

# Gender Behavioral Issues and Entrepreneurship

Irene Comeig and Marc Lurbe

**Abstract** Women, despite the fact that they make up around 50% of the world's population, own and manage significantly fewer businesses than men worldwide. Previous empirical research indicates that the gender gap in entrepreneurial propensity mainly comes from subjective perceptions as self-confidence in one's own skills and fear of failure, and from women's lower exposure to other entrepreneurs. In this chapter we present laboratory economic experiments that study, under controlled conditions, subjective perceptions of women and men that seem to affect entrepreneurial propensity. The results of the reviewed experiments indicate that correcting factors such as self-confidence is possible (due to its cultural origin) and would reduce differences in entrepreneurial propensity between genders. Specifically, the promotion among women of competitive sports, the emphasis on feminine references in entrepreneurship, and avoiding presenting entrepreneurial information with male stereotyping while reinforcing women stereotyping are recommended ways to help women gain self-confidence in competitive environments, as entrepreneurship. Regarding the other subjective perception that has been found to sustain the gender gap in entrepreneurship propensity, the fear of losses (and/or attitudes towards risk), the reviewed experimental research, still in need of more context-free experiments, similarly suggests cultural changes and education as ways to overcome this gender-gap.

**Keywords** Education • Entrepreneurship • Experimental economics • Gender • Subjective perceptions

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## 1 Introduction

Women, despite the fact that they make up around 50% of the world's population, own and manage significantly fewer businesses than men worldwide (Kim 2007; Coleman and Robb 2012; Koellinger et al. 2013; Cho and Lee 2015)—As a matter of example, women-owned businesses in the US represented “only 3.5% of total sales, 6.4% of total employment, and 4.5% of annual payroll” in 2007 (Coleman and Robb 2012, p. 5). Although significant advances in the status of women entrepreneurs in the developing world during the last 30 years have been made (e.g. Center for Women's Business Research, 2009), there is still substantial scope for further research on the reasons that sustain this gender gap.

The recent empirical evidence on entrepreneurship using data from the Global Entrepreneurship Monitor (GEM) Project (considered the largest global research database in entrepreneurship—Reynolds et al. 2005; Sánchez-Escobedo et al. 2016), shows that subjective perceptual variables account for much of the difference in the entrepreneurial propensity between genders (e.g. Langowitz and Minniti 2007; Koellinger et al. 2011, 2013).

Specifically, Koellinger et al. (2013), using data on 17 countries, shows that the gender gap in entrepreneurial propensity mainly comes from subjective perceptions as self-confidence in one's own skills and fear of failure, and from women's lower exposure to other entrepreneurs, whereas socio-economic variables (as age, education, work status, and household income) only play a small role, probably due to their influence on perceptions. In the same line, Wagner (2007), using data from Regional Entrepreneurship Monitor (REM) Germany 2003 that include information not available from the GEM survey, finds that the fear of failure is important for the explanation of the gender gap in entrepreneurship.

In this chapter we present laboratory economic experiments that study, under controlled conditions, subjective perceptions of women and men that seem to affect entrepreneurial propensity. Laboratory economic experiments are particularly well suited to allow for analyzing subjective perceptions and its causality not only on women entrepreneurial behavior, but also on entrepreneurial behaviors in general. Due to the large quantity of research generated in recent years, this chapter does not attempt to provide a complete literature review, but to identify some underpinnings in the entrepreneurial propensity of women.

Our goal is to provide some insights into the foundations of the observed differences in entrepreneurship propensity across men and women by reviewing experimental research and to suggest ways to overcome this gender gap. The results of the reviewed experiments indicate that correcting factors such as self-confidence is possible (due to its cultural origin) and would reduce differences in entrepreneurial propensity between genders. Specifically, the promotion among women of competitive sports, the emphasis on feminine references in entrepreneurship, and avoiding presenting entrepreneurial information with male stereotyping while reinforcing women stereotyping are recommended ways to help women gain self-confidence in competitive environments as entrepreneurship.

The other subjective perception that has been found to sustain the gender gap in entrepreneurship propensity, the fear of losses (and/or attitudes towards risk), is reviewed in Sect. 3. The reviewed experimental research, still scarce in context-free experiments, suggests cultural changes and education as ways to overcome this gender-gap.

This chapter is organized as follows: Following this introduction, Sect. 2 provides an overview of the experimental research that shows the importance of self-confidence in the decision to entering competitive environments, and provides recommendations for policy interventions to increase women's self-confidence in competitive contexts. Section 3 focuses on experimental results on fear of failure through experiments on attitudes toward downside risk per gender. Section 4 concludes.

