

Taxi Drivers, Cashiers, and Restaurant Servers: A Cross-Cultural Study of Gender Differences

Lee Ellis¹

Siti Nor Awang

The Australian National University

In Western cultures, pronounced gender differences in occupations have been well documented, but comparable differences in other countries have been minimally investigated. The present study used direct observation to compare gender differences in persons performing three occupations – taxi driver, cashier, and restaurant server – in one Western country (the United States) and two non-Western countries (China and Malaysia). Results revealed that in all three countries, taxi drivers are overwhelmingly males while cashiers and restaurant servers are predominantly females. In fact, the gender ratios for these occupations in all three countries were statistically equivalent. While difficult-to-identify social factors may also play a role in determining occupational choices by men and women, the present study seems more compatible with suggestions that evolved neurohormonal factors may be involved. Consequently, the discussion proposes that biological factors incline males toward taxi driving because this line of work makes heavy demands on spatial reasoning skills. Females, on the other hand, are hypothesized to be drawn toward being cashiers and restaurant servers because of the social orientation and social skills required of these occupations.

Key words: Gender differences; Occupational choices; Sex roles; Testosterone; Interests; Neurology; Evolutionary psychology; Spatial reasoning; Social orientation.

Gender differences in occupations have been documented in Western countries for over a century (e.g., Durkheim, 1893/1984; England, 1981; Charles, 1992; Anker, 1998; Wootton, 1997). These differences are so dramatic for many lines of work that well over half of all gainfully employed persons would have to change jobs in order to achieve gender equality in all occupations (Bianchi & Spain, 1996, p. 23; Lewis & Nice, 1994).

¹ Department of Anthropology & Sociology, University of Malaya, Kuala Lumpur, Malaysia 50603, email: lee.ellis@hotmail.com

So far, nearly all of the studies of occupation-specific sex segregation have involved relatively high social status occupations, such as attorneys, college professors, corporate executives, engineers, nurses, physicians, politicians, and teachers in Western countries (Ellis et al., 2008, pp. 790-805). And rarely has research been reported from non-Western countries that could be directly compared to what was found in the West. This has been especially true for occupations that are of low to moderate occupational status. To begin rectifying these deficiencies, the present study examines sex differences in three middle-to-low status occupations in the United States and in two quite different non-Western countries, China and Malaysia.

Methods

Observations were made of people involved in three occupations between 2007 and 2010 in large cities in China, Malaysia, and the United States. The occupations were those of taxi drivers, store and restaurant cashiers, and restaurant servers. The gender of the persons performing each of these occupations was recorded on the spot within an hour after observation.

At some of the smaller restaurants, about 5% of the restaurant servers also functioned as cashiers. These individuals were only tallied once for whichever of these two jobs they were observed performing first.

Efforts were made to verify the data on sex differences in these three occupations from government-based statistics. However, these efforts were not successful due mainly to each country maintaining their statistics in different ways. Also, only the United States appears to have made its statistics on sex differences in occupations readily available in published form.

Data from the U.S. indicate that 95% of persons in “transportation and material moving occupations” were males in 1975 and that the percentage 20 years later was 90% (Wootton, 1997, p. 17). A more recent study put the percentage of “motor vehicle operators” who were men at 88% (U.S. Bureau of the Census, 2008). This category not only included taxi drivers, but also bus and truck drivers.

Regarding the occupations of restaurant servers and store cashier, U.S. statistics put the percentage of “waiters and waitresses” who were female at 91% in 1975 and 78% in 1995. The proportion of “cashiers” who were female was estimated to be 87% in 1975 and 79% in 1995 (Wootton, 1997, p. 17).

Readers will see that the above gender proportions are fairly close to the direct observations made in the present study for the United States (Table 1). Unfortunately, comparable published statistics for China and Malaysia were not located. For this reason, the present study relies on direct observation of convenience samples in all three countries. Chi square was used to assess statistical significance.

Results

Findings are shown in Table 1. One can see that in all three countries, over 95% of taxi drivers were males, making the sex difference for the three countries combined highly significant ($\chi^2 = 258.234$, $df = 1$, $p < .001$). A chi square test was performed to determine if the three countries were statistically different from one another in this regard. To do so, it was necessary to replace the 0 number of female taxi drivers observed in China with a 1, which changed the actual percentage only slightly (from 0% to 2.3%). The resulting calculation for all three countries was $\chi^2 = .103$, $df = 2$, $p = .949$. This suggests that the gender ratios for taxi drivers in all three countries were statistically equivalent.

