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Is "discrimination" necessary to explain the sex gap in earnings?

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Abstract

Economists usually assume that any sex difference in earnings after controlling for human capital and occupational segregation is largely (though not entirely) attributable to "discrimination". From the evolutionary psychological perspective, I argue that "discrimination" (or any other external constraint) is unnecessary to explain the partial effect of sex on earnings if men and women are inherently different in their desire to earn money. From this perspective, reproductive success (rather than earnings) is the ultimate (albeit unconscious) goal of all biological organisms, including humans, and earnings are men's, but not women's, means to reproductive success. The General Social Survey data are consistent with my contention that evolved (*not* learned) differences in preferences are largely responsible for sex differences in pay, and confirm my prediction that there is no sex gap in earnings among childless unmarried workers under 40. My conclusion is that the sex gap in pay exists because women have better things to do than to earn money, reproductively speaking.

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1. Introduction

The sex difference in pay is one of the central concerns of microeconomics (Blau & Kahn, 2000) and sociology (Marini, 1989). Researchers in these fields decompose the total difference in earnings between men and women into three components: (1) human capital factors; (2) occupational sex segregation; and (3) discrimination. To the extent that the sex gap in pay is attributable to differences in human capital and productivity, such as education, experience, and tenure, it is considered by most to be unproblematic. To the extent that the sex gap in pay results from occupational sex segregation, then paying all workers in a given occupation equally will not close the gap. Paying the same wages to male and female truck drivers, and to male and female secretaries, will not close the sex gap in pay if truck drivers make more than secretaries, and most truck drivers are male and most secretaries are female. Occupational sex segregation necessitates considerations of comparable worth (England, 1992).

Economists and sociologists commonly assume that any remaining sex difference in earnings, after they partial out the effects of human capital and occupational sex segregation, reflects "discrimination", where employers pay equally qualified men and women performing the same job differently. The existence of "discrimination", however, must necessarily be inferred from statistical evidence and cannot be observed directly. And the conclusion that there is "sex discrimination" by employers crucially hinges on the assumption that men and women are on the whole identical, except in the amount of human capital they possess and the jobs they hold. If men and women with the same amount of human capital and in the same jobs are *inherently* different in ways that affect their earnings, for instance, in their preference for earning money, then the conclusion that the remaining sex difference in earnings reflects employer discrimination becomes untenable (Browne, 2002). Such innate differences in preferences, desires and other internal states are very likely to have evolved because men of higher status, greater political power, and larger economic resources have always had greater reproductive success throughout evolutionary history (Betzig, 1986; Kanazawa, 2003a; Pérusse, 1993). If men and women are different in *internal* preferences and dispositions, such as their desire and drive to earn money, then no *external* factors, such as employer discrimination, becomes necessary to explain the sex gap in pay.

In this paper, I will argue from the evolutionary psychological perspective, as does Browne (2002), that the evolved sex differences in preferences and dispositions predispose men to possess greater desire to earn money and other material resources, and that external factors, such as employer discrimination, are therefore unnecessary to explain the sex differences in earnings. I will present analyses of the General Social Survey (GSS) data to demonstrate that men are indeed more motivated to earn money than women, but this is only because women in general have better things to do than to earn money, reproductively speaking. The sex differences in preferences for earning money appear to stem neither from labor market experiences nor from socialization. The GSS data also confirm my prediction that the sex difference in earnings disappears for women who are equally motivated to earn money as men.

2. Evolutionary psychology (EP) and economics

Compared to other social scientists, economists are more open to "evolutionary theory", evinced, for instance, by the inception of the *Journal of Evolutionary Economics* in 1990. Most of the articles appearing in this journal, however, as well as other work by economists on "evolutionary theory", deal with the evolution of game strategies, institutions, organizational forms, and other nonbiological entities (Gintis, 2000; Hannan & Carroll, 1992). A more recent journal, the *Journal of Bioeconomics*, founded in 1999, is more open to evolutionary psychological approaches. Some of the genuinely evolutionary psychological contributions to economics have been by noneconomists (Cosmides & Tooby, 1994; Rogers, 1994). The search on EconLit with the exact phrase "evolutionary psychology" culls only 18 entries (as of June 2003).

However, there is a steadily growing (if still relatively small) intellectual movement by economists to incorporate insights from modern evolutionary psychology into economics. Hirshleifer (1977, 1978) is an early advocate for the introduction of biological perspective into economics, long before the birth of modern evolutionary psychology. Frank (1987, 1988) and Hirshleifer (1988) both suggest that emotions may have evolved as commitment devices. More recently, Ben-Ner and Putterman (2000) argue, as does Kanazawa (2001a), that evolutionary psychology can explain the origins of human preferences and thus they need not remain exogenous in microeconomic models, as Stigler and Becker (1977) claim. Earl and Potts (2000) suggest the evolutionary origins of the human capacity for parallel search, coopted in the current environment for browsing in shopping malls. Vanberg (2002) advocates for evolutionary psychology and other models of "program-based behavior" as alternatives to standard microeconomic models in the study of institutions. Robson (2001) briefly introduces the biological foundations of economic behavior, while Robson and Kaplan (2003) present a model of the coevolution of the human brain and life expectancy in the context of hunter-gatherer economies.

