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Alnamlah, Manar Saleh

*Document Version*
Final published version

*Publication date:*
2021

*License*
Unspecified

*Citation for published version (APA):*
Alnamlah, M. S. (2021). *About Gender Gaps in Entrepreneurial Finance*. Copenhagen Business School [Phd]. PhD Series No. 19.2021

**COPENHAGEN BUSINESS SCHOOL**
SOLBJERG PLADS 3
DK-2000 FREDERIKSBERG
DANMARK

**WWW.CBS.DK**

**ISSN 0906-6934**

**Print ISBN:** **978-87-7568-014-6**
**Online ISBN:** **978-87-7568-015-3**

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Manar Saleh Alnamlah

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CBS PhD School | **PhD Series 19.2021**

CBS COPENHAGEN BUSINESS SCHOOL
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# About Gender Gaps in Entrepreneurial Finance

**Manar Saleh Alnamlah**

**Supervisors:**

Prof. Mirjam van Praag

Assoc. Prof. Orsola Garofalo

Asst. Prof. Ali Mohammadi

CBS PhD School

Department of Strategy and Innovation

Copenhagen Business School

Manar Saleh Alnamlah
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1st edition 2021
PhD Series 19.2021



ISSN 0906-6934

Print ISBN: 978-87-7568-014-6
Online ISBN: 978-87-7568-015-3

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# Acknowledgments

Writing a dissertation is harder than I thought, but it is more rewarding and fulfilling than I had ever imagined. This dissertation would not have been possible without the immense support and assistance of many people who accompanied me throughout the process.

First and foremost, my supervisors, Mirjam van Praag, Orsola Garofalo, and Ali Mohammadi. There are no words that can express the debt of gratitude that I owe you. I would like to thank Mirjam, my main supervisor, for giving me the opportunity to grow as a researcher next to an intelligent and passionate scholar like herself. Her support, guidance, and encouragement have lit up the path and the way forward. I would like to express my heartfelt thanks to Orsola, for gladly stepping in and coming aboard as a supervisor when life happened. I am deeply grateful for her dedication and generosity in sharing her knowledge. She encouraged me to be explorative and many times *experimental*. Without her guidance and invaluable advice, this dissertation would not have been possible. I would also like to thank Ali for advising and supporting me in many ways. Discussions and even random conversations with him are insightful and thought-provoking. I am thankful to him for keeping me curious and leaving me with more questions than answers.

I would like to thank my co-author Christina Gravert (Copenhagen University) for the opportunity to work with her and for many helpful discussions. I wish to extend my special thanks to Aleksandra Gregorič and Lars Bo Jeppesen for their thorough evaluations and their insightful comments during the pre-defense, which were essential to improving this dissertation, as well as to Jordi Brandts (Institut d'Anàlisi Econòmica (CSIC)), and Tom Vanacker (Ghent University) for joining Aleksandra as part of the assessment committee for my final defense.

Many thanks are due to everyone at the Department of Strategy and Innovation (SI). I am especially thankful for Keld Laursen, the head of the department, and Peter Lotz, the former head of the Department of Innovation and Organizational Economics (INO) for their assistance and support. I am also thankful to Hans Christian Kongsted, for his guidance and patience as the PhD coordinator since day one. The assistance provided by Gitte Hornstrup Dahl, Mie Maahr Hegelund, Carolina Majlis Fink, Anja Knudsen, Blazenka Blazevac-Kvistbo and the entire administrative team is greatly appreciated. I would like to express my sincere gratitude to every

faculty member at the department for their eagerness to help and for all the feedback provided during PhD days, especially, Vera Rocha, Lars Bo Jeppesen and Toke Reichstein.

I am fortunate to have shared this journey with brilliant and supportive PhD colleagues. I am immensely grateful to my friends and colleagues in my PhD cohort, Hadar Gafni, Wolf-Hendrik Uhlbach, Louise Lindbjerg, Nathan Rietzler, Sara Vardi, Tiare Brasseur, Agnes Guenther, Alina Grecu, Carolyn Rutherford, and Alison Holm. They have turned a cluster of offices with glass walls, *the PhD Village*, into a safe environment for learning and growing. Each one of you has shown nothing but genuine respect, support, positivity and enthusiasm. I am especially grateful to Hadar for helping, listening, and encouraging me when I most needed it. The world is a better place thanks to people like him who selflessly want to develop others and diversify their taste in music. I am also grateful to the previous PhD cohort, Agnieszka Nowinska, Adrian Merida, Ahmad Barirani, Søren Bering, and especially Diego Zunino and Theo Vladasel for their advice and guidance.

Needless to say, I am grateful to Al Imam Mohammad Ibn Saud Islamic University for funding this PhD. I would also like to acknowledge the financial support of the Mærsk Mc-Kinney Møller Chair of Entrepreneurship at CBS, Jan Wallanders and Tom Hedelius Foundation, and the Tore Browaldhs foundation.

My endless gratitude goes to my parents, Saleh and Wafa, and my brothers, Mohammed and Fahad, for shaping me into the person I am today. No words can express my deepest appreciation for your love, support, and encouragement. My gratitude goes out to my little and only sister, Ghadah, whom I lost during this journey. In her short life, she taught me how to love unconditionally and what joy truly means. It gives me comfort that a soft cloud, just like her, was never born and it never ceases to exist.

Finally, I am immensely grateful to my husband, my love and my everything, Mohammed Almahmood, for all the times during the PhD process that he listened, lent me a shoulder to cry on, encouraged me, and helped me without entitlement or conditions. No words can express my gratitude for his love and the immeasurable joy he brings to my life. His passion for what he does inspires me every single day and life with him and because of him is much more beautiful and exciting.

# Summary

Gender disparity is not only pronounced in the likelihood of entrepreneurship and success but also in venture funding Given that access to capital is one of the detrimental factors in a venture's survival and success, the gender gap in funding potentially contributes to the loss of innovative new ideas and economic growth. The purpose of this dissertation is to help to settle the established debate about the potential relevant mechanisms behind the gender gap in access to financial resources. Using multiple experimental approaches, the three studies that constitute this dissertation intend to advance our understanding of the role that investors' beliefs about female entrepreneurs, entrepreneurs' capital-seeking behavior, and investor-entrepreneur gender dynamics play in driving the observed gap.

The first study examines whether the entrepreneur's gender has an impact on the funding likelihood of male and female venture capital investors and whether the impact is industry-dependent. The study shows that while eliminating any potential systematic differences arising from the capital demand-side (entrepreneur), male investors have the same propensity to proceed to due diligence for female-founded and male-founded ventures. Female investors, on the other hand, exhibit discriminatory behavior in favor of their own gender. Their propensity to proceed to due diligence is higher for female-founded ventures relative to male-founded ones. The findings indicate that the funding gender gap may not be the outcome of biased male investors and that having more female investors could potentially contribute to closing the gap.

The second study examines the impact of competition loss and received attributional feedback on the gender gap in persistence. In competitive domains, women are more likely to drop out after losing a competition compared to men. Since it is difficult to avoid failure in these domains, this study investigates the gender differences in the causal effect of losing a competition and receiving attributional feedback on the subsequent willingness to compete. Provided attributional feedback attributes the competition loss to either bad luck, a lack of effort, or a lack of ability. Using an incentivized, real-effort, laboratory experiment, the study finds no gender differences in persistence after losing a competition. However, it finds significant gender differences in the willingness to compete after losing and receiving attributional feedback that attributes the loss to bad luck or a lack of ability. Relative to men, women are less likely to compete again after losing and receiving feedback that attributes their loss to a lack of ability and more likely to compete when their loss is attributed to bad luck. Men and women compete at a

similar rate when their loss is attributed to a lack of effort. The findings have implications for designing feedback mechanisms that potentially improve women's representation in the labor market.

The third study examines the entrepreneurs' resilience and the investor-entrepreneurs gender dynamics during the fundraising process. Rejection is a central element of the fundraising process and, hence, many entrepreneurs are inevitably confronted by it. This study argues that our understanding of the funding gender gap is incomplete without considering the role played by the entrepreneur's resilience and the investor-entrepreneur gender dynamics during fundraisings. Using a venture competition, the study experimentally examines the effect of the judge's gender and competition loss on entrepreneurs' participation in a subsequent competition. The results suggest that there is no gender difference in resilience after losing. However, male but not female entrepreneurs' resilience is found to be moderated by the judge's gender. Male entrepreneurs who are assigned to female judges are more likely to participate in the subsequent competition after losing. The findings indicate that gender differences in resilience may not contribute to the gender gap in funding while highlighting the potential negative impact of female investors on expanding the gap.

# Resumé

Kønsdiskriminationen indenfor entreprenørskab viser sig ikke alene ved en mindre tilstedeværelse af kvinder, men også ved deres adgang til finansieringsmidler. Da adgang til kapital er en af de afgørende faktorer for et ventures overlevelse og succes, kan kønsbestemte forskelle i finansieringen føre til tab af innovative, nye idéer og økonomisk vækst. Formålet med denne afhandling er at bidrage til at belyse den igangværende diskussion om de mulige relevante mekanismer, der ligger til grund for den kønsbestemte forskel i adgangen til finansieringsmidler. Ved brug af flere eksperimentelle tilgange er formålet med de tre studier, som denne afhandling består af, at fremme vores forståelse for den rolle, som investorers opfattelse af kvindelige entreprenører, entreprenørers adfærd ved kapitalsøgning og kønsdynamikken mellem investor og entreprenørs spiller i den observerede forskel.

Det første studie undersøger, om entreprenørens køn har indflydelse på sandsynligheden for finansiering fra mandlige og kvindelige investorer af venturekapital, og om resultatet er branchebestemt. Studiet viser, at ved eliminering af enhver mulig systematisk forskel fra den kapitalsøgendes side (entreprenøren), så har mandlige investorer samme tilbøjelighed til at gå videre til due diligence for kvindeligt etablerede som for mandligt etablerede ventures. Derimod udviser kvindelige investorer diskriminerende adfærd til fordel for deres eget køn. Deres tilbøjelighed til at gå til due diligence er større for ventures etableret af kvinder end for ventures etableret af mænd. Resultaterne viser, at kønsbestemte forskel i finansieringen ikke nødvendigvis skyldes mandlige investorer mulige kønsmæssige forudindtagethed, og at tilgangen af flere kvindelige investorer kan bidrage til at lukke hullet.

Det andet studie undersøger betydningen af konkurrencetab og dets betydning for den vedvarende kønsskævhed. Indenfor konkurrenceprægede områder er kvinder mere tilbøjelige end mænd til at falde fra efter at have tabt en konkurrence. Da det er vanskeligt ikke at begå fejl indenfor dette emne, så undersøger dette studie kønsforskellene i den årsagsbestemte virkning efter at have tabt en konkurrence og have modtaget kritisk feedback på den efterfølgende villighed til at konkurrere igen. Ved at give kritisk feedback beskrives tabet i konkurrencen som enten sort uheld, manglende indsats eller manglende evner. Ved at bruge et motivationsskabende og reelt indsatsbaseret laboratorieforsøg viser studiet ingen kønsforskelle i udholdenhed efter at have tabt en konkurrence. Det viser dog markante kønsforskelle med hensyn til villighed til at konkurrere igen efter at have tabt og fået kritisk feedback, når det tilskrives sort uheld eller manglende evner.