## 2 The Role of Self-Confidence

Recent research in the experimental economics literature, trying to provide insights into why we observe a higher fraction of men than women in top-level positions in business, science, or politics and a lower fraction of women in entrepreneurship found that generally men and women differ in propensities to engage in competitive activities (e.g., Gneezy et al. 2003; Gneezy and Rustichini 2004; Croson and Gneezy 2009; Niederle and Vesterlund 2007, 2011; Holm et al. 2013), with women shying away from competition more frequently. A stylized finding in this literature is that men opt to compete more often than women even where women are more able.

Self-confidence or, more precisely, the women's low self-confidence was found to be key for this result. Kamas and Preston (2012), for example, in an analysis with US undergraduate students found that, conditional on ability, self-confidence was the determinant condition in decisions to enter competitive environments, with women being less self-confident. In the same direction, the framed-field experiment on prediction markets presented in Boulu-Reshef et al. (2016) showed that the women's low self-confidence related to a lower trading participation.

Comeig et al. (2016), in an economic experiment with undergraduate students from economics and business careers in Spain, experimentally tested subjects' self-confidence and its relation to the decision of entering competitive environments. They found that women entered competitive environments if they had previous experience in competitive sports. Results showed that experience in competitive sports acts as a substitute for high self-confidence and that self-confidence serves as a path to enter in competitive systems. This result suggests that policy interventions devoted to increase women's experience in competitive sports might raise women's self-confidence and therefore help reduce the gender differences in top-level positions in business, science, or politics, and in the entrepreneurship propensity.

Actually, the research of Gneezy et al. (2009), showed that preferences for competition come from cultural influences (nurture), not from gender nature, and thereby might be changed with policy interventions. Gneezy et al. (2009), trying to understand the role culture plays in gender preferences for competition, analyzed

the competitiveness of the participants of two distinct societies: the Maasai, a patriarchal society in Tanzania, and the Khasi, a matrilineal and matrilocal society in India. Their results showed that, similar to the extant evidence from experiments in Western cultures, Maasai men opted to compete more than Maasai women. However, this result reversed among the Khasi, where women chose the competitive environment more often than Khasi men, and even weakly more often than Maasai men. Women outcompeted men in the matrilineal society.

In line with cultural pressure, Charness and Rustichini (2011) observed how men and women competitive vs. cooperative behavior changed when their same-gender peers observed them. In an experiment with university students from the US, females cooperated more often and men cooperated less frequently when they were observed by their same-gender peers. Charness and Rustichini (2011) concluded that men want to signal to other men that they are tough; whereas women prefer to signal to other women they are cooperative. This result indicates that cultural context (and salient group membership such as gender) influences gender behavior.

As entrepreneurship might be considered, in patriarchal societies, as a male typed career, this stereotype could act as a mechanism to explain gender differences in entrepreneurship propensity. Gupta et al. (2014) analyzed how the contextual influence of stereotype threat actually influences evaluations of new business opportunities. Evaluation of new opportunities has been reported to be an important part of entrepreneurship. They found that while salience of masculine stereotypical information boosted men's opportunity evaluation, when entrepreneurship was linked to feminine stereotypical information the results reversed in favor of women. Their findings suggest it is possible to reduce gender differences in entrepreneurship propensity by presenting appropriate gender stereotypical information. Given that the experiment was run with business students in Turkey and repeated with working professionals in the US, the results seem to hold cross-culturally. In the same direction, the survey analyzed by Leslie et al. (2015) about the gender imbalance in STEM careers and the women's underrepresentation in academia revealed that this imbalance is due to the fact that women are stereotyped as not possessing the necessary talent. They found that cultural stereotypes on expectations of brilliance are behind women's underrepresentation in some scientific disciplines and academic departments.

Overall, the findings reported in this section indicate that self-confidence in one's own skills (and cultural context, as self-confidence reinforcing mechanism) plays an important role in the willingness to enter in competitive environments as entrepreneurship. This result is important for policy interventions because appropriate education and presentation of information may correct women's lower confidence.

Results from controlled experiments suggest several paths to reinforce women's self-confidence: (1) Educating young women by giving them experience in competitive environments as competitive sports; (2) In order to alleviate patriarchal cultural pressure and its consequences on gendered entrepreneurial identity, highlighting feminine references in entrepreneurship; and (3) Avoiding presenting information with male stereotyping while reinforcing women labeling.