Markóczy (1998) underscores the relevance of modern evolutionary psychology and the concept of human nature to managerial economics. Hoffman, McCabe, and Smith (1998) emphasize, as does Kanazawa (2004), the relevance of evolutionary psychology to experimental economics and noncooperative game theory, while Jackson (2002) stresses its importance for ecological economics. Although a comprehensive review of the contribution of evolutionary psychology to all areas of economics has yet to appear, I refer interested readers to thorough and excellent introductions of evolutionary psychology (EP) such as Barkow, Cosmides, and Tooby (1992), Buss (1999), Cartwright (2000), Daly and Wilson (1988), Ridley (1993) and Wright (1994). On the internet, the greatest resource on evolutionary psychology is the home page of the Human Behavior and Evolution Society (http://www.hbes.com), which contains links to some introductory materials, and information on the latest books and articles on evolutionary psychology and places to study it, among many others.

Becker's (1991) *A Treatise on the Family* remains the most influential economic analysis of the family. Like me, Becker (1991, pp. 307–323) takes evolutionary biology seriously in his analysis of human behavior in the family. Unlike me, however, Becker (1976) considers economics to be more fundamental than evolutionary biology. Being

truly reductionist, I take a contrary view in this paper and argue that evolutionary biology and psychology are more fundamental than economics and can provide microfoundations to the economic analysis of human behavior (Kanazawa, 2001a).

3. Sex difference in earnings from the evolutionary psychological perspective

Microeconomics is premised on the model of *the actor*. The actor is singular and unitary; microeconomics does not make distinctions among human actors. EP would question the explanatory utility of the microeconomic model of the singular and unitary actor. While many psychological mechanisms are shared by men and women, many others are sex specific and are part of distinct male and female human natures. Throughout evolutionary history, ancestral men and women consistently faced different sets of problems, especially in the area of mating and reproduction, and their evolved solutions (represented by the psychological mechanisms) are therefore often distinct (Miller, 2000). EP would thus advocate two separate models of human actors: Male and female.

Throughout the human evolutionary history, the attainment of reproductive success most often required *biparental investment*. Unlike most species in nature, for which male parental investment into the offspring is limited to the sperm deposited inside the female during copulation, men invest heavily into their children to assure their survival to sexual maturity and therefore their own reproductive success, even though male parental investment even among humans is never as high as female parental investment (Fukuyama, 1999, pp. 92–111; Trivers, 1972). The more resources the father invests into the children, the greater the likelihood of their survival to sexual maturity.

Statistical evidence from Canada and ethnographic evidence from Trinidad converge to highlight the danger to children of not living with their biological fathers. Daly and Wilson (1985) show that, relative to those who live with two biological parents, Canadian children between the ages of 0 and 4 who live without their fathers are 12.5 times (if they live only with their mother) or 40.1 times (if they live with their mother and stepfather) as likely to be physically abused ($p < 0.001$). Similarly, juveniles who grow up without fathers are 5.6 times (in single-parent families) or 2.4 times (in families with stepfathers) as likely to be arrested for criminal offences ($p < 0.0001$). Flinn (1988) shows that both young women ($p < 0.05$) and young men ($p < 0.02$) in Trinidad who grow up without their biological fathers have significantly lower reproductive success (defined as the number of children who survive their first year) than their counterparts who grow up with their biological fathers.

In the ancestral environment or the environment of evolutionary adaptedness (EEA), where our ancestors were hunter gatherers, there was a clear division of labor by sex, as evident from Murdock's (1937) study of 224 tribal societies; division of labor by sex (and age) is one of the human universals identified by Brown (1991). It was the male who accumulated material resources through game hunting and competition, while the female took physical care of the children. Ancestral women gathered plant foods and thereby contributed to the nutritional needs of their children,

but their childcare responsibilities prevented them from devoting themselves to amassing and accumulating material resources to the same extent that men did. (Ancestral women spent about 92% of their reproductive life either pregnant or nursing (Symons, 1995, pp. 88–91).) Ancestral men with greater material resources were better able to provide for their children than those with fewer material resources, and their children had greater chances of survival to sexual maturity. Women in the EEA therefore preferred to mate with men with greater resources, and women to this day (who have inherited their psychological mechanisms from their female ancestors) are attracted to men with greater material resources in all human societies (Buss, 1989; Gottschall, Martin, Quish, & Rea, 2004). Psychological mechanisms, such as the one that produces criteria by which women judge their potential mates, are adapted to the EEA, not to the current environment (Kanazawa, 2004). The fact that women themselves can acquire material resources today has not altered their psychological mechanisms and the desires and preferences they engender. Even wealthy and powerful women today still prefer to mate with men who are even wealthier and more powerful than they are (Buss, 1989; Wiederman & Allgeier, 1992).