I forhold til mænd er kvinder mindre tilbøjelige til at konkurrere igen efter at have tabt og fået en feedback, som forklarer deres tab som manglende evner, og mere tilbøjelige til at konkurrere igen, når deres tab tilskrives sort uheld. Mænd og kvinder er i lige tilbøjelige til konkurrere igen, når deres tab tilskrives manglende indsats. Resultaterne har betydning for udformningen af feedbackmekanismer, som potentielt kan forbedre kvinders repræsentation på arbejdsmarkedet.

Det tredje studie undersøger, hvordan investorers køn påvirker entreprenørernes modstandsdygtighed i løbet af finansieringsprocessen. Afvisning er en central del af finansierings¬processen, og derfor bliver mange entreprenører uundgåeligt konfronteret med den. Dette studie hævder, at vores forståelse af kønsforskelle i finansiering ikke er komplet, hvis ikke der tages hensyn til den betydning, som entreprenørens modstandsdygtighed og kønsdynamikken mellem investor og entreprenør i finansieringsprocessen har. Ved brug af en venturekonkurrence undersøger studiet eksperimentelt betydningen af dommerens køn og konkurrencetab ved entreprenørers deltagelse i en efterfølgende konkurrence. Resultaterne viser, at der ikke er nogen kønsforskel i modstandsdygtigheden efter et konkurrencetab. Imidlertid kan man se, at mandlige, men ikke kvindelige, entreprenørers modstandsdygtighed bliver modereret af dommerens køn. Mandlige entreprenører, som tildeles kvindelige dommere, er mere tilbøjelige til at deltage i den efterfølgende konkurrence efter at have tabt. Resultaterne indikerer, at kønsforskellen i modstandsdygtighed formentlig ikke bidrager til forståelse af de kønsbestemte forskelle i finansiering, men de fremhæver derimod den potentielle, negative indflydelse som kvindelige investorer har på at gøre forskellen større.

# Contents

# Chapter 1

# Introduction

For women, the likelihood of entrepreneurship and success as such still is much lower than it is for men. This gender disparity has been widely observed in practice and much studied by entrepreneurship scholars. One domain in which this disparity is pronounced too is in women's access to financial resources from, e.g., venture capital or banks (Brush, Greene, Balachandra, & Davis, 2014; Ewens & Townsend, 2019; Gompers & Wang, 2017; Guzman & Kacperczyk, 2019). According to PitchBook[1], female-founded ventures in the U.S. raised less than 3% of the overall venture capital invested in 2019 (PitchBook, 2019). Moreover, on average, approved loans for female-owned businesses in 2018 account for 25% of approved applications and the received loans are smaller by 31% compared to male-founded businesses.[2]

The phenomenon of gender disparity in entrepreneurs' access to financial resources has been well documented and investigated in the literature. Nevertheless, scholars' continued interest and their steady contribution to the literature highlight the persistence of the phenomenon and the dispute over the underlying mechanisms argued to potentially explain the gap. This dissertation intends to contribute to the established literature on the gender gap in entrepreneurial finance by examining potential relevant mechanisms on both the supply and demand side of the capital. Studying this gender gap is of critical importance due to its strategic and consequential impact on the future of entrepreneurship and innovation landscape. Given that access to financial resources predicts a venture's survival and success (Aldrich & Ruef, 2006; Shane & Stuart, 2002), the gender gap in funding contributes to the gender gap in entrepreneurship and potentially innovation. Due to constrained access to external capital, new business ideas and developed technologies by female entrepreneurs may have a lower chance to survive and get commercialized (Kerr, Nanda, & Rhodes-Kropf, 2014).

The gender gap debate in entrepreneurial finance can be outlined by two prominent streams of research. On the one hand, a stream of research argues that the capital demand-side is

[1] PitchBook is a financial data and software company. http://www.pitchbook.com

[2] https://www.biz2credit.com/research-reports/as-revenue-of-women-owner-businesses-rose-credit-scores-dropped-in-2018

potentially contributing to the gender gap in entrepreneurs' access to external capital (Balachandra, Briggs, Eddleston, & Brush, 2019; Coleman & Robb, 2009; Ewens & Townsend, 2019; Gompers & Wang, 2017). Scholars provide evidence of female-specific structural factors and preferences on both the entrepreneur and venture levels. Women are found to rely more on their personal savings and family to fund their ventures as opposed to pursuing external capital (Coleman & Robb, 2009; Cowling, Marlow, & Liu, 2020; Hebert, 2020). Compared to males, female entrepreneurs are less likely to apply for a bank loan (de Andrés, Gimeno, & de Cabo, 2020). When pursuing external capital from early-stage investors, female entrepreneurs, on average, set fundraising goals that are approximately 23% lower than male entrepreneurs (Ewens & Townsend, 2019). In a market where capital is scarce and rejection is frequent, female entrepreneurs are less likely to relaunch a failed crowdfunding campaign, and when they do they take longer time between campaigns (Greenberg, Kuppuswamy, & Mollick, 2019). Moreover, evidence from a venture competition suggests that networking frictions between male and female entrepreneurs may contribute to the gender gap with regard to access to venture capital (Howell & Nanda, 2019). Female entrepreneurs are less likely to benefit from exposure to VCs due to their lower likelihood to proactively network and reach out to investors after the competition. According to Guzman & Kacperczyk (2019), women are less likely to found ventures with high growth orientation and to establish ventures in industries associated with venture capital, such as IT or biotechnology. They claim that this systematic growth and industry sorting explains the majority of the observed gender gap in high-growth entrepreneurship.

Other scholars argue in another stream of research that the gender gap in entrepreneurship cannot be entirely explained by the capital demand-side and highlight the potential role of bias on the capital supply side (Brooks, Huang, Kearney, & Murray, 2014; Ewens & Townsend, 2019; Gompers & Wang, 2017). They argue that, all else being equal, female entrepreneurs' disadvantage in accessing capital is the outcome of differential treatment by capital-supply decision-makers. That includes venture capitalists, angel investors, and judges in venture competitions. In venture competitions with panels of angel investor judges, female entrepreneurs are found to be significantly less likely to win compared to their male peers (Brooks et al., 2014). Moreover, male angel investors on AngelList, a platform that connects entrepreneurs with prospective angel investors, are found to show significantly less interest and invest less capital in female entrepreneurs compared to observably similar male entrepreneurs (Ewens & Townsend, 2019). The exhibited differential treatment of female entrepreneurs is not exclusive to the decision to fund; it also encompasses entrepreneur-investor interactions during the pursuit of capital.

Pitches presented by women receive different types of questions and are less favored compared to ones presented by men (Brooks et al., 2014; Kanze, Huang, Conley, & Tory Higgins, 2018). Moreover, all-female teams that present pitches to high-ranked accelerators have been found to be more heavily judged based on their delivery and appearance (Hu & Ma, 2020). These all-female teams are penalized due to incongruity with gender stereotypes. Hu and Ma (2020) also show that for pitches presented by mixed-gender teams, women are ignored and overlooked despite their speaking for, on average, a similar duration to men. Female entrepreneurs also face constraints when seeking bank credit. Recently, de Andrés, Gimeno and de Cabo (2020) exploited an interesting dataset that included all requested and granted bank loans in Spain over a period of 10 years. They show that conditional on applying, female entrepreneurs are less likely to be approved for a loan in their founding year compared to their male counterparts.

However, evidence from the capital supply-side is not conclusive regarding the nature of investors' differential treatment and its underlying mechanisms. According to Balachandra et al. (2019), investors react negatively to the display of feminine-stereotyped behaviors during a pitch. They show investors penalized both male and female entrepreneurs for displaying feminine-stereotyped behaviors. The penalty is claimed to be driven by the incongruity between feminine-stereotyped behavior and the stereotypically masculine characteristics of the successful entrepreneur (Balachandra et al., 2019; Buttner & Rosen, 1989). Based on empirical evidence, Hebert (2020) claims that although the gender gap in equity funding persists in male-dominated sectors, in female-dominated sectors women are no longer at a disadvantage. Female entrepreneurs operating within female-dominated sectors are more likely to raise external equity relative to male entrepreneurs. Challenging the entire notion of gender bias against female entrepreneurs, Gornall and Strebulaev (2020) provide experimental evidence that suggests that investors are more likely to reply to cold pitches (via email) received from female entrepreneurs compared to identical cold pitches received by male entrepreneurs.

Drawing on the economics literature, many scholars attribute investors' differential treatment to discrimination and use existing models of discrimination to explain its underlying mechanisms. Typically, discrimination is classified into the following two types: taste-based discrimination (Becker, 1957) and statistical discrimination (Arrow, 1973; Phelps, 1972). Taste-based discrimination would involve investors acting *irrationally* by rejecting or funding female entrepreneurs' ventures based on their gender preferences rather than investment's financial feasibility. In contrast, statistical discrimination would involve investors acting *rationally* by rejecting or funding female entrepreneurs' ventures based on their accurate beliefs about the

females' average entrepreneurial competence, growth potentials, and the financial feasibility of the ventures. Recently, a new type of discrimination, *Inaccurate statistical discrimination*, has emerged to address the assumption of belief accuracy in statistical discrimination (Bohren, Haggag, Imas, & Pope, 2019). Inaccurate statistical discrimination would involve investors rejecting or funding female entrepreneurs' ventures based on their inaccurate, but perceived to be accurate, beliefs and stereotypes. As a result, investors would perceive their irrational action of dismissing or seizing the investment opportunity as being rational. For instance, investors are less likely to fund female entrepreneurs operating in male-dominated industries, while they are more likely to fund female entrepreneurs operating in female-dominated industries due to their context-dependent and likely inaccurate stereotypes (Bordalo, Coffman, Gennaioli, & Shleifer, 2019; Hebert, 2020).

To help settle the ongoing debate about the gender gap in terms of access to financial resources, this dissertation examines potential underlying mechanisms on the capital supply-side, capital demand-side, and their interaction. On one hand, the dissertation empirically examines investors for potential gender disparities in preferences and beliefs about female entrepreneurs during the fundraising process and the role these disparities play in driving the gender gap in funding. On the other hand, it examines entrepreneurs for potential gender disparities in capital-seeking behavior and persistence in the fundraising process and the role these disparities play in driving the gender gap. The dissertation also addresses the interaction of the supply and demand capital side by investigating the investor-entrepreneur gender dynamics and their potential contribution to the documented gender gap in funding.

