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Gender, self-confidence, sports, and preferences for competition☆

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ABSTRACT

Gender differences in the willingness to compete may explain the small percentage of women in top-level positions in business, science, or politics. This research examines with a fuzzy-set qualitative comparative analysis (fsQCA) the conditions, including gender, that relate to competition preferences and the different paths that may lead to a decision to enter competition. The results of the economic experiment show that no single condition but combinations of characteristics explain preferences for competition. Furthermore, results show that experience in competitive sports relates to a higher self-confidence and increases the willingness to enter in competitive systems. Interestingly, one of the causal paths leading to enter competition is being a risk-averse woman with experience in competitive sports. These results provide insights to guide policy interventions to reduce the gender gap in preferences for competition and, therefore, to rise the percentage of women in top-level positions.

1. Introduction

Recent research in economics shows a gender gap in the willingness to compete, with women shying away from competition more than men do (Croson & Gneezy, 2009; Niederle & Vesterlund, 2007, 2011). This gender difference in preferences toward competition seems critical to explain the small percentage of women in top-level positions in business, science, or politics (Blau, Currie, Croson, & Ginther, 2010; Cason, Masters, & Sheremeta, 2010; Datta Gupta, Poulsen, & Villeval, 2013; Dohmen & Falk, 2011; Gneezy, Leonard, & List, 2009; Gneezy, Niederle, & Rustichini, 2003; Gneezy & Rustichini, 2004; Niederle & Vesterlund, 2007; 2011). Consequently, research and policy interventions explore ways to increase women's competitive behavior (Balafoutas & Sutter, 2012; Calsamiglia, Franke, & Rey-Biel, 2013; Miller & Segal, 2012; Niederle, Segal, & Vesterlund, 2013; Villeval, 2012).

However, competitive behavior might not always be desirable. Some studies relate women's lower preferences for competition to positive consequences for the general economic well-being. Eckel and Fullbrunn (2015) show that increasing the fraction of women traders in the market reduces the magnitude of the speculative price bubbles such as the one causing the financial crisis in 2008. They argue that women's higher risk aversion and lower preferences for competition seem to trigger this result. Charness and Rustichini (2011) relate women's lower willingness to compete with higher cooperative behavior. Furthermore, their research on gender differences in cooperation suggests that females cooperate more often and men cooperate less often when their gender peers observe them. Charness and Rustichini (2011) conclude that men prefer signaling to other men that they are tough, whereas women prefer to show other women that they are cooperative. This result appears to indicate that salient group membership such as gender influences behavior. Similarly, Ackerlof and Kranton (2010) and Cohn, Fehr, and Maréchal (2014) show how identities, and not just economic incentives, shape economic decisions.

Differences in willingness to compete may relate to not only gender differences in social identity or personal traits such as cooperativeness and risk aversion but also to differences in confidence. Kamas and Preston (2012) find that, conditional on ability, self-confidence eliminates gender differences in decisions to enter winner-take-all (WTA) competition. However, this result does not hold for business school students in the Kamas and Preston (2012)'s analysis. Gender differences in willingness to compete persist in business school students even after accounting for risk aversion and confidence. Conversely, women outcompete men in Gneezy et al.'s (2009) study in a matrilineal society. These findings, together with previous literature's results depending on the tasks performed, may indicate that self-confidence plays a role in the willingness to compete. The inclusion of self-confidence in studies on gender differences in competition preferences is important for policy interventions because appropriate education and information may correct lower confidence. Policy interventions devoted to increase

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women's willingness to compete need to take into account the related conditions and behaviors. Consequently, research methods should account for the causal complexity and should study the different paths that could lead to decide entering competition.

Prior studies mainly present laboratory economic experiments and apply econometric models to analyze the main net effects of gender on the willingness to compete. This study aims to analyze the recipes of conditions that relate to competition preferences, including gender, and the different paths that lead to a decision to enter competitive environments. Thus, this study presents a laboratory economic experiment on preferences for competition, and uses a fuzzy-set qualitative comparative analysis (fsQCA) to analyze results. The fsQCA (Ragin, 2000) helps capture complex patterns of causation and shows different combination of conditions that could lead to the outcome.

The findings describe differences in preferences for competition that do not come from the gender alone, but from several combinations of causal conditions. Furthermore, results suggest that experience in competitive sports relates to a higher self-confidence and serves as a path to increase integration in competitive systems. Following this Introduction, Section 2 presents the details of the experimental design. Section 3 presents the method of analysis and reports the results. Section 4 discusses the results and offers some conclusions.