Throughout evolutionary history, material resources were men's essential means to reproductive success, the ultimate (albeit unconscious) goal of all biological organisms, whereas physically taking care of the children was women's. Because all psychological mechanisms are designed ultimately to promote our reproductive success in the EEA, EP would predict that men are far more motivated to accumulate material resources than women are (Browne, 1995, 2002). [1] From this perspective, women have better things to do than to accumulate material resources in order to increase their reproductive success; they can do so by physically taking care of their children. In contrast, men have to accumulate such resources in order to attract and keep mates and invest in their children; there was no other way for them to increase their reproductive success. I can therefore derive my first hypothesis with regard to sex difference in the desire to earn money. Browne (2002) articulates and defends this hypothesis, logically and empirically, in great detail.

H 1. Men have a greater desire to accumulate material resources (earn money) than women.

Further, the sex difference in the desire to earn money should be larger if women already have better things to do, reproductively speaking. Women who have children can directly increase their reproductive success by physically taking care of them, rather than by earning money, whereas this option is not (yet) available to childless women. Married women can rely on their husbands to accumulate resources to

[1] Academics and other scholars may believe that their main legacy for the posterity is their ideas, not their genes, passed on to the future generations. Unfortunately, evolutionary psychological research shows that academics are no exception to the rule. For instance, it appears that the main (albeit unconscious) purpose of making scientific discoveries is to attract mates. As soon as male scientists get married and have children, their scientific productivity plummets, just like criminals desist from criminal careers once they get married (Kanazawa, 2000, 2003b).

invest into their children, in a division of labor universally practiced in the EEA for which their psychological mechanisms were designed, whereas this option is not available to unmarried women.

Recall that the ultimate (albeit largely unconscious) goal of all humans from the evolutionary psychological perspective is reproductive success, defined as *inclusive fitness* (maximizing the welfare and reproductive success of those who share their genes). Of course, having and taking care of one's own biological children is the most direct and effective means of increasing inclusive fitness; that is why most women (and men), given the opportunity, are motivated to have children. If, however, a woman does not yet have children, she can still increase her inclusive fitness by investing in her kin (brothers, sisters and other close relatives) even though she cannot (yet) do so by investing in her own biological children. A childless woman in the EEA may invest in their kin by both physically taking care of them and by accumulating resources to invest in them, *through activities that are equivalent of earning "income" in the EEA.*

Ethnographies of contemporary hunter-gatherer societies seem to indicate that, while most pubescent women get married and have children soon after their menarche, young women often engage in productive economic activities (along with childcare) until they do. For instance, among the Yanomamö Indians of Brazil, a young childless woman

> remains near her family of orientation and concerns herself with their immediate needs. She becomes proficient at grating manioc. She joins her mother and older women in the field, returning with a heavy load of manioc root and/or stalks of bananas. She helps prepare food for her father and male siblings. She cares for any younger siblings. She accompanies other family members on one-day trips to poison fish in streams, garner jungle fruit, or gather honey... She carries heavy baskets laden with produce from the field, even though a boy or man might be walking along behind her empty-handed. She chops and gathers firewood. She plucks the feathers of a bird that has been shot, cooks the meat, and tends the fire. Occasionally she spins and weaves cotton (Peters, 1998, p. 140).

Ethnographies of the Nharo Bushmen of Botswana (Guenther, 1986, pp. 204–206) and of the Ache Indians in Paraguay (Hill & Hurtado, 1996, pp. 65–73) also confirm that young childless women in these hunter-gatherer societies engage in both childcare and productive economic activities. It is therefore not unreasonable to posit that women have evolved psychological mechanisms that first lead them, during the reproductive age, to ascertain whether they have their own biological children; if they do, to invest in them; and if not, then to engage in productive economic activities as well as physical care of their kin in an attempt to increase their inclusive fitness indirectly. This is probably why women today are much closer to their kin than men are (Campbell, 1988; Fischer & Oliker, 1983; Kanazawa, 2001b; Marsden, 1987). I can draw a second hypothesis with respect to the effect of marital status and parenthood on the sex difference in the desire to earn money.

H 2. The sex difference in the desire to earn money (hypothesized in H1) is greater among parents and married people than among nonparents and unmarried people.

EP also makes some life-course predictions. It is very important to remember that, regardless of our own reproductive success in our own lifetimes, we are all descended from people who have attained some reproductive success, and we are disproportionately descended from those who attained great reproductive success. And we inherited our psychological mechanisms disproportionately from those who attained great reproductive success, who had long and fruitful reproductive careers. There are 20 children who inherit their psychological mechanisms from the mother who managed to have 20 children in her lifetime, but only one child who inherits her psychological mechanism from the mother who managed to have only one child in her lifetime.