**Dissertation Structure**

The dissertation consists of three independent studies. In each study, a different research question is explored. Although the research questions are tackled from an empirical perspective, I draw on theories of discrimination, similarity attraction, and attribution to identify potential underlying mechanisms that explain the findings. Methodologically, the dissertation provides casual evidence relying on experimental approaches. The applied experimental approaches allow the dissertation to draw causal inferences while overcoming some methodological shortcomings in observational data. Such as the underlying assumption in observation data that all entrepreneurs seek to raise external capital and the lack of data on the failed fundraising attempts, previous rejections, and rejecter. Moreover, experimental approaches enable the dissertation to recruit and observe representative samples of male and female entrepreneurs. Lastly, it is challenging to

investigate female investors using observational data due to the insufficient number of female investors to obtain statistically meaningful results.

Table 1.1 provides an overview of the dissertation chapters and is followed by a summary of each of the three chapters. In chapter 2, I examine the impact of an entrepreneur's gender on male and female venture capital investors' likelihood of funding. Using a lab-in-the-field experiment, I separate and test for gender preferences and stereotypes among investors while eliminating any systematic gender differences between male and female entrepreneurs.

**Table 1.1 Overview of the Dissertation Chapters**

| | **Title** | **Research Question** | **Unite of Analysis** | **Method and Data** |
|---|---|---|---|---|
| **Chapter 2** | Is the Gender Gap in Venture Funding Driven by Biased Male Investors? Evidence from a Lab-in-the-field Experiment | Are female entrepreneurs less likely to secure venture capital because of their gender? If so, is their disadvantage industry-dependent? | Investors (capital supply) | Lab-in-the-field experiment (Gneezy & Imas, 2017)<br><br>Venture evaluations of 118 UK-based investors with past investment experience in either angel syndicate, private equity fund, or venture capital fund. Recruited via Prolific.co |
| **Chapter 3** | She Couldn't Agree More: The Role of Failure Attribution in Shaping the Gender Gap in Competition Persistence | Does receiving negative attributional feedback after losing a competition causally affect the willingness to compete again? If so, does the effect vary by gender? | Entrepreneurs (capital demand) | Laboratory experiment (Niederle & Vesterlund, 2007)<br><br>Real effort tournaments entry of 667 students from all faculties at the University of Hamburg and University College London. |
| **Chapter 4** | Gender Dynamics and Entrepreneurs' Resilience in Venture Funding | Are there gender differences in entrepreneurs' resilience while seeking to secure external capital? And how the entrepreneurs' resilience influenced by the gender of investors? | Entrepreneurs (capital demand) and investors (capital supply) | Lab-in-the-field experiment (Gneezy & Imas, 2017)<br><br>Venture competition participation of 403 UK-based active entrepreneurs who currently own and manage a business venture. Recruited via Prolific.co |

In Chapter 3, based on a paper co-authored by Christina Gravert (University of Copenhagen), we examine the impact of competition loss and its causal attributions on the gender

differences in persistence. We conducted a laboratory experiment to investigate whether a gender difference in attributing failure to one of the three causal attributions – luck, effort, and ability – explains a possible gender difference in persistence.

Lastly, in Chapter 4, based on a joint paper with Orsola Garofalo (Copenhagen Business School), Ali Mohammadi (Copenhagen Business School), and Christina Rott (Vrije Universiteit Amsterdam), we examine entrepreneurs' resilience and the investor-entrepreneurs gender dynamics during the fundraising process. We experimentally examine whether there is a gender difference in entrepreneurs' resilience while seeking to secure external capital and whether entrepreneurs' resilience is influenced by the gender of the investor.

**Chapter 2: Is the Gender Gap in Venture Funding Driven by Biased Male Investors? Evidence from a Lab-in-the-field Experiment**

In high-growth entrepreneurship, female entrepreneurs represent less than 10 percent of all entrepreneurs (Gompers & Wang, 2017). Not only are they in the minority in terms of representation, but also with regard to their share of venture capital. Female-founded ventures received less than 3 percent of the total capital invested in 2019 (PitchBook, 2019). The lack of gender diversity in the industry extends to its gatekeepers with more than 90% of venture capitalists being men (Gompers & Wang, 2017). Male investors' dominance of VC investment decisions highlights the significance of their investment behavior and preferences. Thus, this study separately examines the propensity of male and female investors to fund female entrepreneurs compared to male entrepreneurs. Moreover, the study investigates whether investors' treatment of female entrepreneurs is industry-dependent moderated by the industry's gender composition. By investigating investors' preferences and beliefs about female entrepreneurs, this study aims to increase understanding of the phenomenon and, as a result, the efficiency of policy interventions.

A large body of research suggests that the observed gender disparity in entrepreneurial finance is driven by the capital supply-side. Investors are claimed to treat female entrepreneurs differently and less favorably than male entrepreneurs during the fundraising process. Pitches presented by women are penalized and are less favored compared to identical pitches presented by males (Brooks et al., 2014). Moreover, women are asked different types of questions when pitching their ventures compared to male entrepreneurs (Kanze et al., 2018). Recently, Ewens and Townsend (2019) show that male angel investors are less interested in and are less likely to fund female-founded ventures.

Several scholars explain investors' differential treatment of female entrepreneurs using the existing models of discrimination. A possible underlying mechanism driving investors' discrimination against females is the gender preferences (taste-based discrimination, Becker, 1957) of men, who are the predominant investors in the industry. Accordingly, investors would irrationally dismiss an opportunity to fund a female-led venture based on their taste that favors male over female entrepreneurs rather than the financial feasibility of the funding deal. A related possible underlying mechanism is that male investors may hold inaccurate or stereotypical beliefs about females as entrepreneurs (inaccurate beliefs, Bohren et al., 2019). As a consequence, they irrationally dismiss an opportunity to fund a female-led venture based on their inaccurate beliefs, which they perceive to be accurate. In contrast, other scholars argue that investors' differential treatment of female entrepreneurs is explained by systematic differences between male-founded and female-founded ventures (statistical discrimination (Arrow, 1973; Phelps, 1972). Therefore, investors rationally dismiss an opportunity to fund a female-led venture based on a lack of financial feasibility (e.g., females are less likely to sort into ventures with high growth potential).

In this paper, I conducted an experiment designed to examine the potential underlying mechanisms of discrimination and offer causal evidence while eliminating confounding factors. Through the initial screening and evaluation process of a startup summary, I distinguish and test for taste-based discrimination (Becker, 1957) and inaccurate statistical discrimination (Bohren et al., 2019), while controlling for potential statistical discrimination based on accurate beliefs (Arrow, 1973; Phelps, 1972). In the experiment, I separately examine male and female investors' propensity to proceed to due diligence after screening identical ventures, which are once presented once as male-founded and the other as female-founded. Furthermore, I examine entrepreneurs' perceived competence to determine whether investors exhibit any discriminatory behavior against female entrepreneurs during the screening process.

Experimental evidence shows that male investors display no gender discrimination in the form of gender preferences and/or inaccurate beliefs against female entrepreneurs. Their willingness to proceed to due diligence after evaluating female-founded ventures is similar to their willingness after evaluating male-founded ventures. In contrast, the experimental analysis suggests that female investors display discriminatory behavior in favor of their own gender in that they are more likely to proceed to due diligence when evaluating female-founded ventures. Their systematic preference for female entrepreneurs is driven by their gender preferences and/or inaccurate beliefs about females. Taken together, our findings suggest that female entrepreneurs are not at a disadvantage when evaluated by male investors due to their gender. Moreover,

increasing the number of female investors might increase females' share of the venture capital invested and positively contribute to closing the gap.

## Chapter 3: She Couldn't Agree More: The Role of Failure Attribution in Shaping the Gender Gap in Competition Persistence

To date, women remain underrepresented in competitive and high-reward fields such as corporate senior leadership, STEM jobs, innovation, and entrepreneurship. Besides gender differences in terms of human capital and discrimination, the literature has documented gender differences in entry into competition (e.g., Croson & Gneezy, 2009; Niederle & Vesterlund, 2007, 2011). According to Buser, Niederle, & Oosterbeek (2014), women's lower preference for competition partly explains the gender gap in career choice and labor market participation including entrepreneurship. Nevertheless, the emergence of empirical evidence suggesting that women are more likely to drop out of a competition after a loss or rejection has brought into light the role of gender differences in preferences for competition beyond the entry point.

Failure is a core element in these competitive and high-reward fields. Entrepreneurs commonly experience many failed fundraising attempts before successfully securing the needed external capital (Fried & Hisrich, 1994; Gompers, Gornall, Kaplan, & Strebulaev, 2020). Patent applicants appeal rejections and negotiate patent rights before finally being awarded a patent (Aneja, Reshef, & Subramani, 2020; Jensen, Kovács, & Sorenson, 2018). While it is difficult to avoid failure in these competitive fields, it is crucial to withstand these setbacks to be able to survive and succeed. This dynamic raises questions about differences in terms of willingness to compete again after failure between women and men who initially self-select into competition. In this chapter, we examine the impact of competition loss and its causal attributions on the gender differences in persistence.

The literature has empirically addressed the gender gap in persistence after failure across different competitive fields and in the lab. In entrepreneurship, female entrepreneurs are less likely to re-enter into entrepreneurship after their business failure and they are less likely to relaunch a failed crowdfunding campaign (Greenberg et al., 2019; Simmons, Wiklund, Levie, Bradley, & Sunny, 2019). Similarly, in senior leadership recruitment, women are less likely to consider a senior executive role offered by a firm that has previously rejected them (Brands & Fernandez-Mateo, 2017). The experimental economics literature has examined women's persistence after losing a competition. In a lab experiment and using field data from a math Olympiad, women are found to be less likely to compete again after losing (Buser & Yuan, 2019). Moreover, women are

found to be more likely to attribute failure to a lack of ability while men are more likely to attribute it to bad luck (Shastry, Shurchkov, & Xia, 2020).

In this chapter, we conducted an incentivized laboratory experiment to test the causal effect of receiving attributional feedback that attributes competition loss to bad luck, a lack of effort, or a lack of ability on the subsequent willingness to compete and, if so, whether the effect varies by gender. The experiment is designed to have two rounds and subjects earn money based on their performance in a real effort task of adding up sets of five two-digit numbers. In each round, subjects choose their compensation scheme, which is either to receive a piece-rate payment or enter a winner-takes-all competition. At the end of round one, a hypothetical or an actual (depending on the compensation scheme) win or loss is determined based on the subject's performance compared to a randomly matched opponent. Subjects then choose their compensation scheme for the next round. They decide whether they want to compete again or work for a piece-rate compensation in the following round.

The results confirm the previously documented negative effect of losing and receiving performance feedback, which involves receiving feedback about absolute and relative performance, on the subsequent willingness to compete again. However, in contrast with previous evidence presented in the literature, we do not find gender differences in persistence after losing a competition. Men and women compete again at a similar rate after losing. When examining the causal effects of attributional feedback on men and women's persistence in competition, we find no gender difference when the competition loss is attributed to a lack of effort. However, when the competition loss is attributed to bad luck or a lack of ability, we find significant gender differences in the subsequent willingness to compete. Compared to men, women are less likely to compete after losing when their loss is attributed to a lack of ability, but they are more likely to compete when it is attributed to bad luck. The findings emphasize the important role attributional feedback plays in shaping the gender gap in competitive domains. Moreover, they improve our understanding of women's reaction to negative feedback, which may have implications for designing enhanced feedback mechanisms that reduce the drop-out rate and, thus, close the gender gap in competitive environments.