Regarding the other two lines of work, Table 1 shows that they were both performed predominantly by females. The gender difference in the combined three-country sample was highly significant for both of these occupations (for cashiers: $\chi^2 = 233.611$, $df = 1$, $p < .001$; for servers: $\chi^2 = 440.017$, $df = 1$, $p < .001$).

Chi square was also used to determine if the sex ratios for either of these occupations were significantly different between any of the three countries. In the case of store and restaurant cashiers, the resulting chi square was $\chi^2 = .780$, $df = 2$, $p = .677$, and for restaurant servers, it was $\chi^2 = .555$, $df = 2$, $p = .758$. As with taxi drivers being predominantly males

in all three countries, the gender ratios for both of these two female-dominated occupations within all three countries were found to be statistically equivalent.

Discussion and Conclusions

The present study widens the evidence on sex differences in occupations by directly comparing three countries using identical methodology. An amazing degree of similarity in occupations chosen by men and women were found in these three countries despite substantial differences in culture, religion, and degrees of industrialization.

Table 1. Sex differences among taxi drivers, cashiers and restaurant servers in China, Malaysia and the United States.

	China		Malaysia		United States	
	Male	Female	Male	Female	Male	Female
Taxi driver	43 (100%)	0 (0.0%)	180 (98.4%)	3 (1.6%)	47 (97.9%)	1 (2.1%)
Cashier	6 (10.0%)	56 (90.0%)	22 (9.5%)	209 (90.5%)	10 (13.0%)	67 (87.0%)
Restaurant server	5 (9.2%)	46 (90.8%)	38 (9.3%)	369 (90.7%)	13 (11.7%)	98 (88.3%)

Furthermore, in the United States, major political and legislative pressure has been brought to bear on sex segregation in high status occupations (e.g., physicians, lawyers, and academics), resulting in considerable increases in the proportions of females in these occupations in recent decades (Schultz, 1990; Reskin, 1993). The fact that the proportions of taxi drivers, cashiers, and restaurant servers in the U.S. are virtually identical to those found in two still developing countries with far fewer legislative oversights concerning gender discrimination suggests that the political forces levied in the U.S. to increase female representation in high status occupations have had little or no impact on sex ratios in low to middle status occupations.

Sociocultural Explanations

Why would almost identical degrees of occupational

segregation by gender be found in three distinct cultures? Most explanations for why men and women gravitate toward different occupations focus on cultural factors such as sex role expectations, child rearing practices, educational training, and employer discrimination (e.g., England, 1981; Anker, 1997, 1998; Eagly et al., 2000).

Regarding the three occupations considered in this report, it would be difficult to identify any specific social roles or child rearing practices that would restrict women from driving taxis or men from performing cashier or food serving functions in stores and restaurants. Furthermore, there are few if any educational or specialized training requirements that would prevent one or the other sex from entering any of these three lines of work.

Perhaps one could argue that employers believe (either correctly or not) that females are generally “more honest” than their male counterparts, and therefore discriminate against male cashier applicants. However, nearly all of today’s cash registers are configured to maintain close tabs on all transactions, thus minimizing the risk of this form of employee theft. Regarding taxi drivers, it may be that females avoid this occupation due to fear of being sexually assaulted, although such risks actually seem miniscule given that taxi drivers are in control of the vehicle and can contact dispatchers whenever they have difficulties. Overall, it seems that one is left with only farfetched ways of explaining sex differences in these three occupations in strictly sociocultural terms.

The Evolutionary Neurohormonal Explanation

Recently, several researchers have proposed that evolutionary forces may underlie gender differences in many occupational interests and choices (Browne, 2006; Ellis, 2011; Geary, 2010; Lippa, 2008, 2010). Common to their arguments are the following ideas: Throughout human evolution, males have been the main hunters and females have provided the bulk of parental care to children (Ellis et al., 2008, pp. 652 & 788). The differentiation of these two activities seems to have resulted in male brains evolving more refined navigating capabilities and female brains

becoming more adept at casual and congenial social interactions (Geary, 2010). As a result of these evolved neurological forces, men and women in contemporary times are drawn into a number of fairly specific occupations – e.g., males being attracted to those involving navigation and females finding friendly socially oriented jobs more appealing.