### 3 Gender Differences in Fear of Failure

Significant gender differences in fear of failure found in Koellinger et al. (2013) and Wagner (2007) might be due to more pronounced degrees of loss aversion in women, but they could also come from less favorable conditions in equity and/or credit markets for women when trying to get funding, or from less favorable *perceived* conditions.

Actually, some evidence from surveys in different countries show that female entrepreneurs face lower probability of receiving a loan (Cavalluzzo et al. 2002; Muravyev et al. 2009; Welsh et al. 2016), have a smaller amount of start-up capital (Coleman 2000; Verheul and Thurik 2001), and are more likely to receive a smaller loan (Zimmerman and Scot 2006). Other research from surveys, however, highlight the cultural gender bias (cultural attitudes favoring males) as the reason why female entrepreneurs tend to shy away from formal credit markets, even though credit markets are not actively discriminating against women (Zimmerman and Scot 2006; Ongena and Popov 2015).

In spite of the documented less favorable conditions that women face in credit markets, gender differences in fear of failure might come from women’s more pronounced degrees of loss aversion, too. Recent economic experiments have identified some underpinnings that help study gender differences in degrees of loss aversion. Although laboratory economic experiments involving losses are difficult to conduct and, consequently, results may be puzzling, some experimental economics literature regarding attitudes towards risk per gender provides interesting insights.

Comeig et al. (2015) proposes two different risk structures (see Table 1) called downside risk and upside risk, respectively, being the downside risk structure an approach that allows the analysis of loss aversion in the laboratory. As referent dependant approaches (see Thaler 1980), and the Prospect Theory (Kahneman and Tversky 1979; Tversky and Kahneman 1992) show that outcomes are evaluated relative to some relevant reference point (in contrast to conventional economic approaches, as the Expected Utility Theory, in which the possible outcomes of available choice options are valued in absolute terms), downside risk structure may serve to elicit loss aversion. Specifically, Bediou et al. (2013) shows that the loss perception generated by payoffs under the reference point make subjects exhibit loss aversion.

The results of the laboratory economic experiment of Comeig et al. (2015) show that with downside risk (in presence of perceived losses) males tend to select the

**Table 1** Examples of downside risk and upside risk

Option A	Option B
Extreme downside risk	
9 in 10 chances of 664	9 in 10 chances of 547
1 in 10 chances of 25	1 in 10 chances of 275
Extreme upside risk	
9 in 10 chances of 389	9 in 10 chances of 511
1 in 10 chances of 2500	1 in 10 chances of 600

riskier option more often than females in the low stakes scenario, but this significant difference disappears in the high stakes scenario. This result seems to point out to some degree of gender differences in fear of failure; despite the fact this difference is not widespread among situations of high stakes. This result lets the question open to more future research. It is important to highlight that the weak gender difference in perceived loss aversion found come from a context-free canonical form experiment, where cultural references and emotions might be minimized.

In contrast to the previous reviewed research, Comeig et al. (2014) presents a laboratory experiment in the context of credit markets. In this experiment subjects (half women) face a downside risk in the context of a choice between two loan contracts differing in interest rate and collateral requirements. The two contracts have been designed as theoretical incentive-compatible contracts, where the theory predicts that subjects with low risk projects should choose higher collateral at a lower interest rate, while subjects with high risk projects should select contracts without collateral at a higher rate. The key idea is that the cost of choosing collateral is lower for subjects with low risk projects as they have a lower failure probability.

However, if women exhibit more pronounced degrees of loss aversion the self-selection mechanism with collateral will fail. Results from this experiment show that incentive-compatible contracts with collateral fail to classify women, while they successfully classify men. Thus, in this downside risk environment in a context of financing decisions women show a significant higher degree of loss aversion. It is important to highlight that this experiment was conducted in three different European countries (UK, Spain, and Switzerland) showing the same experimental results in each of the three countries.

Table 2 presents an abstract of the results found in literature about gender differences in fear of failure (downside risk). As shown in the Table 2, contextual downside risks lead to more pronounced degrees of loss aversion in women.

Despite gender differences in generally defined risk preferences have seemed prevalent in literature surveys (see Eckel and Grossman 2008; Harrison and Rutström 2008; Croson and Gneezy 2009; Charness and Gneezy 2012; Charness et al. 2013), haven't found to be uniform across measurement methods and contexts (see Holt and Laury 2014; Filippin and Crosetto 2016). For example, Booth and Nolen (2012) report that girls in single-sex schools choose the risky option more often than girls in coeducational schools. In the same line, Nelson (2016) reevaluates empirical work on gender and risk, and concludes that gender differences in risk preferences are overstated in the literature. Probably, separating downside and upside risks, as presented in Table 2, will help clarify the results. The downside risk structure approaches loss aversion elicitation.