**Chapter 4: Gender Dynamics and Entrepreneurs' Resilience in Venture Funding**

The considerable attention that has been given to the issue of the gender gap in entrepreneurship entry and funding has highlighted the remarkably high rejection rates during the fundraising process. On average, venture capital firms only fund 1% of considered proposals

(Gompers et al., 2020). Furthermore, respected startup accelerators such as Y Combinator (YC) and Techstars accept, at most, 3% of received applications.[3] Thus, attempting to secure financial resources and getting rejected in the process are necessary and inevitable challenges encountered by many entrepreneurs.

The interest in understanding and closing the gender gap in entrepreneurs' access to capital has also highlighted the enormous gender gap among investors. Male venture capitalists account for more than 90% of all investors and it has been suggested that they are biased against female entrepreneurs (Ewens & Townsend, 2019; Gompers & Wang, 2017). To achieve gender diversity both on the capital demand and supply side, initiatives have been created to support and encourage female investors to participate in the venture capital industry and to invest in female-led ventures (e.g., Kaden, 2019). A number of venture capital funds such as Golden Seeds and Female Founders Fund have been established by women investors and invest exclusively in female entrepreneurs.

Given the high rejection rate with regard to funding and the calls to increase female investors' share of the industry, this chapter argues that our understanding of the gender gap in funding is potentially incomplete if we do not consider the role that entrepreneurs' resilience and investor-entrepreneur gender dynamics play during the fundraising process. Thus, this examines whether there is a gender difference in entrepreneurs' resilience while seeking to secure financial resources and whether entrepreneurs' resilience is influenced by the gender of the investor.

Theories in the literature are inconsistent about the gender differences in response to rejection and loss. In patenting, data from the United States Patent and Trademark Office (USPTO) shows that female-led teams are less likely to appeal and continue the patent process after common initial rejections (Aneja et al., 2020). This gender difference in inventors' response to rejection is found to explain almost half of the gender gap in the awarded patents. In corporate senior leadership, the gender differences in applicants' responses to executive recruitment rejections have been investigated in the field and experimentally (Brands & Fernandez-Mateo, 2017). The study shows that women are less likely to consider an executive job offered by a firm that has rejected them previously. In contrast, in politics, data on state and local elections in the United States since the 1950s suggests that electoral candidates who lose are less likely to run again. However, women candidates are not affected differently by the electoral losses than men

[3] https://www.forbes.com//sites/paulinaguditch/2017/05/30/get-into-a-top-startup-accelerator/?sh=5ecbdbd7725f

and are, thus, not less likely to persist in politics after losing (Bernhard & De Benedictis-Kessner, 2020).

In entrepreneurship, rejection is a central element in the fundraising process, although it is not exclusively driven by a venture's financial feasibility (Fried & Hisrich, 1994; Gompers et al., 2020; Petty & Gruber, 2011). Stage focus, industry focus, geographical focus, fund availability, and/or time constraints on the investor's side do play an important role in funding decisions. To our knowledge, responses to rejection have only been studied in reward-based crowdfunding. An analysis of thousands of failed projects on a crowdfunding platform (Kickstarter) shows that women are less likely to relaunch their crowdfunding campaign after failing at their first attempt (Greenberg et al., 2019). Several other scholars have examined entrepreneurs' responses to another and related disappointing outcome, i.e., business failure. Compared to male entrepreneurs, female entrepreneurs are less likely to (re-)enter into entrepreneurship after a business failure (Simmons et al., 2019). Few studies have investigated the role of resilience, i.e., an entrepreneur's ability to "bounce back" from a negative experience (J. H. Block & Block, 1980; J. Block & Kremen, 1996; Carver, 2010; Lazarus, 1993), in entrepreneurship. It has been claimed that resilience predicts entrepreneurial intentions in adverse conditions such as war and is linked to entrepreneurial success (Bullough, Renko, & Myatt, 2014a; Fisher, Maritz, & Lobo, 2016).

Female investors are encouraged to support and invest in female-led ventures. Nevertheless, the literature on female investment preferences and the relative success of this form of gendered investment policy in closing the gender gap in funding is very limited. An analysis of a longitudinal database of angel groups suggests that gender-diverse groups, in which females are not in the majority, have a lower likelihood of investment (Becker-Blease & Sohl, 2011)(Becker-Blease & Sohl, 2011). Increasing the proportion of women in venture capital firms and accelerator programs has been found to attract more proposals from female entrepreneurs (Brush, Carter, Gatewood, Greene, & Hart, 2004; Dutt & Kaplan, 2020). Ewens and Towsnend (2019) find weak evidence of a bias in favor of female entrepreneurs among early-stage female investors. They claim that increasing the number of female investors would partially offset men's bias and reduce the funding gap.

We launched a two-stage venture competition with a significant monetary prize to experimentally examine the effect of the judge's gender in the first stage on the participation of entrepreneurs in the second stage. Our experimental design enables us to isolate the causal mechanisms for entrepreneurs' responses to loss in the first stage. In the second stage, we are able

to observe the resilience of entrepreneurs. Furthermore, we randomly assign and observe the effect of the gender of the judge/investor. Lastly, to control for the possibility that the competition losses are caused by gender-biased assessments, the assessment process is designed to be gender-blind.

We find no gender differences in entrepreneurs' resilience after losing a competition. The likelihood of participating in a second competition after losing is similar for both female and male entrepreneurs. Interestingly, we find that entrepreneurs' resilience is moderated by the judge's gender for male but not female entrepreneurs. In our sample, being assigned to a female judge only increases male entrepreneurs' participation in the second competition. We also find evidence of statistical discrimination among our judges. In a gender-blind assessment process, both male and female judges assigned significantly lower scores to female-owned ventures compared to male-owned ones. The findings indicate that the gender gap in funding may not be driven by differences in resilience between male and female entrepreneurs. Moreover, the findings highlight the potential adverse effect of having more female investors on the existing gender gap. Increasing the number of female investors in the industry would probably only improve the resilience of male entrepreneurs, which would widen the gender gap in the entrepreneurial finance market.

**Intended Contributions**

By investigating potential underlying mechanisms driving the documented gender gap in entrepreneurial finance, this dissertation contributes to several strands of literature. The dissertation contributes to the literature on entrepreneurship and gender by helping to settle the debate of whether the gender gap in funding is investor-driven or entrepreneur-driven (Coleman & Robb, 2009; Ewens & Townsend, 2019; Guzman & Kacperczyk, 2019). First, the dissertation advances our understanding of the capital supply-side role in shaping the gender gap in funding by investigating funding behavior and gender preferences of male investors. Male investors are widely claimed to discriminate against and underfund female entrepreneurs due to their pre-existing gender preferences and stereotypes (Ewens & Townsend, 2019; Hebert, 2020). As men investors dominate the industry, their bias is argued to be driving female entrepreneurs' disadvantage in securing external capital (Gompers & Wang, 2017). Based on a unique experimental design that eliminates any potential explanations arising from the capital demand-side (entrepreneurs), the dissertation finds no evidence of any discriminatory behavior against female entrepreneurs among male investors. Second, this dissertation mirrors the growing interest in the literature concerning the potential role of female investors on the capital supply-side in closing the gender gap (e.g., Gompers, Mukharlyamov, Weisburst, & Xuan, 2021; Ewens &

Townsend, 2019; Raina, 2019; Gompers & Wang, 2017). The dissertation advances our understanding of female investors' behavior and gender preferences by presenting evidence of positive discrimination among female investors. Female investors systematically discriminate in favor of their gender. Female investor's positive discrimination in favor of female entrepreneurs as a result of their gender preferences for women. Third, the dissertation advances our understanding of the effect of the interaction between the capital supply and demand sides on the gender gap in funding. This dissertation highlights and explores the potential effect of investor-entrepreneur gender dynamics from the entrepreneurs' perspective in explaining female entrepreneurs' contained access to external capital. Experimental evidence presented in this dissertation suggests that female investors do not have a significant influence on female entrepreneurs' capital-seeking behavior while their presence significantly encourages male entrepreneurs to seek external capital.

By investigating the gender difference in persistence after losing a competition, the dissertation builds on and extends the literature on the gender gap in preference for competition (e.g., Croson & Gneezy, 2009; Niederle & Vesterlund, 2007, 2011). The dissertation contributes to this literature by distinguishing between gender differences in preferences for competition entry and persistence. It presents evidence that men and women have the same likelihood to persist after losing a competition, the dissertation contributes to the literature by distinguishing between the gender gap in competition entry behaviors and persistence. Furthermore, the dissertation speaks to the established performance feedback literature and attribution literature by examining the effects of different types of feedback on belief updating and persistence after losing. Besides, the dissertation contributes to the literature on the gender gap in the labor market by improving our understanding of gender differences in competitive environments, which may allow us to design better policies that aim to achieve gender equality in labor participation.

More broadly, The dissertation contributes to the growing literature on the drivers and implications of gender diversity in the labor market (Fernandez-mateo & Rubineau, 2019; Gompers & Wang, 2017; Hoogendoorn, Oosterbeek, & Van Praag, 2013; Lyngsie & Foss, 2017; Solal & Snellman, 2019). We highlight the role feedback plays in shaping women's representation in the economy. We show that improved feedback mechanisms have a significant impact on women's persistence after losing a competition. Providing attributional feedback that emphasizes the role of a lack of effort or bad luck rather than a lack of ability in women's failure mitigates the gender gap in the drop-out rate. Thus, improving women's persistence would possibly advance gender diversity in the labor market.

Overall, the dissertation sheds light on the potential role of statistical discrimination and systematic gender differences among entrepreneurs as opposed to male investor's bias in driving the gender gap in the entrepreneurial finance market. Moreover, the dissertation questions the well-intentioned calls to increase female investors' participation in the industry in an effort to reduce the gender gap in funding. Presented evidence suggests that increasing the number of female investors may contribute to the increase in female entrepreneurs' access to capital, but it would also encourage male, but not female, entrepreneurs' persistence during the fundraising process. Highlighting both the potential side effect of increasing female investors on the gender gap and the inconsistent response to gender among investors and entrepreneurs opens up considerable opportunities for future research, which would positively contribute to the design of more effective policy interventions.