One of the most interesting lines of evidence in this regard has come from studying sex differences in a broad range of interests. Literature reviews have shown that males are more inclined to focus attention on physical things while females focus on people (Lippa, 1998; Su et al., 2009). This “things vs. people” sex difference has been found cross-culturally in adults, adolescents, and children, and even in newborn babies (Connellan et al., 2000).

Lippa (1998) and Browne (2006) have both proposed that sex differences in interests in things vs. people could have considerable impact on a wide variety of occupational choices. Along similar lines, Baron-Cohen et al. (1998) suggested that prenatal exposure of the brain to testosterone shifts interests away from people toward inanimate objects. The authors proposed that an extreme interest in inanimate objects may underlie a clinical condition called autism, which is predominantly a male disorder (Ellis et al., 2008, p. 405). Baron-Cohen and associates tested their hypothesis by studying the occupations of the fathers of autistic children, and found unusually high proportions of them to be engineers and physicists. Two other studies have indicated that brain exposure to testosterone contributes to masculine types of occupational choices (Dabbs et al., 1990; White et al., 2006).

Other evidence pointing toward links between evolutionary and neurohormonal factors as having influenced sex differences in occupational choices comes from studying maze-navigating skills. In humans as well as several other species of mammals, males have been shown to surpass females in these skills (Ellis et al., 2008, pp. 309-310). Males also seem to spend more time exploring their environments than do females (Geary, 2010, pp. 311-313).

Various authors have proposed that such spatially oriented gender differences in interests and abilities appear to be promoted by exposing male brains to relatively high levels of testosterone (Kimura, 2000; Moffat et al., 1998). Furthermore, high neurological exposure to testosterone appears to have detrimental effects on social sensitivities and skills (Baron-Cohen, 2003; Ellis, 2011).

Overall, while the present study was exploratory and based on convenience samples, it provides cross-cultural evidence for the first time that similar sex ratios exist in three common lines of work. While sex role expectations and training cannot be excluded as part of the explanation for these observed gender differences (e.g., Bielby & Baron, 1986; Goldin, 1990), the high degree of cultural uniformity seems much more in line with the idea that something of a biological nature is involved. Thus, while sex discrimination and a “glass ceiling” effect may operate to cause female under-representation in various high status occupations (Hultin, 2003; Maume, 1999), it would be hard to attribute the overwhelming dominance of males among taxi drivers and their relative rarity among cashiers and restaurant servers to such social forces.

It is herein hypothesized that as a result of evolutionary forces, testosterone acts on the brain in ways that generally draw males into occupations that are things-oriented, especially when these occupations also involve a great deal of spatial reasoning. If so, one can expect males to dominate not only in being taxi drivers, but also airline pilots, and even engineers throughout the world (Ellis, 2011).

On the other hand, the relatively low exposure of female brains to testosterone may incline them to choose occupations that are much more socially oriented, including cashiers and restaurant servers. If such reasoning is correct, it predicts that most worldwide gender differences documented in the past will continue to exist in the future no matter what laws are instituted against sex discrimination in employment. More research into gender differences in occupational choices within the context of evolutionary and neurohormonal factors seems warranted.

References

- Anker, R.
(1997) Theories of occupational segregation by sex: an overview. *International Labour Review* 139: 129-155.
- Anker, R.
(1998) *Gender and jobs: Sex segregation of occupations in the world*. Geneva, Switzerland: International Labour Office.
- Baron-Cohen, S.
(2003) *The essential difference: The truth about the male and female brain*. New York: Basic Books.
- Baron-Cohen, S., Bolton, P., & Wheelwright, S.
(1998) Does autism occur more often in families of physicists, engineers, and mathematicians? *Autism* 2: 296-301.
- Bianchi, S.M. & Spain, D.
(1996) *Balancing act: Motherhood, marriage, and employment among American women*. Thousand Oaks, CA: Sage.
- Bielby, W. & Baron, J.
(1986) Men and women at work: sex segregation and statistical discrimination. *American Journal of Sociology* 91: 759-799.
- Browne, K.R.
(2006) Evolved sex differences and occupational segregation. *Journal of Organizational Behavior* 27: 143-162.
- Charles, M.
(1992) Variation in occupational sex segregation. *American Sociological Review* 57: 483-502.
- Connellan, J., Baron-Cohen, S., Wheelwright, S., Batki, A. & Ahluwalia, J.
(2000) Sex differences in human neonatal social perception. *Infant Behavior and Development* 23: 113-118.
- Dabbs, J.M., Jr., de La Rue, D. & Williams, P.M.
(1990) Testosterone and occupational choice: actors, ministers, and other men. *Journal of Personality and Social Psychology* 389: 1261-1265.
- Durkheim, E.
(1893/1984) *The division of labor*. New York: Free Press.
- Eagly, A., Wood, W. & Diekmann, A.
(2000) Social role theory of sex differences and similarities: A current appraisal. In T. Eckes & H.M. Trautner (eds.): *The developmental social psychology of gender*, pp. 123-174. New York: Taylor & Francis.
- Ellis, L.
(2011) Evolutionary neuroandrogenic theory and universal gender differences in cognition and behavior. *Sex Roles* 64: 707-722.
- Ellis, L., Hershberger, S., Field, E., Wersinger, S., Pellis, S., Geary, D., Palmer, C., Hoyenga, K., Hetsroni, A. & Karadi, K.
(2008) *Sex differences: Summarizing more than a century of scientific research*. New York: Psychology Press.

