
- M. Daly and M. Wilson (1983). *Sex, Evolution and Behavior*, 2nd edn, Belmont, CA: Wadsworth Pub. Co.
- M. Daly and M. Wilson (1988). *Homicide*, New York: Aldine de Gruyter.
- R.G. D'Andrade (1966). Sex differences and cultural institutions. In *The Development of Sex Differences* (edited by E.E. Maccoby), Stanford, CA: Stanford University Press, pp. 174–204.
- M. Diamond and H.K. Sigmundson (1997). Sex reassignment at birth: long-term review and clinical implications. *Archives of Pediatric and Adolescent Medicine*, **151**, 298–304.
- A. Eagly (1989). Gender stereotypes and attitudes toward women and men. *Personality and Social Psychology Bulletin*, **15**, 543–558.
- A. Eagly (1991). Are women evaluated more favorably than men? An analysis of attitudes, beliefs, and emotions. *Psychology of Women Quarterly*, **15**, 203–216.
- J.S. Eccles (1987). Gender roles and achievement patterns: an expectancy value perspective. In *Masculinity/Femininity: Basic Perspectives* (edited by J.M. Reinisch *et al.*), New York: Oxford University Press, pp. 240–280.
- E. Eide (1994). College major choice and changes in the gender wage gap. *Contemporary Economic Policy*, **12**, 55–64.
- L. Ellis (1986). Evidence of a neuroandrogenic etiology of sex roles from a combined analysis of human, nonhuman, primate, and nonprimate mammalian studies. *Personality and Individual Differences*, **7**, 519–552.

- B.J. Ellis (1992). The evolution of sexual attraction: evaluative mechanisms in women. In *The Adapted Mind* (edited by J. Barkow *et al.*), Oxford: Oxford University Press, pp. 267–288.
- P. England (1979). Women and occupational prestige: a case of vacuous sex equality. *Signs*, **5**, 252–265.
- P. England (1992). *Comparable Worth: Theories and Evidence*, New York: Aldine de Gruyter.
- C.F. Epstein (1995). Glass ceilings and open doors: women's advancement in the legal profession: a report to the Committee on Women in the Profession, the Association of the Bar of the City of New York. *Fordham Law Review*, **64**, 291–449.
- W. Farrell (1993). *The Myth of Male Power: Why Men are the Disposable Sex*, New York: Simon & Schuster.
- A. Fausto-Sterling (1992). *Myths of Gender: Biological Theories About Women and Men*, 2nd edn, New York: Basic Books.
- Federal Glass Ceiling Commission (1995). *Good for Business: Making Full Use of the Nation's Human Capital: Fact Finding Report of the Federal Glass Ceiling Commission*, Washington, DC: Government Printing Office.
- A. Feingold (1994). Gender differences in personality: a meta-analysis. *Psychological Bulletin*, **116**, 429–456.
- M.S. Fiebert and M.W. Meyer (1997). Gender stereotypes: a bias against men. *Journal of Psychology*, **13**, 407–410.
- R.K. Filer (1985). Male-female wage differences: the importance of compensating differentials. *Industrial and Labor Relations Review*, **38**, 426–437.
- L.M. Finley (1986). Transcending equality theory: a way out of the maternity and the workplace debate. *Columbia Law Review*, **86**, 1118–1182.
- D.G. Freedman and M.M. DeBoer (1979). Biological and cultural differences in early child development. *Annual Review of Anthropology*, **8**, 579–600.
- V. Fuchs (1988). *Women's Quest for Economic Equality*, Cambridge, MA: Harvard University Press.
- I. Gati *et al.* (1995). Gender differences in career decision making: the content and structure of preferences. *Journal of Counseling Psychology*, **42**, 204–216.
- J.L. Gibbons *et al.* (1997). Cross-national gender differences in adolescents' preferences for free-time activities. *Cross-Cultural Research*, **31**, 55–69.
- H.J. Ginsburg and S.M. Miller (1982). Sex differences in children's risk-taking behavior. *Child Development*, **53**, 426–428.