Our inherited psychological mechanisms therefore partly assume that we are reproductively successful, whether or not we really are in our own lives. Very few women who were childless at 35 or 40 in the EEA subsequently left any offspring. That means that women today inherited their psychological mechanisms only from women who were already mothers at least by the time they were 40 (if not much earlier). Women's psychological mechanisms today should therefore assume, once they are past reproductive age, that they are married with children, and compel them to devote their time and energy to childrearing, whether or not they indeed have children. Children of mothers who acted as if they did not have to take care of their children and instead devoted their energies elsewhere, did not survive to sexual maturity and pass on their mothers' genes (Campbell, 1999).

I therefore suggest that women's inclination to engage in productive economic activities when they do not have children should cease as the women get older, because older women in the EEA almost certainly had children by then. I can therefore derive a third hypothesis with regard to the life-course effect of age on the sex difference in the desire to earn money.

H 3. The sex difference in the desire to earn money (hypothesized in H1) is greater among older people and less among younger people.

Put together, Hypotheses 1–3 would lead me to predict that there would be very little sex difference in the desire to earn money among young, unmarried, childless workers. I will subject these hypotheses to empirical test with the GSS data.

4. Empirical analyses

4.1. Data

The National Opinion Research Center at the University of Chicago has administered the GSS either annually or biennially since 1972. Personal interviews are conducted with a nationally representative sample of noninstitutionalized adults in the United States. The sample size is about 1500 for each annual survey, and about 3000

for each biennial one. The exact questions asked in the survey vary by the year. The total sample size from 1972 to 2000 is 40,933, even though all of the analyses below are conducted with smaller samples because relevant questions are asked only in some years. The GSS data are available to download at the web site of Survey Documentation and Analysis at the University of California, Berkeley (http://csa.berkeley.edu/archive.htm).

4.2. Bivariate comparisons

In most of the years between 1973 and 1994, the GSS asks some or all of the respondents to rate five criteria for selecting a job, from the most important (= 5) to the least important (= 1). These criteria are: High income; no danger of being fired; working hours are short, lots of free time; chances for advancement; and work is important and gives a feeling of accomplishment. I use the score the respondents give to the first criterion (high income) as a measure of how important money is to them and of their desire to earn money. A total of 18,127 respondents are asked this question in 15 separate surveys.

Table 1 (Panel A) shows that men rank income as significantly more important as a criterion for a job than women (3.4287 vs. 3.3434, $t = 4.927$, $p < 0.0001$). In 1982,

Table 1
Sex differences in how important income is (5-point scale)

	Mean	SD	*n*	
(A) All ages				
Men	3.4287	1.1509	8059	$t = 4.927$
Women	3.3434	1.1652	10,068	$p < 0.0001$
(B) Ages 18–19				
Men	3.7809	1.0695	178	$t = 2.440$
Women	3.4939	1.1049	164	$p < 0.05$
(C) All nonparents				
Men	3.4382	1.1578	2556	$t = 3.153$
Women	3.3351	1.1137	2295	$p < 0.01$
(D) All unmarrieds				
Men	3.4565	1.1709	2865	$t = 3.588$
Women	3.3548	1.2000	4549	$p < 0.001$
(E) Age 40 and under				
Men	3.5365	1.1141	3916	$t = 2.356$
Women	3.4797	1.1162	4695	$p < 0.05$
(F) Nonparents age 40 and under				
Men	3.4997	1.1252	1895	$t = 1.871$
Women	3.4294	1.0632	1551	$p < 0.10$
(G) Unmarrieds age 40 and under				
Men	3.5591	1.1335	1812	$t = 0.610$
Women	3.5368	1.1228	2025	$p > 0.5$

the GSS asks half the respondents in the sample the same question in a slightly different manner. It asks respondents to rate high income as a job characteristics on a 7-point (rather than a 5-point) scale, from unimportant ($=1$) to important ($=7$). On this measure as well, men score significantly higher than women (6.0399 vs. 3.8222, $t = 2.272$, $p < 0.05$) (not shown). At least by these measures, men exhibit a far greater motivation to earn money than women do.

Now the critics of EP might argue that the sex difference in how important money is as a criterion for a job reflects (rather than causes) the fact that women earn less money than men. Rather than an innate and evolved difference between the sexes, the critics would contend, the sex difference in the importance placed on income reflects women's learned response to their life-long experience of being paid less than men are. Panel B of Table 1 should counter this argument. It replicates the same comparison as in Panel A, but only among respondents who are either 18 or 19 years old. (The minimum age for participation in the GSS is 18.) These are young adults, most of whom have not had their first full-time job, and none of whom have had a life-long experience in the labor market. Yet, even among this small sample, men consider high income to be significantly more important than women (3.7809 vs. 3.4939, $t = 2.440$, $p < 0.05$). In fact, the absolute sex difference is much larger among this subsample of young adults than it is in the full sample (0.2870 vs. 0.0853), even though it is statistically less significant due to the small sample size. If the teenage respondents exhibit the same sex difference in their desire to earn money, the difference could not stem from their life-long experiences in the labor market.