Supporting the idea that gender differences in fear of failure (Koellinger et al. 2013; Wagner 2007) might come from more pronounced degrees of loss aversion in women, and also from less favorable conditions (or perceived conditions) in cultural environment, economic experiments on downside risk structures seem to show stronger gender differences when contextualizing experiments.

In order to analyze social and economic factors behind gender behavior towards risk, Gong and Yang (2012) conducted experiments with subjects from two ethnic groups, the matrilineal Mosuo and the patriarchal Yi in China. However, the two

**Table 2** Gender differences in fear of failure (downside risk) in the literature

Study	Type (laboratory experiment or field study)	Context (contextual—specific or context-free)	Gender differences	
			Upside risk (low probability of a high payoff)	Downside risk (low probability of a low payoff)
Comeig et al. (2015)	Laboratory experiment	Context-free (lottery choices) for low and high stakes.	No gender differences	Women weakly more risk averse
Comeig et al. (2014)	Laboratory experiment	Loan choices	N/A	Women more risk averse
Leslie et al. (2015)	Field study	PhD choices	N/A	Women more risk averse
Harrison and Mason (2007)	Field study	Venture capital market (business angel market)	No gender differences	N/A
Fehr-Duda et al. (2006)	Laboratory experiment	Context-free (framed as gambles) and Contextual (framed as insurance and investment decisions)	No gender differences	Women more risk averse
Bliss and Potter (2002)	Field study	Mutual funds management	No gender differences. If any, men more risk averse.	N/A
Holt and Laury (2002)	Laboratory experiment	Context-free: Lottery choices under real and hypothetical scenarios for low payoffs and high payoffs.	No gender differences when payoffs are scaled up (high payoffs) under real scenarios.	No gender differences

risk tests they used to measure risk attitudes per gender represent lotteries of 50% probability of success, thus not allowing for downside risk or upside risks analyses. They find that Mosuo people (matrilineal society) have a significant smaller gender gap in risk preferences. This is consistent with Cárdenas et al. (2012) that compare gender risk attitudes in Colombia and Sweden. They find that girls in Sweden show a small gender gap, while in both Colombia and Sweden girls are more risk averse than boys.

Gneezy et al. (2009) run the same investment risk test used in Gong and Yang (2012) (that does not allow for downside risk analyses) and found no significant gender differences. However, they found a significant ethnicity difference, being the matrilineal Khasi less risk averse.

Overall, the findings reported in this section seem to indicate that cultural context plays a role in the gender differences in fear of failure, which affect

entrepreneurship. This result lets some room for policy interventions through appropriate education.

However, results from preliminary context-free controlled experiments still show some gender differences in fear of failure (through downside risk) that require further research in order to understand if such differences in fear of failure originate from nature too, and not only from nurture (cultural factors).

## 4 Conclusion

Significant advances in the status and number of women entrepreneurs in the developing world have been made during the last 30 years. However, women still own and manage significantly fewer enterprises than men worldwide.

This chapter has presented laboratory economic experiments analyzing, under controlled conditions, subjective perceptions of men and women that seem to affect entrepreneurial propensity. Laboratory economic experiments are exceptionally well suited to allow for examining subjective perceptions. The goal of this review was to identify some underpinnings by providing insights into the foundations of the observed differences in subjective perceptions as self-confidence in one's own skills and fear of failure.

The results of the reviewed experiments suggest that correcting factors such as self-confidence implies helping change culture. Specifically, the promotion among women of competitive sports, highlighting feminine references in entrepreneurship, and avoiding male stereotyped entrepreneurial information while presenting women labeled information are recommended ways to increase women self-confidence in competitive environments as entrepreneurship.

The significant gender differences in fear of failure that seem to push the gender gap in entrepreneurial propensity have been revised too. Despite the fact that results from preliminary context-free economic laboratory experiments show some gender differences in downside risk structures, findings reported in experiments seem to indicate that cultural context plays an important role.

This result lets the door open to policy interventions providing appropriate education and a fair playground for all genders in entrepreneurship matters.

However, more experimental research in downside context-free environments is needed to better understand if gender differences in fear of failure originate in nature too, and not only in cultural factors (nurture).

Another question that remains open is how increasing women's exposure to other entrepreneurs, or to women entrepreneurs, may help reduce the gender gap in entrepreneurship propensity.



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