

More males run fast A stable sex difference in competitiveness in U.S. distance runners

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Abstract

Sex differences in competitiveness are well established, but it is unknown if they originate from sociocultural conditions or evolved predispositions. Testing these hypotheses requires a quantifiable sex difference in competitiveness and the application of a powerful sociocultural manipulation to eliminate it. Study 1 reviews previous work showing that more male distance runners are motivated by competition and maintain large training volumes, suggesting that more males should run fast relative to sex-specific world-class standards. I then use two independent statistical approaches to demonstrate that, in matched populations of male and female U.S. runners, two to four times as many males as females ran relatively fast in 2003. Study 2 investigates whether the growth in opportunities and incentives for female athletes in the past 30 years is eliminating this sex difference. I first show that there was a marked increase in the number of fast female runners in the 1970s and early 1980s, a period during which female participation increased dramatically. However, I found no indication of an absolute or relative increase in the number of fast female distance runners since the mid-1980s. These findings therefore support the hypothesis that sex differences in competitiveness partly reflect evolved predispositions.

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1. Introduction

Humans show sex differences in competitiveness. Males tend to compete using direct means, such as aggression or physical displays, while females more often compete using indirect means, such as ostracizing or stigmatizing (Bjorkqvist, 1994; Buss, 2004; Campbell, 2002; Maccoby, 1998). In addition, the object of competition generally differs, as males typically compete for status, while females more frequently compete for attributions of attractiveness or sexual exclusiveness (Buss, 2004; Campbell, 2002).

The origin of these differences is debated. On one hand, the standard social science model (*sensu* Tooby & Cosmides, 1992) claims that sex differences in competitiveness and related social psychological attributes, such as dominance, independence, and egocentrism, can be ultimately traced to sociocultural conditions. These conditions differentially socialize males and females and/or direct them into sex-differentiated roles. Thus, according to the *sociocultural conditions hypothesis*, sex differences in competitiveness could be eliminated if society were altered appropriately (Cross & Madson, 1997; Eagly, 1987; Eagly & Wood, 1999; West & Zimmerman, 1987).

Evolutionary psychology, on the other hand, holds that sex differences in competitiveness and related attributes partly reflect predispositions that evolved because they were associated with enhanced fitness in the past. At the mechanistic level, these evolved predispositions are primarily due to sex-differentiated hormonal environments, especially the prenatal environment. Therefore, the *evolved predispositions hypothesis* holds that, although sociocultural conditions modulate the expression of sex-differentiated behavior, sex differences in competitiveness would occur even if society were egalitarian (Archer & Lloyd, 2002; Buss, 2004; Campbell, 2002; Daly & Wilson, 1988; Geary, 1998).

1.1. Testing the hypotheses

Beginning in the early 1960s, dramatic changes in the roles and opportunities available to girls and women have occurred in many Western societies, including the United States. Changes include increased participation and acceptance in the labor force, higher education, political office holding, and organized athletics (Browne, 2002; Shulman & Bowen, 2001; Twenge, 2001). These changes offer an opportunity to test the explanatory power of the sociocultural conditions hypothesis and the evolved predispositions hypothesis. The former predicts convergence in social psychological attributes, while the latter predicts that sex differences will remain stable.

Determining whether there has been convergence in social psychological attributes has proven difficult, however. Meta-analyses of gender stereotypes, sex typing, and personality have produced evidence of convergence (Twenge, 1997, 2001; cf. Diekmann & Eagly, 2000) but have also indicated stability or even increased differentiation (Feingold, 1994; Lueptow, Garovitch-Szabo, & Lueptow, 2001). Furthermore, the characterization of psychological attributes in these meta-analyses has relied almost exclusively on written assessments rather than behavior under real-world conditions. Thus, it is unclear whether these kinds of studies could, in principle, provide strong evidence of changes in social

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