Chapter 2

# Is the Gender Gap in Venture Funding Driven by Biased Male Investors? Evidence from a Lab-in-the-field Experiment

**Manar Alnamlah**

Department of Strategy and Innovation

Copenhagen Business School

## 2.1 Introduction

Without doubt, the venture capital industry lacks gender diversity. It has been and still is very much a "boys' club" with more than 90 percent of its senior venture capitalists being men (Gompers & Wang, 2017). On the entrepreneur-level, women are significantly in the minority in terms of representation and access to capital. In 2019, start-ups with all-female founders receive less than 3 percent of the capital invested (PitchBook, 2019). Access to venture capital is crucial to the growth and success of high-growth startups. Subsequently, the gender disparity in venture funding may operate to the loss of new ideas, technologies, and economic growth if it is not the outcome of rational investment decisions (Shane & Stuart, 2002; Wong, Ho, & Autio, 2005). Moreover, this disparity in an industry dominated by male investors may alter the nature of innovation and the ideas that are commercialized and developed (Kerr et al., 2014).

In this study, I examine whether female entrepreneurs are less likely to secure venture capital compared to male entrepreneurs and, if so, whether the disadvantage is industry-dependent. Given that venture capitalists are predominantly men, the investment behavior and preferences of male investors become more consequential for entrepreneurs' likelihood of funding. Thus, this study investigates whether male investors and whether female investors are biased against female entrepreneurs during the screening stage of the fundraising process. By unfolding investors' beliefs about female entrepreneurs, this study aims to increase understanding of the phenomenon and, as a result, the efficiency of policy interventions.

The issue of gender disparity in venture capital funding is well documented and investigated in the literature (for a review, see Drover, Busenitz, et al., 2017). Despite the scholarly and policy interest in the topic, there is still a steady contribution to this body of work that highlights the persistence of the issue, the unsettled dispute about the underlying mechanisms, and the incomplete comprehension of its potential drivers and possible explanations. One stream of research claims that the observed disparity may be the outcome of gender differences on the demand-side of capital. It has been suggested that gender differences in risk preferences, competitiveness, and human capital contribute to women's lower likelihood of sorting into competitive fields such as entrepreneurship (Buser et al., 2014; Croson & Gneezy, 2009; Niederle & Vesterlund, 2007). Additionally, when they enter into entrepreneurship, they self-select into industries that are associated less with venture capital and they pursue startups with lower growth orientation (Guzman & Kacperczyk, 2019). Furthermore, it has been argued that gender differences in securing financial resources can potentially explain the funding gap. For instance,

female entrepreneurs have been found to resort more to their personal financial sources and set lower fund goals when they resort to external equity (Coleman & Robb, 2009; Ewens & Townsend, 2019). Another stream of research claims that the disparity cannot be entirely explained by the demand-side and argues that it is also driven by the capital supply-side differential treatment towards female entrepreneurs (Coleman & Robb, 2009; Gompers & Wang, 2017). Compared to similar males, female entrepreneurs are found to receive less interest from early-stage investors (Ewens & Townsend, 2019). Moreover, pitches presented by females are preferred less compared to identical pitches presented by males (Brooks et al., 2014). The literature suggests that the differential treatment of females by investors, who are mostly men, potentially originates in their preferences for homophily (Mcpherson, Lynn, & Cook, 2001) and similarity attraction (Byrne, 1971). In contrast, recent experimental evidence suggests that high-growth entrepreneurship investors are biased in favor of females (Gornall & Strebulaev, 2020).

This unsettled discussion about the potential explanations for the gender gap in funding and these inconsistent findings highlight the complexity of the phenomenon. Predominantly, scholars have explained their results as being due to discrimination, while using the existing models of discrimination. Economic theories of discrimination are typically categorized into two types. First, taste-based discrimination (Becker, 1957), which would involve investors discriminating against female entrepreneurs by making *irrational* investment decisions based on their preferences that favor, or disfavor, a certain gender rather than on ability and feasibility assessments. Second, statistical discrimination (Arrow, 1973; Phelps, 1972), which would entail investors discriminating against female entrepreneurs by making *rational* investment decisions based on accurate beliefs about the female entrepreneur's ability and investment feasibility. However, Bohren, Haggag, Imas, and Pope (2019) have recently questioned the assumption that beliefs are always accurate and have suggested that the possibility of a third type of discrimination named inaccurate statistical discrimination. This would involve investors discriminating against female entrepreneurs by making what is perceived by them to be "*rational*" investment decisions based on beliefs about female entrepreneurs that are perceived to be accurate when they are not, i.e., they are inaccurate beliefs. Distinguishing between these three types of discrimination is essential to design policies that effectively elevate and prevent discrimination against a particular gender or race.

To help settle the ongoing dispute in the literature about the potential underlying mechanisms of discrimination and offer causal evidence while eliminating entrepreneur-driven confounding factors, I conducted a lab-in-the-field experiment. In the experiment, I examine male

investors' and female investors' propensity to proceed to due diligence and the perceived competence to unfold how gender and industry gender composition influence investors' evaluations during the screening stage of the fundraising process. Through the initial screening and evaluation process of a startup summary, I separate and test for the two types of discrimination that are taste-based (Becker, 1957) and inaccurate statistical discrimination (Bohren et al., 2019), while controlling for potential accurate statistical discrimination (Arrow, 1973; Phelps, 1972). In the summaries, I manipulate the gender of the entrepreneur (male or female) and the gender composition of the industry (gender-neutral industry or male-dominated industry). Participants in the experiment were randomly assigned to evaluate one out of two pairs of startups. A pair consists of a startup that is operating in a gender-neutral industry and another startup operating in a male-dominated industry. The two pairs are identical except for the founders' gender. For instance, a participant would receive two startups operating in the two aforementioned industries and presented as female-founded startups. Another participant would receive the same pair of startups but presented as male-founded startups.

During the experiment, I separate and test for taste-based and inaccurate statistical discrimination while controlling for accurate statistical discrimination as follows. First, evidence of within-industry differential treatment of male and female entrepreneurs with no between-industry (gender-neutral vs. male-dominated) differential treatment indicates that investors have a preference for a particular gender group and it is not industry-dependent. In this case, investors discriminate for/against entrepreneurs from a particular gender group across industries as they experience utility/disutility from interacting with this gender group. Thus, the observed differential treatment in evaluations is explained by investors' taste-based discrimination. Second, evidence of between-industry differential treatment of male and female entrepreneurs with no within-industry differential treatment indicates that investors have no preference for gender but they hold stereotypical and industry-dependent beliefs about entrepreneurs from a particular gender group. In this case, investors discriminate for/against entrepreneurs as a result of their stereotypical beliefs about the average ability of the entrepreneurs' gender group within a particular industry. Thus, the observed differential treatment in evaluations is explained by investors' inaccurate statistical discrimination. Third, evidence of within-industry differential treatment of male and female entrepreneurs and, at the same time, between-industry differential treatment of male and female entrepreneurs indicates that investors have a preference for a particular gender group. Moreover, they hold stereotypical and industry-dependent beliefs about entrepreneurs from a particular gender group. In this case, investors discriminate for/against

entrepreneurs from a particular gender group as a result of utility/disutility from interacting with this gender group and/or stereotypical beliefs about the average ability of the entrepreneurs' gender group within a particular industry. The observed differential treatment in evaluations is explained by investors' taste-based discrimination and/or inaccurate statistical discrimination. The experimental design is incapable to distinguish these two types of discrimination in this case. Fourth, evidence of neither within-industry nor between-industry differential treatments of male and female entrepreneurs indicates that investors have no preference for a particular gender group. Moreover, investors hold no stereotypical and industry-dependent beliefs about entrepreneurs from a particular gender group. In this case, investors treat male and female entrepreneurs similarly and the study would not observe any gender gap in the evaluations.

There are several advantages to using the initial screening stage as a context for investigating gender discrimination in venture funding. First, unlike other fundraising stages where start-ups are subject to extensive due diligence, during the screening stage, investors capitalize on notable and easily accessible information such as the founder's gender, training, previous traction, and patents (Chan & Park, 2015; Stuart, Hoang, & Hybels, 1999). Investors use these observable "cues" that they have found based on experience to correlate with unobservable quality to screen out proposals using minimal time and effort. Second, unlike other stages that require active interaction during a pitch or a meeting, the nature of the screening stage facilitates "cold" deals (e.g., via emails). As a result, the initial screening stage eliminates the potential effect of gender-associated factors such as the negative effect of feminine behavior (e.g., warmth, sensitiveness, or expressiveness) during a pitch on the entrepreneur's evaluation (Balachandra et al., 2019). Third, the majority of funding proposals are rejected during this stage (Fried & Hisrich, 1994). According to Petty and Gruber (2011), qualitative data shows that roughly 60 percent of received proposals are rejected during deal screening and only 1 percent manage to successfully secure funding. These figures highlight the importance of such a stage in terms of a startup's access to venture capital. Thus, using the screening stage as a context for this study allows me to isolate the effect of being female as opposed to female-specific factors that could be observed during the pitch, the due diligence meeting, or deal negotiations, potentially triggering biased behavior in investors.

To examine the gender differences in the effect entrepreneur's gender and industry's gender competition among investors, the analysis of the startup evaluations is performed separately for male and female investors. I find no evidence of differential treatment of female entrepreneurs among male investors while eliminating potential factors that contribute to the

funding gap as a result of statistical discrimination. Identical male-led and female-led startups have the same propensity to proceed to due diligence when screened by male investors. Male investors also perceive female entrepreneurs as being as competent as their male counterparts. Furthermore, the study finds no significant effect of the gender composition of the industry on male investors' evaluations of female-led startups. Male investors have the same propensity to proceed to due diligence for both female-led startups operating in a male-dominated industry and those operating in a gender-neutral industry. Failing to observe any differential treatment indicates that male investors in the study sample do not hold any gendered preference (taste-based discrimination) or any inaccurate beliefs and stereotypes about female entrepreneurs (inaccurate statistical discrimination).

When looking at female investors, the study finds evidence of positive discrimination in favor of female entrepreneurs. While eliminating potential factors that contribute to the funding gap as a result of statistical discrimination, female investors positively discriminate in favor of female entrepreneurs and evaluate them differently compared to their male peers. Their propensity to proceed to due diligence is significantly higher for female-led startups compared to identical male-led ones. Moreover, female investors perceive female entrepreneurs as being significantly more competent compared to male entrepreneurs. Nevertheless, the study finds no significant effect of the gender composition of the industry on female investors' evaluations of female-led startups. Female investors have the same propensity to proceed to due diligence for both female-led startups operating in male-dominated and gender-neutral industries. The findings indicate that female investors' differential treatment of women is driven by taste-based discrimination and not by inaccurate statistical discrimination. Overall, the study suggests that the documented funding gender gap in the market is possibly not driven by male investors' gendered preference (taste-based discrimination) or their inaccurate beliefs and stereotypes (inaccurate statistical discrimination). On the other hand, regarding the calls to increase the number of female venture capital investors to overcome the issue of gender disparity in the industry, the study suggests that having more female investors would potentially increase female entrepreneurs' access to venture capital. Female investors' systematic preference for female entrepreneurs is possibly driven by their preference for women potentially originating from their preferences for homophily (Mcpherson et al., 2001) and similarity attraction (Byrne, 1971).