- England, P.
 (1981) Assessing trends in occupational sex segregation, 1900-1976. In I. Berg (ed.): *Sociological perspectives on labour markets*, pp. 273-295. New York: Academic Press.
- Geary, D.C.
 (2010) *Male, female: The evolution of human sex differences*, 2nd ed. Washington, DC: American Psychological Association.
- Goldin, C.
 (1990) Understanding the gender gap: an economic history of American women. In P. Burstein (ed.): *Labor market discrimination and public policy*, pp. 17-32. Washington, DC: NBER Books.
- Hultin, M.
 (2003) Some take the glass escalator, some hit the glass ceiling: career consequences of occupational sex segregation. *Work and Occupations* 30: 30-61.
- Kimura, D.
 (2000) *Sex and cognition*. Cambridge, MA: MIT Press.
- Lewis, G.B. & Nice, D.
 (1994) Race, sex, and occupational segregation in state and local government. *American Review of Public Administration* 24: 393-410.
- Lippa, R.A.
 (1998) Gender-related individual difference and the structure of vocational interests: the importance of the "people-things" dimension. *Journal of Personality and Social Psychology* 74: 996-1009.
- Lippa, R.A.
 (2008) Sex differences and sexual orientation differences in personality: findings from the BBC internet survey. *Archives of Sexual Behavior* 37: 173-187.
- Lippa, R.A.
 (2010) Sex differences in personality traits and gender-related occupational preferences across 53 nations: testing evolutionary and social-environmental theories. *Archives of Sexual Behavior* 39: 619-636.
- Maume, D.
 (1999) Glass ceilings and glass escalators: occupational segregation and race and sex differences in managerial promotions. *Work and Occupations* 26: 483-494.
- Moffat, S.D., Hampson, E. & Hatzipantelis, M.
 (1998) Navigation in a "virtual" maze: sex differences and correlation with psychometric measures of spatial ability in humans. *Evolution & Human Behavior* 19: 73-87.
- Reskin, B.
 (1993) Sex segregation in the workplace. *Annual Review of Sociology* 19: 241-270.

Schultz, V.

- (1990) Telling stories about women and work: judicial interpretations of sex segregation in the workplace in Title VII cases raising the lack of interest arguments. *Harvard Law Review* 103: 1749-1839.

Su, R., Rounds, J. & Armstrong, P. I.

- (2009) Men and things, women and people: a meta-analysis of sex differences in interests. *Psychological Bulletin* 135: 859-884.

U.S. Bureau of the Census

- (2008) Occupation by sex and median earnings in the past 12 months (In 2008 Inflation-Adjusted Dollars) for the civilian employed population 16 years and over. http://www.factfinder.census.gov/servlet/STTable?_bm=y&-qr_name=ACS_2008_3YR_G00_S2401&-geo_id=01000US&-ds_name=ACS_2008_3YR_G00_-&-redoLog=false

White, R.E., Thornhill, S. & Hampson, E.

- (2006) Entrepreneurs and evolutionary biology: the relationship between testosterone and new venture creation. *Organizational Behavior and Human Decision Processes* 100: 21-34.

Wootton, B.

- (1997) Gender differences in occupational employment. *Monthly Labor Review* 120: 15-24.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.