- B.A. Gladue (1991). Aggressive behavioral characteristics, hormones, and sexual orientation in men and women. *Aggressive Behavior*, **17**, 313–326.
- S. Goldberg and M. Lewis (1969). Play behavior in the year-old infant: early sex differences. *Child Development*, **40**, 21–31.
- C. Goldin and S. Polachek (1987). Residual differences by sex: perspectives on the gender gap in earnings. *AEA Papers and Proceedings*, May, 143–151.
- C. Goldin (1990). *Understanding the Gender Gap: An Economic History of American Workers*, New York: Oxford University Press.
- L.S. Gottfredson (1981). Circumscription and compromise: a developmental theory of occupational aspirations. *Journal of Counseling Psychology Monographs*, **28**, 545–579.
- R.J. Grey and G.G. Gordon (1978). Risk-taking managers: who gets the top jobs. *Management Review*, **67**, 8–13.
- H.D. Grotevant *et al.* (1977). Patterns of interest similarity in adoptive and biological families. *Journal of Personality and Social Psychology*, **35**, 667–676.
- T.W. Harrell and B. Alpert (1989). Attributes of successful MBAs: a 20-year longitudinal study. *Human Performance*, **2**, 301–322.
- J.A. Harris *et al.* (1996). Salivary testosterone and self-report aggressive and pro-social personality characteristics in men and women. *Aggressive Behavior*, **22**, 321–331.
- J. Hersch (1996). Smoking, seat belts, and other risky consumer decisions: differences by gender and race. *Managerial and Decision Economics*, **17**, 471–481.
- J. Hersch and W.K. Viscusi (1996). Gender differences in promotions and wages. *Industrial Relations*, **35**, 461–472.
- C. Hoffman and J. Reed (1982). When is imbalance not discrimination? In *Discrimination, Affirmative Action, and Equal Opportunity* (edited by W. Block and M. Walker), Vancouver: Frasier Institute, pp. 187–216.
- K.B. Hoyenga (1993). Sex differences in human stratification: a biosocial approach. In *Social Stratification and Socioeconomic Inequality Vol. 1* (edited by L. Ellis), Westport, CT: Praeger, pp. 139–157.
- K.B. Hoyenga and K.T. Hoyenga (1993). *Gender-Related Differences: Origins and Outcomes*, Boston: Allyn & Bacon.
- W.R. Huang (1997). Gender differences in the earnings of lawyers. *Columbia Journal of Law and Social Problems*, **30**, 267–325.
- R. Hubbard (1990). The political nature of 'human nature'. In *Theoretical Perspectives on Sexual Difference* (edited by D.L. Rhode), New Haven, CT: Yale University Press, pp. 63–73.
- R. Hunter (1993). Afterword: a feminist response to the gender gap in compensation symposium. *Georgetown Law Journal*, **82**, 147–158.
- J.P. Jacobsen and W.L. Rayack (1996). Do men whose wives work really earn less? *American Economic Review*, **86**, 268–273.
- L.A. Jensen-Campbell *et al.* (1995). Dominance, prosocial orientation, and female preferences: do nice guys really finish last? *Journal of Personality and Social Psychology*, **68**, 427–440.
- O.D. Jones (1997). Evolutionary analysis in law: an introduction and application to child abuse. *North Carolina Law Review*, **75**, 1117–1242.
- L. Kalb and L. Hugick (1990). The American worker: how we feel about our jobs. *Public Perspective*, September/October, 21–22.
- C.F. Keating (1985). Gender and the physiognomy of dominance and attractiveness. *Social Psychology Quarterly*, **48**, 61–70.
- D.T. Kenrick *et al.* (1990). Evolution, traits, and the stages of human courtship: qualifying the parental investment model. *Journal of Personality*, **58**, 97–116.

- M.P. Kidd and M. Shannon (1996). The gender wage gap: a comparison of Australia and Canada. *Industrial and Labor Relations Review*, **49**, 729–746.