Another potential criticism, especially from traditional sociologists, is that the sex difference in how important money is might be a consequence of life-long gender socialization. [2] The critics might argue that girls and women are socialized to believe that money is not as important for them as it is for boys and men, and gender socialization, rather than evolved psychological differences, might be responsible for the sex differences in Table 1. Apart from the empirical fact that "gender socialization" does not seem to exist, because parents treat boys and girls identically (Lytton & Romney, 1991), the GSS allows an indirect test of this alternative hypothesis and shows it to be false. From 1972 to 1998, the GSS poses the question: "Do you agree or disagree with this statement? Women should take care of running their homes and leave running the country up to men". As Table 2, Panel A, shows, women are not more likely to agree with this statement than men are (0.7600 vs. 0.7585; $t = 0.261$, $p > 0.7$), which they should, if they have been socialized to believe that money is more important to men than it is to women. Further, in contrast to the pattern shown in Table 1, Panel B, teenage women are statistically more likely to *disagree* with this statement (Table 2, Panel B) (0.7253 vs. 0.8794; $t = 3.862$, $p < 0.001$). This is the *opposite* of the sex differences in Table 1.

The pattern is exactly the same with respect to another question: "Do you approve or disapprove of a married woman earning money in business or industry if she has a husband capable of supporting her?" Women are not statistically less likely

[2] I thank Alan S. Miller for bringing this potential criticism to my attention.

Table 2
The effects of "gender socialization"

	Proportion disagree	SD	*n*	
Do you agree or disagree with this statement? Women should take care of running their homes and leave running the country to men				
(A) All Ages				
Men	0.7585	0.4280	9747	$t = 0.261$
Women	0.7600	0.4271	12,791	$p > 0.7$
(B) Ages 18–19				
Men	0.7253	0.4476	182	$t = 3.862$
Women	0.8794	0.3265	199	$p < 0.001$
Do you approve or disapprove of a married woman earning money in business or industry if she has a husband capable of supporting her?				
(C) All Ages				
Men	0.7639	0.4247	10,702	$t = 1.525$
Women	0.7722	0.4194	13,699	$p > 0.1$
(D) Ages 18–19				
Men	0.7548	0.4312	208	$t = 3.140$
Women	0.8738	0.3329	206	$p < 0.01$

to approve of such a woman than men are (Table 2, Panel C) (0.7639 vs. 0.7722; $t = 1.525$, $p > 0.1$). Once again, teenage women are statistically *more* likely to approve of such a woman than their male counterparts (Table 2, Panel D) (0.7548 vs. 0.8738; $t = 3.140$, $p < 0.01$). The GSS data therefore demonstrate that the effects of socialization documented in Table 2 are the opposite of men's and women's actual preferences presented in Table 1. It appears that women believe earning money is just as important for women *in general* as it is for men, that is, for all the other women in society, but in their own private behavior they state that earning money is not as important to them *personally* as men do. In this sense, women appear to be in the state of pluralistic ignorance (Prentice & Miller, 1993). The cause of the sex differences in preferences shown in Table 1 appears to be something other than their labor market experience or "gender socialization".

My Hypothesis 2 predicts that the sex difference in the desire to earn money should be greater if women have better things to do, reproductively speaking, but smaller if they do not. Panel C of Table 1 compares men and women who have not had any children. The difference is still statistically significant ($p < 0.01$), but much less so than in the full sample in Panel A. The t statistic drops from 4.927 to 3.153. The same happens when I limit the comparisons to those who are not married (Panel D: $t = 3.588$, $p < 0.001$) and those who are 40 and younger (Panel E: $t = 2.356$, $p < 0.05$). While the sex difference is still statistically significant, in each case it is much less so than in the full sample. If I limit the sample to nonparents age 40 and younger (Panel F), the sex difference becomes only marginally significant ($t = 1.871$, $p < 0.10$), and the sex difference completely disappears among unmarried respondents age 40 and younger (Panel G: $t = 0.610$, $p > 0.5$).

The bivariate comparisons of the sexes presented in Table 1 therefore seem to support my Hypotheses 1–3. Men do seem to have greater desire to earn money than women, and the sex difference appears to be greater if women have better things to do than earn money, by being married or having children, and smaller if they do not. The comparisons also seem to confirm the life-course pattern predicted by EP that the psychological mechanisms of women over 40 lead them to believe that they are married and have children, even if they do not in reality. I will test these hypotheses more rigorously with multivariate statistics below.