Addressing the phenomenon using an experimental approach enables me to draw causal inferences about whether female entrepreneurs are penalized for their gender and whether the investor's gender is a differentiating factor. Moreover, it enables me to overcome some challenges

and shortcomings associated with investigating the gender gap in funding using observational data. First, the identification problem in isolating the source of discrimination as being based on investors' taste or inaccurate beliefs while eliminating entrepreneur-driven factors. Factors arising from the capital demand-side and influence entrepreneur's access to capital may be unobservable to scholars or, potentially, the investors themselves. Second, the nonexistence or inaccessibility of information about the full population of entrepreneurs seeking external capital. Third, the insufficient number of female investors from which to obtain statistically meaningful results.

This study speaks to the literature on entrepreneurship and gender (e.g., Ewens & Townsend, 2019; Guzman & Kacperczyk, 2019; Gompers & Wang, 2017; Coleman & Robb, 2009). Prior literature suggests multiple and sometimes inconsistent potential explanations for the gender gap in entrepreneurs' access to venture capital. The study contributes to settling the ongoing debate in the literature by unfolding investors' beliefs about female entrepreneurs and offering causal evidence while eliminating all entrepreneur-driven confounding factors. First, it separates and tests for the two types of discrimination, i.e., taste-based and inaccurate statistical discrimination, and accurate statistical discrimination. Previous work was either unaware of the distinction between these two types of discrimination or was unable to distinguish them (e.g., Ewens & Townsend, 2019). The isolation of the two types of discrimination prevents an identification problem, thereby leading to more efficient analysis and, potentially, more effective policies. The results show that when all (observable and unobservable) potential systematic differences (statistical discrimination) between male and female entrepreneurs are controlled for, male investors exhibit no differential treatment towards women. In other words, the findings indicate that male investors are not biased against female entrepreneurs. As a result, taste-based discrimination and/or inaccurate statistical discrimination may not explain the gender gap in access to capital observed in the market. At the same, the study highlights the potential prominent role of statistical discrimination in shaping the funding gender gap. Furthermore, the study contributes to the stream of literature in entrepreneurship that focuses on the potential role of female investors in innovation and closing the gender gap (e.g., Gompers, Mukharlyamov, Weisburst, & Xuan, 2021; Ewens & Townsend, 2019; Raina, 2019; Gompers & Wang, 2017) by providing evidence of their positive systematic discrimination (taste-based) in favor of their own gender.

The remainder of this paper is structured into five sections. Section 2 introduces the literature on gender disparity in venture funding. Section 3 discusses the experiment design and

procedure. Section 4 reports the data analysis and results. Section 5 presents a discussion of the study findings and their implications. Finally, Section 6 summarizes the study's conclusions.

## 2.2 Gender Disparity in Venture Funding

### 2.2.1 Startup Evaluation and Investment Decisions

Scholars have shown interest in understanding VCs' decision-making processes and venture evaluation criteria (Fried & Hisrich, 1994; Gompers et al., 2020). Early work, such as Hall and Hofer (1993) and Fried and Hisrich (1994), has documented the sequential nature of this process. Based on a model developed using qualitative evidence, Fried and Hisrich (1994) suggest that VCs' decision-making decision undergoes multiple stages starting from identifying potentially attractive opportunities either by receiving funding proposals or by seeking them out. This is followed by the screening of opportunities, whereby investors devote minimal time and effort to screening out initially unattractive investment opportunities. The remaining opportunities proceed to undergo a comprehensive investigation (due diligence). Finally, after various evaluations, multiple meetings with the team and contract term negotiations, VCs eventually sign the legal documents and close the deal.

Studies typically investigate the influence of startup characteristics using only the outcome of securing an investment while overlooking the sequential nature of the decision-making process and disregarding the accumulative effect of the previous stages (e.g., Hebert, 2020; Guzman & Kacperczyk, 2019; Eckhardt, Shane, & Delmar, 2006). These studies also overlook the possibility that investors reject funding proposals due to a wide range of factors other than investment feasibility. Investors have different portfolios, investment strategies, availability of funds, and preferences for industries and geographic locations (Gompers et al., 2020; Petty & Gruber, 2011). Moreover, these studies assume that startup characteristics have an equal weight across stages. Therefore, they overlook the possibility of a variation in the relevance of characteristics across stages in that some could be found to have a significant effect in one stage but not in another (Petty & Gruber, 2011). For instance, referrals were found to play a positive role during the initial screening for opportunities, while detailed financial statements are less relevant in this stage (Fried & Hisrich, 1994). During a startup pitch, gender is found to not influence investors' preference for a startup as opposed to the display of feminine-stereotyped behaviors (Balachandra et al., 2019). Thus, the influence of gender on the decision-making process of venture capital investors

differs in that it is possibly present in some stages but not in others, while the magnitude of the influence possibly varies between stages

The scarcity of financial resources in the industry in combination with a high level of competition means that the opportunity cost of investment delays is high (Li, 2008). At the same time, new and high-return investments that VCs hunt for are mostly associated with information asymmetry and extreme uncertainty, which illustrates the inherently speculative essence of the screening and selection process (Gompers & Lerner, 2001). Given the high level of uncertainty and the high number of proposals that are considered for investment, the literature suggests that investors tend to capitalize on notable and easily accessible information "cues" to facilitate their decision-making process (Chan & Park, 2015; Stuart et al., 1999). To reduce uncertainty, investors utilize observable attributes based on previous experiences to signal or correlate with quality such as the startup's previous traction, patents, founders' human capital, and founders' gender. According to the literature, the majority of funding proposals considered are rejected during the screening stage, which highlights the importance of this stage in terms of the likelihood of receiving funding (Fried & Hisrich, 1994; Gompers et al., 2020). Existing research suggests that roughly 60 percent of the proposals received by a VC firm are rejected during the screening stage alone (Petty & Gruber, 2011). Eventually, around 10 percent of all proposals considered are recommended for investment while only 1 percent successfully secure investment (Gompers et al., 2020). This very high rejection rate during screening highlights how crucial this stage is for a startup's likelihood of successfully securing venture capital. Consequently, I argue that it is the optimal context for isolating gender from non-gender-associated factors and behaviors and to then investigate potential discriminatory treatments towards female entrepreneurs while securing venture capital.

### 2.2.2 Gender Disparity in Entrepreneurial Finance

The essential role that venture capital funding plays in the survival and growth of new ventures is well documented in the literature (Aldrich & Ruef, 2006; Shane & Stuart, 2002). Female-led startups' lower access to external capital potentially results in the loss of new ideas and technologies besides the loss of potential economic growth (Gompers & Wang, 2017; Wong et al., 2005). Therefore, gender disparity in funding may not only obstruct equality, it may also impair the diversity of the innovation landscape by altering the nature of innovations and the types of ideas that are commercialized (Kerr et al., 2014).

There is sustained interest amongst scholars to investigate the issue of gender disparity in funding. However, to date, the potential underlying mechanisms behind the gap in funding remain disputed in magnitude and direction. One body of work argues that gender disparity in funding is the outcome of the capital demand-side, in particular, female-specific structural factors and preferences. Based on data from a longitudinal survey of new firms in the US (Kauffman Firm Survey) conducted to determine whether there are gender differences in venture financing, Coleman and Robb (2009) found that female entrepreneurs resort more to their personal financial sources and raise lower amounts of capital compared to their male counterparts. There is also evidence indicating that female entrepreneurs have a lower propensity to select themselves in industries associated with VC. According to Guzman and Kacperczyk (2019), female entrepreneurs are less likely to found startups with a strong growth orientation indicated by having a legal form of organization, patents, and trademarks. This evidence illustrates the possibility that female entrepreneurs are simply underrepresented in the population of entrepreneurs seeking venture capital because of differences on the demand side of the funding market, as opposed to supply-side factors such as biased behavior among investors. The literature also suggests that systematic differences in social networks and networking between male and female entrepreneurs may explain the gender gap in funding. In a male-dominated industry, homophily in networking puts females at a disadvantage when it comes to interacting with investors, lawyers, and male entrepreneurs, which plays a significant role in securing an investment or obtaining referrals (Becker-Blease & Sohl, 2007; Brashears, 2008). In a VC network at Harvard Business School's New Venture Competition, Howell and Nanda (2019) find that females networking with VCs benefit less from the exposure in starting a VC-based startup compared to males. According to their survey, females' disadvantage is explained by their lower likelihood to proactively network with VC after the competition.

On the other hand, the literature suggests that the observed gender disparity in funding cannot be explained by capital demand-side factors alone (Gompers & Wang, 2017). Several scholars present evidence of discriminatory behavior against female entrepreneurs originating from the capital-supply side, i.e., investors (Brooks et al., 2014; Coleman & Robb, 2009; Kanze et al., 2018). Across entrepreneurial pitch competitions in the United States judged by angel investors and experiments using nonprofessional evaluators as participants, Brooks et al. (2014) document that gender has a significant impact on investment by providing evidence that pitches presented by males entrepreneurs are preferred over identical ones presented by females. Examining the interactions and funding decisions of early-stage investors in AngelList (an online

platform that matches investors with seed-stage startups), Ewens and Townsends (2019) find that male investors display significantly less interest in female entrepreneurs measured by portfolio share and introduction requests. Moreover, they find that female entrepreneurs are significantly less successful in securing capital from male investors. Their findings are consistent with the claim that gender bias among male early-stage investors is driving the gender disparity in funding. Female entrepreneurs' disadvantage in securing capital is potentially driven by the preferences of investors - who are mostly men - for homophily (Mcpherson et al., 2001) and similarity attraction (Byrne, 1971). The similarity in terms of training and professional experience (Franke et al., 2006) and styles of thinking (Murnieks et al., 2011) have been argued to positively influence investors' startup evaluations. Thus, the funding bias may be a reflection of the predominantly male investors' attraction and preference for interacting with male entrepreneurs who are more similar to them. However, it is worth noting that Gornall and Strebulaev (2020) provide evidence that is inconsistent with this assertion. In a field experiment, they find that investors in high-growth entrepreneurship are biased in favor of female entrepreneurs. Their experimental evidence of male investors' positive bias further illustrates the fragmentation within the literature with regard to the funding gender gap underlying mechanisms.