- B.S. Kilbourne *et al.* (1994). Returns to skill, compensating differentials, and gender bias: effects of occupational characteristics on the wages of white women and men. *American Journal of Sociology*, **100**, 689–719.
- B. Kirkcaldy and C.L. Cooper (1992). Work attitudes and leisure preferences: sex differences. *Personality and Individual Differences*, **13**, 329–334.
- L. Kohlberg (1966). A cognitive-developmental analysis of children's sex-role concepts and attitudes. In *The Development of Sex Differences* (edited by E.E. Maccoby), Stanford, CA: Stanford University Press, pp. 82–173.
- M. Konner and C. Worthman (1980). Nursing frequency, gonadal function, and birth spacing among !Kung hunter-gatherers. *Science*, **207**, 788–791.
- E. Leibenluft *et al.* (1993). Sex differences in rank attainment and research activities among academic psychiatrists. *Archives of General Psychiatry*, **50**, 896–904.
- J. Lever (1976). Sex differences in the games children play. *Social Problems*, **23**, 478–487.
- J. Lever (1978). Sex differences in the complexity of children's play and games. *American Sociological Review*, **43**, 471–483.
- C.A. Littleton (1987). Reconstructing sexual equality. *California Law Review*, **75**, 1279–1337.
- J.C. Loehlin *et al.* (1988). Human behavior genetics. *Annual Review of Psychology*, **39**, 101–133.
- J.S. Long (1992). Measures of sex differences in scientific productivity. *Social Forces*, **71**, 159–178.
- J.E. Long (1995). The effects of tastes and motivation on individual income. *Industrial and Labor Relations Review*, **48**, 338–351.
- R.G. Lord *et al.* (1986). A meta-analysis of the relation between personality traits and leadership perceptions: an application of validity generalization procedures. *Journal of Applied Psychology*, **71**, 402–410.
- B.S. Low (1992). Sex, coalitions, and politics in preindustrial societies. *Politics and the Life Sciences*, **11**, 63–80.
- B.S. Low (1989). Cross-cultural patterns in the training of children: an evolutionary perspective. *Journal of Comparative Psychology*, **103**, 311–319.
- B.S. Low (1994). Human sex differences in behavioral ecological perspective. *Analyse & Kritik*, **16**, 38–67.
- S. Lustgarten (1995). *Business Ownership as an Employment Opportunity for Women*, U.S. Small Business Administration, Document No. PB95-187365.
- D.T. Lykken *et al.* (1993). Heritability of interests: a twin study. *Journal of Applied Psychology*, **78**, 649–661.
- R. Lynn (1993). Sex differences in competitiveness and the valuation of money in twenty countries. *Journal of Social Psychology*, **133**, 507–511.
- H. Lytton and D.M. Romney (1991). Parents' differential socialization of boys and girls: a meta-analysis. *Psychological Bulletin*, **109**, 267–296.
- E.E. Maccoby (1987). The varied meanings of 'masculine' and 'feminine'. In *Masculinity/Femininity: Basic Perspectives* (edited by J.M. Reinisch *et al.*), pp. 227–239, New York: Oxford University Press.
- E.E. Maccoby (1990). Gender and relationships: a developmental account. *American Psychologist*, **45**, 513–520.
- E.E. Maccoby and C.N. Jacklin (1974). *The Psychology of Sex Differences*, Stanford, CA: Stanford University Press.
- E.E. Maccoby and C.N. Jacklin (1980). Sex differences in aggression: a rejoinder and reprise. *Child Development*, **51**, 964–980.
- K.R. MacCrimmon and D.A. Wehrung (1990). Characteristics of risk taking executives. *Management Science*, **36**, 422–435.
- L. Mansnerus (1993). Why women are leaving the law. *Working Woman*, April, 64–104.
- M.M. Marini and P. Fan (1997). The gender gap in earnings at career entry. *American Sociological Review*, **62**, 588–604.