4.3. Multiple regressions

Table 3 presents the multivariate analysis of the importance placed on income as a job characteristic. Equation (1) shows that, controlling for such demographic characteristics as age, race (1 if black), marital status (1 if currently married), number of children, and verbal IQ, and the survey year, sex has a statistically significant effect ($t = 2.861$, $p < 0.001$). Men place much greater value on income as a criterion for selecting a job than women do.

Equation (2) limits the sample to childless respondents only. It shows that the effect of sex is now only marginally significant ($t = 1.718$, $p = 0.086$). Equation (3) limits the sample further to childless, unmarried respondents ($t = 1.697$, $p = 0.090$), and

Table 3
The effect of sex on how important income is (General Social Survey, 1973–1994)

	(1)	(2)	(3)	(4)
Sex	0.069**	0.077[a]	0.091[a]	0.101[a]
(1 = male)	(0.024)	(0.045)	(0.054)	(0.061)
t	2.861	1.718	1.697	1.654
Age	−0.009***	−0.009***	−0.010***	−0.017**
	(0.001)	(0.001)	(0.002)	(0.006)
Race	0.450***	0.450***	0.375***	0.330***
(1 = black)	(0.035)	(0.068)	(0.077)	(0.087)
Marital status	0.030	0.067	–	–
(1 = married)	(0.026)	(0.049)		
Number of	0.012[a]	–	–	–
children	(0.007)			
Verbal IQ	−0.040***	−0.050***	−0.053***	−0.058***
	(0.006)	(0.010)	(0.012)	(0.015)
Year	0.010***	0.010**	0.015**	0.021***
	(0.002)	(0.004)	(0.004)	(0.005)
Constant	−16.718	−16.883	−25.807	−37.587
R^2	0.055	0.058	0.067	0.052
n	9112	2477	1737	1313

Note: Main entries are unstandardized regression coefficients.
Numbers in parentheses are standard errors.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
[a] $p < 0.10$.

Equation (4) limits it to childless, unmarried respondents under 40 years of age ($t = 1.654$, $p = 0.098$). The effect of sex declines, slowly but steadily and monotonically, as I move from the full sample of all respondents to only those who do not yet have anything better to do than earn money, exactly paralleling the empirical pattern shown in the bivariate analyses presented in Table 1.

Table 4 replicates the multivariate analyses in Table 3 with respondent's actual income, as a behavioral outcome of their desire to earn money. Equation (1) regresses income on sex, the importance placed on income, a set of demographic controls as in Table 3 (age, race, number of children, and verbal IQ) and other factors likely to affect income (education, number of hours worked last week, labor union membership, and occupational prestige), and survey year. It shows that sex has a

Table 4
The effect of sex on income (General Social Survey, 1973–1994)

	(1)	(2)	(3)	(4)	(5)
Sex	2.071***	1.188***	0.913**	0.414	2.173***
(1 = male)	(0.136)	(0.236)	(0.289)	(0.301)	(0.453)
t	15.223	5.033	3.162	1.376	4.799
Income is	0.150*	0.087	0.213	0.132	0.072
important	(0.059)	(0.107)	(0.130)	(0.135)	(0.199)
Age	0.052***	0.068***	0.074***	0.278***	0.041*
	(0.006)	(0.011)	(0.013)	(0.032)	(0.019)
Race	0.011	−0.194	−0.200	−0.378	−0.947
(1 = black)	(0.191)	(0.359)	(0.411)	(0.420)	(0.636)
Number of	0.009	–	–	–	−0.053
children	(0.046)				(0.166)
Education	0.226***	0.174**	0.166*	0.037	0.401***
	(0.032)	(0.057)	(0.070)	(0.080)	(0.113)
Hours/week	0.108***	0.113***	0.122***	0.106***	0.110***
	(0.005)	(0.009)	(0.010)	(0.011)	(0.016)
Marital status	0.509***	0.730**	–	–	0.071
(1 = married)	(0.141)	(0.256)			(0.454)
Union member-	1.687***	1.496***	1.449***	1.375***	1.471**
ship (1 = yes)	(0.163)	(0.306)	(0.381)	(0.396)	(0.544)
Occupational	0.074***	0.071***	0.070***	0.058***	0.055**
prestige	(0.006)	(0.010)	(0.012)	(0.013)	(0.021)
Verbal IQ	0.124***	0.163*	0.174*	0.152[a]	0.021
	(0.038)	(0.066)	(0.082)	(0.085)	(0.132)
Year	0.334***	0.303***	0.291***	0.262***	0.298***
	(0.012)	(0.023)	(0.028)	(0.030)	(0.039)
Constant	−699.215	−606.218	−583.558	−527.014	−597.399
R^2	0.499	0.468	0.469	0.522	0.482
n	2922	956	667	556	278

Note: Main entries are unstandardized regression coefficients.
Numbers in parentheses are standard errors.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
[a] $p < 0.10$.

strong partial effect on income ($t = 15.223$, $p < 0.001$), even after many human capital factors (such as age, education and IQ) are controlled. There is a large sex difference in earnings among this sample of all full-time and part-time workers. Incidentally, Equation (1) also replicates with the GSS data the findings of earlier analyses of the National Longitudinal Survey of Youth data (Farkas, England, Vicknair, & Kilbourne, 1997; Herrnstein & Murray, 1994, Chapter 14; O'Neill, 1990) that black–nonblack difference in earnings completely disappears or even reverses once cognitive abilities are controlled.

