



## Beyond Mars and Venus: Understanding gender differences in financial risk tolerance



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### ABSTRACT

Research indicates that men are more risk tolerant and make riskier financial decisions than women. To explain this, researchers have favored “essentialist” explanations that attribute differences to core biological mechanisms and have tended to neglect psychological mechanisms that reflect the influence of culture and socialization. To better understand gender differences in risk tolerance, we investigated the relative effects of multiple psychological dimensions of gender, including gender identification (i.e., identifying as one’s biological sex and viewing it as a positive part of the self), gender typicality (i.e., feeling like a typical member of one’s biological sex), and gender-stereotyped personality traits and social roles. We also measured 2D:4D digit ratios as an indicator of prenatal testosterone exposure. Stereotypically masculine or instrumental personality traits (e.g., strong, acts as a leader) were associated with more risk tolerance in both men and women but were relatively more important for understanding men’s risk tolerance. Stereotypically feminine or communal personality traits were associated with less risk tolerance in women. Women who identified more with other women, and men who identified less with other men showed greater risk tolerance. Digit ratio was not associated with risk tolerance. Further research focused on psychological gender and risk tolerance is emphasized.

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## 1. Introduction

Financial risk taking in investments and gambling may result in both negative (e.g., mounting debts) and positive outcomes (e.g., investment profits). A vast literature indicates that men are more risk tolerant and make riskier decisions about their money than do women (Almenberg & Dreber, 2012; Bernasek & Shwiff, 2001; Byrnes, Miller, & Schafer, 1999; Eckel & Grossman, 2002; Faff, Hallahan, & McKenzie, 2011; Garrison & Gutter, 2010; Hallahan, Faff, & McKenzie, 2003; Hira & Loibl, 2008; Jianakoplos & Bernasek, 1998; Powell & Ansic, 1997; Siegrist, Cvetkovich, & Gutscher, 2002). To explain this difference, some researchers have pointed to broad cultural mechanisms such as income disparity (see Bajtelsmit and Bernasek (1996) for a review). In recent years, gender differences in risk taking and risk tolerance have increasingly been attributed to biological mechanisms such as testosterone. Relatively little research has investigated psychological mechanisms that may contribute to gender differences in risk tolerance. In this paper, we test multiple psychological mechanisms as explanations for gender differences in financial risk tolerance while simultaneously acknowledging biologically based research. To do so, we used an ecologically valid self-report measure of risk tolerance given by financial planners to assess their

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clients' risk preference, namely, the FinaMetrica Risk Tolerance Profile (Bright & Adams, 2000), a measure derived from Roszkowski's (1992) Survey of Financial Risk Tolerance (SOFRT).

### 1.1. Theoretical framework

The second wave of the women's movement in the United States sparked considerable research on the psychology of gender. Researchers had initially conceptualized gender as a bipolar continuum of masculinity to femininity (Constantinople, 1973). From this perspective, a person was either masculine or feminine. By definition, a highly masculine person lacked femininity, and vice versa. In reaction to this, researchers in the 1970s designed inventories including the Bem Sex Role Inventory (Bem, 1974) and the Personal Attributes Questionnaire (Spence & Helmreich, 1978). These inventories defined masculinity and femininity in terms of personality traits. "Masculine" personality traits are instrumental traits that correspond to traditional stereotypes about men (e.g., strong, acts as a leader). "Feminine" personality traits are communal personality traits that correspond to stereotypes about women (e.g., affectionate). Using these measures, a person can endorse both instrumental (masculine) and communal (feminine) personality traits when describing themselves. That is, "masculinity" and "femininity" are separate dimensions, not opposite ends of a single continuum. These measures were rapidly adopted by gender researchers and are now widely used by researchers from a number of disciplines.

Contemporary theories of the psychology of gender have extended the conceptualization and measurement of gender beyond a sole focus on so-called "masculine" (instrumental) and "feminine" (communal) personality traits. Instead, gender is conceptualized as a multidimensional constellation of distinct constructs (Ashmore, 1990; Huston, 1983; Twenge, 1999) that includes not only biological factors (e.g., hormones), but also psychological dimensions including gender identification (i.e., identifying as one's biological sex and viewing it as a positive part of the self), gender typicality (i.e., feeling like a typical member of one's biological sex), personality traits, and specific roles (i.e., cultural prescriptions for behavior based on biological sex). Some have suggested that risk taking is a behavior that belongs to the masculine domain (Wilson & Daly, 1985). Hence, we were interested in how multiple psychological dimensions of gender may relate to financial risk tolerance.

Adopting a multidimensional conceptualization of gender has the potential to contribute new insights. This perspective facilitates the design of interventions to change financial risk tolerance – both in the direction of increasing risk tolerance (e.g., encouraging young women to make financial decisions that could facilitate the accumulation of assets for retirement) and in decreasing inappropriate financial risk taking (e.g., problem gambling). To date, research tends to emphasize that men and women's risky financial behaviors reflect inherent biological differences such as testosterone, a sex hormone present in much higher levels within males than females (Torjesen & Sandnes, 2004). Hence, much like the idea that men and women are so dissimilar to have originated from "Mars or Venus," research that focuses solely on biological differences between men and women ignores that there is substantial variability within each sex. Indeed, variability within groups of men and women is even more pronounced than differences between men and women (Hyde, 2005). Although biological mechanisms such as testosterone are likely to be important for understanding differences between men and women, it is unlikely that biological mechanisms are the sole determinants of financial risk tolerance. Psychological mechanisms likely play a role and may be especially important for understanding individual differences. A better understanding of psychological mechanisms associated with gender differences in risk tolerance can be used to target specific behaviors and skills in interventions that aim to change risk tolerance.

### 1.2. Gender and financial risk taking: Why?

#### 1.2.1. Testosterone

Much research has been devoted to studying gender differences in financial risk tolerance and risk taking. However, relatively few researchers have sought to explain why gender differences exist. In both the empirical literature and in the popular press (e.g., Coates, 2012), the explanations most commonly offered are biologically based mechanisms of action, particularly testosterone. Testosterone is a hormone primarily produced in the male testes but also present in lower levels within females. The hormone precipitates an organizational effect in men with long-term outcomes during critical periods (e.g., sexual differentiation during prenatal development; Jost, Price, & Edwards, 1970). Much research has focused on testosterone's role in stereotypically masculine attributes and behaviors, including aggression (Archer, 2006), sensation seeking (Roberti, 2004), and dominance (Mazur & Booth, 1998). Because testosterone is present in much higher levels within men and is related to other stereotypically masculine traits and behaviors, researchers have hypothesized that the hormone could explain gender differences in financial risk.

To study this question, some have used digit ratios (2D:4D) as a proxy for prenatal testosterone exposure (see Apicella et al. (2008) for a detailed procedure). In people with high prenatal testosterone exposure, the ratio of the second to fourth digits is smaller. Therefore, researchers have supposed that a small 2D:4D ratio may predict risk tolerance. However, this hypothesis has mixed support. For example, links between digit ratio and risk taking in simulated investing and lottery scenarios were found in a mixed-gender sample of Swedish Caucasians (Dreber & Hoffman, 2007), a mixed-gender sample of college students (Garbarino, Slonim, & Sydnor, 2011), and male financial traders (Coates, Gurnell, & Rustichini, 2009), but has not been replicated in a heterogeneous American sample (Dreber & Hoffman, 2007), a male sample of U.S. college students (Apicella et al., 2008), or a male sample of U.S. MBA students (Sapienza, Zingales, & Maestripietri, 2009). Because of such conflicting results, it may be too early to conclude that prenatal testosterone exposure exerts an organizational effect on

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