The entrepreneurship literature suggests that successful entrepreneurs are often perceived as possessing traits that are more common in males, leading the entrepreneurial role to be perceived as masculine and entrepreneurship as a male-typed domain (Buttner & Rosen, 1989). Balachandra et al. (2019) examined 185 video-recorded pitches from an elevator pitch competition in the US to investigate the influence of being female and gender-stereotyped behavior on investors. The authors suggest that investors are not biased against females but against feminine-stereotyped behaviors. Investors penalize feminine-stereotyped behaviors displayed by both males and females. They argue that both male and female entrepreneurs were punished as a result of the incongruity between feminine-stereotyped behaviors and the stereotypically masculine characteristics of the successful entrepreneur. In terms of the influence of gender and gender stereotypes on perceived competence, the literature suggests that females are perceived as being less competent than males (Bigelow, Lundmark, McLean Parks, & Wuebker, 2014). Lee and Huang (2018) find that during the evaluation of early-stage startups, investors penalize female entrepreneurs less when they pitch their businesses using social impact framing. Research claims that social framing elicits stereotypical attributes such as warmth, which promotes the fit between stereotypical female traits and entrepreneurs' traits (Fiske, Cuddy, Glick, & Xu, 2002). In other words, the incongruity between the female's gender role and the entrepreneurial role, which is

perceived as being masculine, was reduced by social framing. As a result, female entrepreneurs were penalized less. Using observational data and an experiment, Kanze, Conley, Okimoto, Phillips and Merluzz (2020) investigate the effect of stereotyped gender fit between the entrepreneurs and their industry on funding likelihood. They find female entrepreneurs operating in male-dominated industries to be less likely to raise capital compared to female entrepreneurs operating in female-dominated industries due to the perceived industry-entrepreneur lack of fit. Moreover, Hebert (2020) suggests that females operating in female-dominated industries are no longer at a disadvantage when securing capital. Based on an examination of survey data and tax files from the French Bureau of Statistics (INSEE), she presents evidence that females are more likely to raise private equity and venture capital. The evidence indicates that investors are not biased (no preference for gender) against females but that they hold gender stereotypes that are activated by the industry's gender composition (context-dependent stereotypes).

### 2.2.3 Female Investors

Members of the venture capital industry, policymakers, and other stakeholders are all aware of the issue of female entrepreneurs' constrained access to venture capital. This recognition of the issue is reflected in efforts and initiatives to support female entrepreneurs. Several accelerators were established to mentor and support female entrepreneurs with financial resources and networks (e.g., Women's Startup Lab). Female investors raised venture capital funds that exclusively fund female entrepreneurs (e.g., Golden Seeds and Female Founders Fund). However, the literature has lightly touched upon the role of female investors in the industry and in closing the gender gap in funding. The significantly low number of female investors poses a challenge for studies that aim to investigate female investors and the gender dynamics between them and the entrepreneurs during the funding process. Gompers and Wang (2017) investigate the gender gap in human capital on the investor level and show that the low share of female VCs in the industry is not fully explained by a shortage of female investors with the relevant training and education. They argue that factors related to homophily in preferences and networks also contribute to the lack of gender diversity among VC investors. In regards to the nature of female investors' participation, the literature suggests that venture capital firms with more female professionals attract more funding proposals from female-led startups (Brush et al., 2004). This funding supports the claim in the literature that females tend to have more females in their network (Aldrich, Reese, & Dubini, 1989). Therefore, Brush et al., (2004) argue that increasing the number of female venture capitalists would increase female entrepreneurs' exposure to investors through

their networks and, consequently, increase their access and share of venture capital. Confirming the importance of social interaction and networks for women in entrepreneurship, Rocha and van Praag (2020) suggest that female entrepreneurs positively influence their female employees' entry into entrepreneurship. Finally, Ewens and Townsend (2019) provide weak evidence, possibly due to a lack of power, that early-stage female investors are biased in favor of their own gender. They speculate that female investors' positive preference for female entrepreneurs is either homophily-induced or is a counter-response to presumably biased male investors. Hence, a direct implication of these theories and in line with similarity-attraction theory (Byrne, 1971), I expect female investors participating in my experiment to behave differently toward female entrepreneurs compared to male investors. I expect them to have a higher preference for female-founded startups and higher perceived competence of female entrepreneurs.

### 2.2.4 Discrimination Theories in Venture Funding

The multiple explanations and inconsistent findings offered in the literature highlight the difficulty of investigating the extent and underlying causes of the gender gap in funding. Drawing on the economics literature, the majority of studies have attributed the gender disparity in funding to discrimination and use existing models of discrimination to explain its underlying mechanism. The economic theories of discrimination are typically categorized into two types. First, taste-based discrimination (Becker, 1957), which is *irrational* discriminatory behavior originating in distaste for or prejudice against a particular group (gender, race, nationality, etc.). This distaste for a particular group creates disutility from interacting with the members of this group. Second, statistical discrimination (Arrow, 1973; Phelps, 1972), which is *rational* discriminatory behavior against a member of a particular group (gender, race, nationality, etc.) based on accurate equilibrium beliefs about the members of this group. However, Bohren et al. (2019) have recently questioned the widespread assumption that beliefs are always accurate and, thus, the possibility of inaccurate statistical discrimination. Evidence in the literature suggests that beliefs in equilibrium are distorted and inaccurate (Bordalo et al., 2019). Psychological distortions such as heuristics and psychological biases play an important role in shaping inaccurate stereotypes and, thus, inaccurate beliefs (Bordalo, Coffman, Gennaioli, & Shleifer, 2016; Bordalo et al., 2019). Bohren et al. (2019) also highlight that inaccurate beliefs are possibly formed as a result of a lack of sufficient information to form accurate beliefs in the first place. Thus, inaccurate statistical discrimination is an *irrational*, but perceived to be rational, discriminatory behavior against a member of a particular group (gender, race, nationality, etc.) as a result of inaccurate beliefs that

are perceived to be accurate. The literature further suggests that this kind of discrimination is mostly context-dependent (Bordalo et al., 2016, 2019; K. B. Coffman, 2014).

In entrepreneurial finance, the three different types of discrimination can be at work. First, taste-based discrimination (Becker, 1957) would involve investors discriminating against an entrepreneur from a specific gender group by making *irrational* investment decisions based on preferences for gender rather than ability and feasibility assessments. Second, statistical discrimination (Arrow, 1973; Phelps, 1972) would involve investors discriminating against an entrepreneur from a particular gender group by making *rational* investment decisions based on accurate beliefs about the entrepreneur's ability, strategic preferences, and investment feasibility. This type of discrimination hinges on the assumption of accurate beliefs. Third, inaccurate statistical discrimination would involve investors discriminating against an entrepreneur from a particular gender group by making what is perceived to be *rational* investment decisions based on inaccurate, but perceived to be accurate, beliefs about that entrepreneur.

The majority of existing studies assume beliefs to be accurate when discussing statistical discrimination. As a result, they only distinguish between taste-based discrimination and accurate statistical discrimination when studying the gender gap in funding. However, few studies have addressed the role of inaccurate beliefs and stereotypes in shaping investor's discriminatory behaviors against female entrepreneurs. For instance, Guzman and Kacperczyk (2019) separate taste-based discrimination and what they refer to as negative stereotypes from accurate statistical discrimination. They provide evidence of gender bias among investors and argue that this bias is consistent with accurate statistical discrimination. The authors claim that the majority of the gender gap in funding stems from accurate beliefs about factors associated with female entrepreneurs' industry sorting and growth preferences. Furthermore, Ewens and Townsend (2019) addressed the possibility of inaccurate beliefs and stereotypes among investors but were unable to distinguish them from preferences for gender. Therefore, they define their underlying mechanism "bias" to include both and present evidence of biased treatment by male investors that is consistent with this definition. To my knowledge, Hebert (2020) is the first to disentangle and examine taste-based discrimination and inaccurate statistical discrimination as potential explanations of the gender gap in venture capital. Based on an examination of observational data of French firms, she presents evidence that females are not systematically less likely to secure capital. Her findings are consistent with inaccurate statistical discrimination as oppose to taste-based discrimination.

As illustrated in previous studies, it is challenging but important to separate preferences from inaccurate beliefs and stereotypes. An identification problem in isolating the source of discrimination as being driven by a preference for gender or inaccurate beliefs is likely to lead to faulty conclusions. Therefore, this study aims to experimentally disentangle inaccurate statistical discrimination from taste-based discrimination while eliminating the possibility of accurate statistical discrimination. Disentangling these two types of discrimination, while eliminating accurate statistical discrimination would facilitate the analysis efficiency and the development of effective policy interventions. While controlling for accurate statistical discrimination, the experimental design distinguishes the other two types of discrimination as follows. Under taste-based discrimination, I expect investors to exhibit significantly different levels of interest in startups presented as female-founded compared to the identical ones presented as male-founded regardless across industries. In contrast, under inaccurate statistical discrimination, I expect to find gender differences in investors' evaluation of male and female entrepreneurs operating within a male-dominated industry as opposed to a gender-neutral industry. The gender gap in evaluation would be explained by investors' inaccurate beliefs about the average ability of female entrepreneurs in this gender incongruent industry.

## 2.3 Methodology

### 2.3.1 Design

To address my research question, I conducted a randomized lab-in-the-field experiment. Gneezy and Imas (2017) define a lab-in-the-field study as "one conducted in a naturalistic environment targeting the theoretically relevant population but using a standardized, validated lab paradigm". Such a methodology enables me to achieve several goals; first and foremost, to help settle the ongoing dispute in the literature about the potential economic mechanisms of discrimination by offering causal evidence while eliminating entrepreneur-driven confounding factors. Second, the experiment allows me to eliminate an identification problem in isolating the source of discrimination as being caused by investors' taste or inaccurate beliefs. Through a startup summary evaluation, I separate and test for the two types of discrimination, i.e., taste-based and inaccurate statistical discrimination, while controlling for potential accurate statistical discrimination. Third, the experimental approach enables me to recruit theoretically relevant participants, who would otherwise be extremely unlikely to show up in a laboratory (Gneezy & Imas, 2017). This will maximize the internal validity while minimizing the external validity

concerns associated with traditional laboratory experiments. Fourth, it allows me to recruit an adequate number of women and ensure their sufficient representation in the sample. Many scholars find studying female investors challenging due to their extremely low representation in the industry. Lastly, a lab-in-the-field experiment overcomes some methodological shortcomings in observation data such as the unavailability or inaccessibility of information about the full population of entrepreneurs seeking external capital. Most observational data includes information about entrepreneurs who managed to successfully raise capital and lacks information on the gender structure of the original pool of capital seekers. Thus, the observed gender gap in funding could be simply an extension of a gender gap in the original pool.

I employed a 2x2 mixed factorial design, where I manipulated, first, the gender of the entrepreneur (male or female, between-subjects)[4], and second, the industry's gender composition (gender-neutral industry or male-dominated industry, within-subjects)[5]. Participants were randomly assigned to evaluate one of two pairs of startups. The pairs are identical except for the founders' gender. So, half of the participants are assigned to evaluate a pair of startups that are presented as male-founded while the other half are assigned to evaluate the same pair of startups but presented as female-founded. Within the pair, one of the startups presented for evaluation operates in a gender-neutral industry and the other in a male-dominated industry. Within the pair, the founders' gender is fixed and the order of startups' presentation is randomized to account for the order effect bias. For instance, a participant randomly received a pair of female-founded startups to evaluate. The first startup displayed is a female-founded startup operating in a male-dominated industry. The next startup displayed is also female-founded but operating in a gender-neutral industry.