Equation (2) in Table 4 repeats the same analysis only among childless workers ($n = 956$). The partial effect of sex is still statistically significant ($t = 5.033$, $p < 0.001$), but is much smaller than it is in the larger sample of all workers; the t statistic is less than one-third of what it is with the full sample. Among the sample of childless, unmarried workers (Equation (3); $n = 667$), the partial effect of sex is even smaller and weaker ($t = 3.162$, $p < 0.01$). Finally, when the sample is limited to childless, unmarried workers 40 and under (Equation (4); $n = 556$), the partial effect of sex completely disappears ($t = 1.376$, $p = 0.170$). Among young, childless, unmarried workers, there is no statistically significant sex difference in earnings, just as there is no statistically significant sex difference in the desire to earn money. Note that I control for the survey year in my earnings equations. My findings that young men and women make the same amount of money therefore does *not* reflect a cohort effect, where "discrimination" has weakened over the years. Multivariate analyses presented in Tables 3 and 4 show that sex differences in both the desire to earn money and the actual income, which are statistically significant among the full sample of men and women, steadily declines and then disappears among men and women who have nothing better to do than earn money.

Now, because I have had to reduce the sample from 2922 to 556 in order to compare men and women when women have "nothing better to do" than to earn money, critics might argue that the nonsignificance of the partial effect of sex on earnings is a result of the small sample size. This is unlikely for two reasons. First, most other variables have similar and similarly significant effects on earnings when the sample is reduced from all workers to young, childless, unmarried workers. More importantly, Equation (5) demonstrates that the nonsignificant partial effect of sex on earnings is not an artifact of the small sample size. For this equation, I select a random 10% sample from the full sample of all workers, and run the same analysis with this small sample. Despite the fact that the final sample size for estimation after listwise deletion is 278, by coincidence exactly one-half of 556 in Equation (4), the partial effect of sex is highly statistically significant ($t = 4.799$, $p < 0.001$). Thus the disappearance of the partial effect of sex on earnings is not attributable to the small sample size, and instead to the fact that women in the sample for Equation (4) do not have anything better to do than to earn money.

Another potential criticism of my analyses presented in Table 4 is my failure to include measures of job tenure and work experience in the earnings equations. [3]

[3] I thank one anonymous reviewer for making this point.

Critics might argue that part of men's advantage over women is their longer and less interrupted work experience; men make more money than women because they tend to have more continuous labor force participation. From this perspective, it makes sense that the partial effect of sex on earnings becomes weaker as I limit my sample to those men and women who have comparable work history. What I am controlling by limiting my sample to young, childless, unmarried workers, the critics would argue, is not their evolved preferences, but their labor force participation history.

Unfortunately, the GSS does not ask its respondent about their job tenure and work experience in most surveys; these measures are available only in 1991. Table 5, Column (1), presents the same earnings equation from Table 4 with the 1991 sample ($n = 239$) with the measures of job tenure (the number of years and months that the respondent has worked for the present employer) and work experience (the total number of years since age 16 that the respondent has spent in paid labor force). The results show that the strong partial effect of sex on earnings among the full sample of all workers is not an artifact of men's longer job tenure and work experience. The effect of sex remains strong and significant ($p < 0.01$) even when these measures of human capital are controlled. [4]

The inclusion of the interaction terms between sex, on the one hand, and age, the number of children, and marital status, on the other, shows the pattern consistent with the results presented in Table 4, even though none of the interaction terms are statistically significant, probably due to the small sample size. All three interaction terms have positive effects on earnings, suggesting that the sex difference in earnings is greater among older, married workers with more children.

Finally, another potential criticism of my conclusion, from the neoclassical economic perspective, is that young, unmarried, childless women have few distractions at work which harm their productivity on the job, whereas married women with children have significant distractions (in the form of household chores and childcare responsibilities) which harm their market productivity, relative to their male counterparts. However, this criticism simply begs the question: *Why* do married women with children consider their household chores and childcare responsibilities to be distractions from their market activities, while their husbands, who are equally married and have an equal number of children as their wives, do not? Why is it that, in most households, the wife assumes most of the household and childcare responsibilities? The unequal commitment to household chores between the sexes cannot be explained by "gender inequality" within the marriage, because unmarried women

[4] It is odd that, while the effect of work experience on income is significantly positive, as predicted, the effect of job tenure on income is equally significantly *negative*. Further, the bivariate correlation between job tenure and income in the GSS data is weakly but statistically significantly negative ($r = -0.145$, $p < 0.001$, $n = 814$). An inspection of the scatterplot, however, reveals that the negative correlation is due to a small number of influential observations with very long job tenures and very low incomes. For instance, there are three respondents who claim to have had job tenure of 83 years each. One of them makes less than $3000, the second less than $4000, and the third less than $20,000. If I exclude all cases of job tenure over 40 years, the bivariate correlation between job tenure and income becomes weakly but statistically significantly positive ($r = 0.144$, $p < 0.001$, $n = 743$).