2. Experimental design and procedures

To explore the conditions related to the decision of entering competition, and the gender effect, this study replicates Niederle and Vesterlund's (2007) economic experiment with undergraduate students from economics and business careers. This study experimentally tests subjects' self-confidence and cooperative behavior, measures attitudes toward risk, and records subjects' experience in competitive games and sports. The study further analyzes the results using fsQCA.

The laboratory economic experiment starts, as in Niederle and Vesterlund (2007), with subjects adding sets of five two-digit numbers during 5 min at a piece-rate payment scheme of 0.25 euros per correct addition (round 1 in Task 1). In a second round, subjects repeat the task under a WTA competitive payment scheme: A tournament in groups of four randomly selected subjects (two men and two women) in which only the subject who solves the largest number of correct additions within the group receives a payment (1 euro per correct sum). Subjects in the third round of Task 1 repeat the task and decide which one of these two payment schemes they prefer to apply. Differently from those of Niederle and Vesterlund (2007), subjects do not receive information about the number of their correct additions until the end of the rounds. Before receiving the information, subjects have to answer an incentivized question on their relative performance (within the group of four). The subject's beliefs on their relative performance compared with their actual position within the group measure each subject's self-confidence.

After this task, subjects start a decomposed game to test their cooperative behavior (Brosig, 2002; Liebrand, 1984; McClintock & Liebrand, 1988). Subjects make 24 choices between two "own-other" payoff combinations. Payoffs come from all 24 choice subjects and partners make. Using a standard classification procedure for this technique, subjects classify for this study as cooperative or non-cooperative (Griesinger & Livingston, 1973).

The third task measures attitudes toward risk. Subjects make choices in nine lottery pairs as in Comeig, Jaramillo-Gutiérrez, and Ramírez (2013). The lotteries' design follows Blavatskyy's (2009) test on risk attitudes, which builds on Holt and Laury (2002). At the end of the experiment, subjects answer a social questionnaire that includes questions about experience in competitive videogames and sports; subjects receive the payoffs in cash (19 euros on average) afterwards. Table 1 describes the conditions this research examines and the data from the experiment.

The 104 subjects of the experiment are students from the Economics, Business, Finance and Accounting, and International Business degrees at the University of Valencia (52 men, 52 women). The computerized experiment was run in the fall 2014 at the Laboratory for Research in Experimental Economics (LINEEX). At the beginning of the experiment, the subjects read the instructions and solved their questions. During the experiment, subjects received no feedback on their performance and could not communicate with other subjects. (Instructions are available upon request).

The fsQCA analysis of the experimental data includes only 68 subjects (31 men and 37 women); that is, subjects who were consistent in the risk-attitude elicitation task. Consistent subjects are those with a unique switching point (USP) from the safe option to the risky option. Risk-averse subjects switch to the risky option after the fifth lottery ($I > 5$). Additionally, fsQCA requires the calibration of the condition that proxies individual's ability, the number of correct additions in the piece-rate round (SCOR1). The number of correct sums in round 1 of Task 1 (with the minimum at 0 sums, the maximum at 13 and average at 5.57 correct sums) translates into a five-point scale (0; 0.2; 0.5; 0.8; 1) and three percentiles (0.95; 0.5; and 0.05) of the condition's presence (Ragin, Drass, & Davey, 2009).

This study uses fsQCA to analyze the experimental results because this type of analysis shows the different paths that lead to reach the outcome, not only the main influences, which is especially appropriate to analyze behavior, connections among experiences and behavior, and to inform policy-makers (Woodside, 2013, 2014).

Table 1
Outcome and causal conditions: definition and estimate.

Condition	Definition	Estimate	Mean
Gender (GEN)	Value = 1 for men Value = 0 for women	Binary	0.46
Decision in round 3 of Task 1 (DEC)	Value = 1 for not entering competition (chooses piece-rate payment) Value = 0 for entering competition (chooses WTA tournament)	Binary	0.50
Number of correct sums in round 1, Task 1 (SCOR1)	Number of additions correctly solved in round 1. Controls for subject's ability.	Fuzzy-set calibration	5.57
Overconfidence (OVERCONF)	Value = 1 for those overestimating their position within the group in round 2 Value = 0 otherwise	Binary	0.24
Risk aversion (AVERISK)	Value = 1 for risk-averse subjects Value = 0 otherwise	Binary	0.75
Experience in competitive sports (SPOR)	Value = 1 for subjects with strong experience in competitive sports Value = 0 otherwise	Binary	0.81
Experience in videogames (GAME)	Value = 1 for subjects with strong experience in videogames Value = 0 otherwise	Binary	0.59
Cooperative personality (COOP)	Value = 1 for cooperative subjects Value = 0 otherwise	Binary	0.37

68 subjects (31 men and 37 women). Decision in round 3 acts for the outcome of the FsQCA.