- D.R. Matteson (1991). Attempting to change sex role attitudes in adolescents: explorations of reverse effects. *Adolescence*, **26**, 885–898.
- A. Moir and D. Jessel (1989). *Brain Sex: The Real Difference Between Men and Women*, New York: Dell Publishing.
- R.L. Moore (1983). Employer discrimination: evidence from self-employed workers. *Review of Economics and Statistics*, **65**, 496–501.
- A.M. Morrison *et al.* (1992). *Breaking the Glass Ceiling: Can Women Reach the Top of America's Largest Corporations?*, updated edn, Reading, MA: Addison-Wesley.
- G.P. Murdock (1932). The science of culture. *American Anthropologist*, **34**, 200–215.
- G.P. Murdock (1972). Anthropology's mythology. *Proceedings of the Royal Anthropological Institute of Great Britain and Ireland for 1971*, 17–24.
- M.A. Murray and T. Atkinson (1981). Gender differences in correlates of job satisfaction. *Canadian Journal of Behavioral Science*, **13**, 44–52.
- New Scientist* (1997). Boys will be boys. *New Scientist*, November 22, 1997.
- New York Times* (1993). High murder rate for women on job. *New York Times*, Oct. 3, 29.
- N. Nicholson (1997). Evolutionary psychology: toward a new view of human nature and organizational society. *Human Relations*, **50**, 1053–1078.
- S.M. Okin (1989). *Justice, Gender, and the Family*, New York: Basic Books.
- D.R. Omark and M.S. Edelman (1975). A comparison of status hierarchies in young children: an ethological approach. *Social Science Information*, **14**, 87–107.
- J. O'Neill (1990). Women and wages. *American Enterprise*, November/December, 25–33.
- J. O'Neill and S. Polachek (1993). Why the gender gap in wages narrowed in the 1980s. *Journal of Labor Economics*, **11**, 205–228.
- C.H. Persell (1983). Gender, rewards and research in higher education. *Psychology of Women Quarterly*, **8**, 33–47.

- S.W. Polachek (1995). Human capital and the gender earnings gap: a response to feminist critiques. In *Out of the Margin: Feminist Perspectives on Economics* (edited by E. Kuiper and J. Sap), New York: Routledge, pp. 61–79.
- K.K. Powlishta and E.E. Maccoby (1990). Resource utilization in mixed-sex dyads: the influence of adult presence and task type. *Sex Roles*, **23**, 223–240.
- R.B. Primack and E.A. Stacy (1997). Women ecologists catching up in scientific productivity, but only when they join the race. *BioScience*, **47**, 169–174.
- S. Redman *et al.* (1994). Determinants of career choices among women and men medical students and interns. *Medical Education*, **28**, 361–371.
- J.M. Reinisch *et al.* (1991). Hormonal contributions to sexually dimorphic behavioral development in humans. *Psychoneuroendocrinology*, **16**, 213–278.
- A.S. Rossi (1977). A biosocial perspective on parenting. *Daedalus*, **106**, 1–32.
- P. Rubin and C.W. Paul, II. (1979). An evolutionary model of taste for risk. *Economic Inquiry*, **17**, 585–596.
- E.K. Sadalla *et al.* (1987). Dominance and heterosexual attraction. *Journal of Personality and Social Psychology*, **52**, 730–738.
- F.N. Schwartz (1992). *Breaking with Tradition: Women and Work, The New Facts of Life*, New York: Warner Books.
- D. Shye (1991). Gender differences in Israeli physicians' career patterns, productivity and family structure. *Social Science and Medicine*, **32**, 1169–1181.
- E. Solberg and T. Laughlin (1995). The gender pay gap, fringe benefits, and occupational crowding. *Industrial and Labor Relations Review*, **48**, 692–708.
- S. Sprecher *et al.* (1994). Mate selection preferences: gender differences examined in a national sample. *Journal of Personality and Social Psychology*, **66**, 1074–1080.
- M. Spiro (1996). *Gender and Culture: Kibbutz Women Revisited*, New Brunswick, NJ: Transaction Publishers.