Table 5
The effect of sex on income, controlling for work experience and tenure (General Social Survey, 1991)

	(1)	(2)
Sex	1.704**	0.607
(1 = male)	(0.548)	(1.855)
Sex∗Age		0.005
		(0.049)
Sex∗Number of Children		0.248
		(0.401)
Sex∗Marital status		0.998
		(1.054)
Job tenure	−0.030*	−0.035*
	(0.015)	(0.015)
Work experience	0.108*	0.097[a]
	(0.049)	(0.052)
Income is	−0.120	−0.111
important	(0.224)	(0.226)
Age	−0.022	−0.016
	(0.050)	(0.056)
Race	−0.068	−0.269
(1 = black)	(0.846)	(0.862)
Number of	0.009	−0.153
children	(0.197)	(0.316)
Education	0.321**	0.294*
	(0.116)	(0.118)
Hours/week	0.110***	0.110***
	(0.016)	(0.017)
Marital status	0.355	−0.179
(1 = married)	(0.523)	(0.745)
Union membership	0.435	0.421
(1 = yes)	(0.763)	(0.769)
Occupational	0.072**	0.074***
prestige	(0.023)	(0.023)
Verbal IQ	0.147	0.162
	(0.150)	(0.154)
Constant	−2.561	−1.839
R^2	0.469	0.474
n	239	239

Note: Main entries are unstandardized regression coefficients.
Numbers in parentheses are standard errors.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
[a] $p < 0.10$.

spend significantly more time on household chores than unmarried men do (25.04 vs. 18.92 hours per week if living alone; 19.26 vs. 14.93 hours per week if living with parents; both ps < 0.05) (South & Spitze, 1994, Table 3). Thus the sex differences in household work *predate* marriage. In order to figure out what men and women consider and do not consider to be distractions from their market activities, one needs to

explain their values and preferences, which neoclassical economics cannot (Kanazawa, 2001a; Stigler & Becker, 1977). Evolutionary psychology is a very strong contender for a general theory of values, especial the sex differences in preferences that affect market activities (Browne, 2002).

5. Conclusion

In order to account for the pattern presented in Table 4 in terms of employer "discrimination", economists and sociologists would somehow have to contend that employers discriminate against women more if they have children, if they are married, and if they are older, *and explain why*. The data presented in Tables 1–3 seem to contradict such an explanation. EP can provide a more parsimonious explanation, consistent with the evidence presented in Tables 1 and 3, that women have inherently less desire to earn money than men, and the sex difference increases as women have better things to do, reproductively speaking. From the perspective of EP, there is absolutely no reason to expect why men and women should have identical predispositions and inclinations toward earning money. Women's evolved psychological mechanisms, adapted to the EEA, would not compel them to engage in activities that did not increase their reproductive success in the ancestral environment.

Just as earlier studies (Farkas et al., 1997; Herrnstein & Murray, 1994, Chapter 14; O'Neill, 1990) demonstrate that "discrimination" is not necessary to account for the race difference in earnings, my analyses show that "discrimination" is not necessary to explain the sex difference in earnings. Due to evolved differences in their preferences and desires, women should be less motivated to earn money than men, because resource accumulation did not increase women's reproductive success in the EEA whereas it did increase men's. The analyses of the GSS data presented here support my contention that women have better things to do than to earn money, reproductively speaking, and that the sex difference in earnings disappears if they do not.

Note that I do not include any measure of occupational sex segregation in my multiple regression equations (other than an oblique one of occupational prestige to the extent that "male" jobs have higher prestige than "female" jobs), even though it is considered to be one of the major determinants of sex difference in earnings (Blau & Kahn, 2000; England, 1992). I am able to explain away sex difference in earnings only with human capital factors, and the desire to earn money. From the perspective of EP, occupational sex segregation also reflects evolved differences between men and women. Men and women get whatever jobs that they want to get according to their evolved desires. As a result, men are more likely to take jobs that involve more competition and risk-taking and allow them to earn more money. In contrast, women are more likely to take jobs that allow them to help and relate to others, regardless of how lucrative they are (Browne, 2002; Mealey, 2000, pp. 344–354). In the GSS data, women place a significantly greater emphasis on the criterion "The work is important and gives me a feeling of accomplishment" (3.8311 vs. 4.0112, $t = 9.348$, $p < 0.0001$). But I will leave a full evolutionary psychological analysis of occupational sex segregation for future studies.

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