- D. Symons (1990). Adaptiveness and adaptation. *Ethology and Sociobiology*, **11**, 427–444.
- T. Tam (1997). Sex segregation and occupational gender inequality in the United States: devaluation or specialized training? *American Journal of Sociology*, **102**, 1652–1692.
- A. Tellegen *et al.* (1988). Personality similarity in twins reared apart and together. *Journal of Personality and Social Psychology*, **54**, 1031–1039.
- R. Thornhill and N.W. Thornhill (1983). Human rape: an evolutionary analysis. *Ethology and Sociobiology*, **4**, 137–173.
- L. Tiger and J. Shepher (1975). *Women in the Kibbutz*, New York: Harcourt Brace Jovanovich.
- J. Tooby and L. Cosmides (1989). Evolutionary psychology and the generation of culture, part I. *Ethology and Sociobiology*, **10**, 29–49.
- R.L. Trivers (1972). Parental investment and sexual selection. In *Sexual Selection and the Descent of Man* (edited by B.G. Campbell), Chicago: Aldine, pp. 136–179.
- R.L. Trivers (1985). *Social Evolution*, Menlo Park, CA: Benjamin/Cummings.
- J.R. Udry *et al.* (1995). Androgen effects on women's gendered behaviour. *Journal of Biosocial Science*, **27**, 359–368.
- J.E. Veevers and E.M. Gee (1986). Playing it safe: accident mortality and gender roles. *Sociological Focus*, **19**, 349–360.
- W.K. Viscusi (1983). *Risk by Choice*, Cambridge, MA: Harvard University Press.
- J.E. Walker *et al.* (1982). Men and women at work: similarities and differences in work values within occupational groupings. *Journal of Vocational Behavior*, **21**, 17–36.
- J.B. Watson (1925). *Behaviorism*, New York: W. W. Norton Co.
- R.S. Weinberg and J. Ragan (1979). Effects of competition, success/failure, and sex on intrinsic motivation. *Research Quarterly*, **50**, 503–510.
- G. Weisfeld (1994). Aggression and dominance in the social world of boys. In *Male Violence* (edited by J. Archer), London: Routledge, pp. 42–69.
- C.C. Weisfeld *et al.* (1983). The spelling bee: a naturalistic study of female inhibition in mixed-sex competition. *Adolescence*, **18**, 695–708.
- C.C. Weisfeld *et al.* (1986). Female behavior in mixed-sex competition: a review of the literature. *Developmental Review*, **6**, 278–299.
- G. Weisfeld *et al.* (1987). Stability of boys' social success among peers over an eleven-year period. In *Interpersonal Relations: Family, Peers, Friends* (edited by J.A. Meacham), New York: Karger.
- C.S. Weisman *et al.* (1986). Sex differences in the practice patterns of recently trained obstetrician-gynecologists. *Obstetrics and Gynecology*, **67**, 776–782.
- M.W. Wiederman and E.R. Allgeier (1992). Gender differences in mate selection criteria: sociobiological or socioeconomic explanation. *Ethology and Sociobiology*, **13**, 115–124.
- J. Williams (1991). Gender wars: selfless women in the republic of choice. *New York University Law Review*, **66**, 1559–1634.
- J.E. Williams and D.L. Best (1990). *Measuring Sex Stereotypes: A Multination Study*, revised edn, Newbury Park, CA: Sage.
- M. Wilson and M. Daly (1992). The man who mistook his wife for a chattel. In *The Adapted Mind* (edited by J.H. Barkow *et al.*), Oxford: Oxford University Press, pp. 289–322.
- P.T.P. Wong *et al.* (1985). On the importance of being masculine: sex role, attribution, and women's career achievement. *Sex Roles*, **12**, 757–769.
- R.G. Wood *et al.* (1993). Pay differences among the highly paid: the male-female earnings gap in lawyers' salaries. *Journal of Labor Economics*, **11**, 417–441.