### 2.3.2 Industry Gender Composition and Recruited Startups

I used two indicators to measure the industry's gender competition. First, the industry's gender split, which is measured by the percentage of the female labor force. Second, the percentage of women-led businesses. For an industry to be classified as male-dominated, the gender split was below 50 percent and the percentage of women-led businesses was below the economy's average[6]. For an industry to be classified as gender-neutral, the gender split was

[4] Between-subjects design indicates that participants were randomly assigned to one of the two treatments (male or female entrepreneur)

[5] Within-subjects design indicates that participants were assigned to both treatments (gender-neutral industry and male-dominated industry

[6] Women-led businesses in the UK account for 17% of all businesses in the economy.

approximately 50 percent, the percentage of women-led businesses was close to the economy's average and, finally, the industry was not perceived as being stereotypically masculine or feminine[7]. The rationale behind using the percentage of the female labor force and the percentage of women-led businesses to determine an industry's gender composition is to capture women's representation within that industry both as an employee and a CEO. Women's representation within an industry is likely to shape investors' stereotypical beliefs about the average ability of female entrepreneurs in performing industry-related activities.

Using Crunchbase, I recruited two real startups - one from a male-dominated industry and the other from a gender-neutral industry. To control for any systematic differences that could influence the results, the selected startups were matched in age (3–4 years old), founders' gender (male), founding team size (2–3), last funding type (Series A), funding raised ($7–10 million), number of investors (4–6), and type of investors (both BAs and VCs). I used the startups' descriptions on Crunchbase and their websites to construct anonymized and modified summaries, which were presented to the participants. For a sample of the proposals used in the experiment, (please see Appendix A.1 for more details).

### 2.3.3 Sample

The experiment was conducted using Prolific, which is an online platform based in the United Kingdom used to recruit participants for surveys and experiments. Prolific considers itself as a platform for scientific studies and academic research. It has been examined among similar platforms and has been found to produce high-quality data (Palan & Schitter, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017). Through the platform, I applied two prescreening conditions for the participants to be eligible to participate in the experiment. First, their country of residence had to be the UK. Second, the participants had to have investment experience from an angel syndicate, private equity fund, or venture capital fund. The second prescreening condition allowed me to verify that all the participants were natural to and familiar with the venture capital industry and the entrepreneurial venture funding process. The experiment was conducted between March and July of 2019. I managed to recruit a total of 172 participants who completed the

[7] Wholesale & retail and information & communication are the two selected industries. Wholesale and retail is a classified as gender-balanced industry with females holding 46% of the industry jobs and leading 18% of the businesses. Information & communication is classified as a male dominated industry since only 27% of the jobs are held by females and only 11% of the business are led by women. The data are retrieved from Labour Force Survey: Employment by industry 2018 in the UK.
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13
https://www.gov.uk/government/statistics/small-business-survey-2018-businesses-with-employees

experiment. To confirm the validity of the two prescreening conditions used in the platform, I excluded participants who were not based in the UK as indicated by their answers in the experiment. Moreover, I excluded participants whose answers indicated that they did not identify themselves as business angels (individual or group), private equity investors, or venture capital fund investors, or have past investment experience working in an angel syndicate, private equity fund, or venture capital fund. Finally, to eliminate careless answers, I excluded participants who failed the gender manipulation check. This resulted in a total sample of 118 investors with experience from the venture capital industry.

### 2.3.4 Procedure

Once the participants had accessed the experiments, they were presented with information about the structure, estimated time, confidentiality, participation payment, and the reward. The experiment was divided into three steps. In the first step, the participants were randomly presented with the summary of a startup and they were asked to conduct an initial screening and evaluate the business opportunity. In the second step, the participants were presented with the summary of another and they were asked to conduct an initial screening and evaluate the business opportunity. These two steps have a similar structure of presenting the summary of the startup followed by a set of fifteen evaluation questions and statements; one of which is a manipulation check question.

The summaries of the two startups were anonymized and were the same in terms of founder-related criteria, i.e. the founding team size (2 founders), founders' education quality (degree from a top 10 university worldwide), education field (business), and industry-related experience (2–5 years). The summaries were also the same in terms of startup-related criteria, i.e., previous traction (received seed capital), the source of seed capital (angel investor/ crowdfunding), and the share of equity ownership offered to investors (35%). Finally, the summaries were the same in regard to the number of words (190 – 225) (see Appendix A.1 for more details).

In the third and final step, I measured participants' risk aversion using Holt and Laury (2002) incentivized risk references test (see Appendix A.2 for more details). This is followed by fourteen questions about the participants' past investment experience and eight questions related to the participants' socio-demographic background. Completing this step concludes the experiment for the participant. It should be noted that the participants were not allowed to return to any of the previous steps once they had moved on to a subsequent step. It took the participants, on average, 16 minutes to complete the experiment.

### 2.3.5 Entrepreneur's Name and Ethnicity

In the presented startup summaries, the gender of the entrepreneurs was implicitly communicated using names and pronouns. I used a total of eight different names, half of which were male names and the other half were female names (see Appendix A.3 for more details). The name construction process went through multiple stages following prior studies (Bertrand & Mullainathan, 2004; Gornall & Strebulaev, 2020). Assuming the entrepreneurs were born in the early 90s, I retrieved a dataset of the top 100 baby names (boys and girls) in England and Wales for the year 1994 from the British Office for National Statistics[8] and the top 500 last names between the years 1991 and 2000 from the National Health Service Register[9]. I used the top 20 common names from the list of boy's names, girl's names, and last names. Furthermore, to mitigate any potential gender ambiguity with the first names, I excluded any ambiguous or unisex names in the UK or Europe using Jörg Michael's list.[10]

In regard to ethnicity, the literature suggests that it does signal information about the entrepreneur's quality, which has been found to influence investors' decisions (Gornall & Strebulaev, 2020). Thus, I only recruited white-sounding first and last names. I then randomly paired the first names with the last names. I performed another gender and ethnicity check on the randomly paired full names by surveying out of sample individuals who were also current residents of the United Kingdom. I examined the gender and ethnic perceptions of each one of the full names to confirm that they matched the desired signal. I excluded all the full names that were not perceived as the intended gender, on average, less than 97 percent of the time. Furthermore, I excluded all the full names that were not perceived to be ethnically white, on average, less than 90 percent of the time. Finally, the remaining eight constructed names were common names and, therefore, to avoid using the names of existing individuals with matching characteristics, I checked LinkedIn for any matches. I found no matches between the constructed names and individuals on LinkedIn

### 2.3.6 Incentives

The incentive structure of the experiment offered a participation payment of £5 per hour. Moreover, the experiment offered a reward of up to £300 to one randomly selected participant out

[8] Top 100 Baby Names in England and Wales (1904-1994)
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/babynamesenglandandwalestop100babynameshistoricaldata
[9] Top 500 surnames database - the National Health Service Register
http://surnamestudies.org.uk/statistics/top500.htm
[10] Jörg Michael, ftp://ftp.heise.de/pub/ct/listings/0717-182.zip (Retrieved January 15, 2019)

of every 100. Eligibility to win the reward is depended on the answers to two questions (one for each startup the participants have to evaluate), which askes participants to predict the amount of capital the startup would probably raise in the next funding round using a scale from zero to £5.5 million. Participants are eligible if their estimated amounts are within plus/minus five percent of the sample's average. They would receive a randomly selected amount (up to £300) depending on their choice in the Holt and Laury (2002) risk aversion test in the third section of the experiment (see Appendix A.2 for more details)

### 2.3.7 Measures

***The Propensity to Proceed to Due Diligence***

The decision to allocate funds and invest goes through a structured and complex process. Therefore, I believe that capturing the gender effect using only the outcome of investment overlooks the effect of gender in each step of the fundraising process. This could lead to the misidentification of the underlying mechanisms and the extent of their influence in driving the bias against females. Furthermore, investors may perceive a startup to be high in quality and predict high returns, but they may not necessarily translate this positive evaluation into an investment. Investors' decision to fund a startup is driven by several factors other than investment feasibility. Investors usually have preferences for certain industries, growth stages, and geographic locations (Gompers et al., 2020; Petty & Gruber, 2011). Therefore, it is more meaningful and effective in examining the gender effect to measure both their propensity to investigate the investment (due diligence) and, at the same time, the likelihood that they will recommend it to a fellow investor. To my knowledge, none of the experimental studies has captured the gender bias against female entrepreneurs by using the propensity to proceed to due diligence. I used Clingingsmith & Shane's (2018) measure of aggregating the score of four questions, "*I would pursue a follow-up meeting to learn about the venture*", "*I would be interested in seeing the business plan for this venture*", "*I would recommend this opportunity to a co-investor*", "*I would initiate due diligence on this venture*". The aggregate score was measured using a seven-point Likert-scale (1-strongly disagree to 7-strongly agree). By using the investor's propensity to proceed to due diligence, I address my research question with a variable associated with a cost of time and effort.

***Perceived Competence***

An additional aim of this study is to determine the extent to which the entrepreneur's gender influences how they are perceived in terms of competence. Following Lee and Huang

(2018), I measure perceived competence by asking the investors to rate three traits of competence. They were asked to demonstrate the degree to which they would describe the entrepreneurs as competent, proficient, and adept using a seven-point Likert-scale (1-strongly disagree to 7-strongly agree).[11] By averaging the values of these three traits, I measured the entrepreneur's perceived competence.[12]

***Controls***

I control for investor's sociodemographic characteristics, investment preferences, and investment experience. The sociodemographic characteristics accounted for are gender, age, college degree or higher, and risk aversion (Holt & Laury, 2002). The investment preferences and experience accounted for are classified as follows. First, investors' most targeted venture stage for investment, which is seed-stage, early-stage, later-stage, M&A, and IPO. Second, investors' investments experience in the information & communication industry and the wholesale and retail industry. Moreover, I control other experimental interventions including the type of previous investors (BA vs. crowdfunding), expert endorsement (with vs. without), and their interactions.

## 2.4 Results

### 2.4.1 Descriptive Statistics

Panel A in Table 2.1 presents the means and standard deviations of the dependent variables; Proceed to due diligence and Perceived competence. Panel B reports the means of the sample's demographic characteristics, risk aversion, and professional and investment experience. Table 2.2 reports the differences in these characteristics between male and female investors. Overall, the average age of the investors in the sample is 42 years and male investors account for 53 percent. Approximately 80 percent of the investors have earned a college degree or higher and 48 percent of these degrees are in STEM-related fields. In regard to professional experience, 94 percent of the investors have five years or more of work experience. Moreover, around 60 percent of the investors have five years or more of investment experience. In terms of the nature of the investors' experience and investment preferences, around 68 percent of them have invested in a private equity fund, 33 percent have invested in a venture capital fund, and 11 percent have invested in an angel syndicate (see Appendix A.4 for more details). The venture stages mostly targeted by the investors in the sample are private equity and early-stage ventures. Finally, the

[11] Unlike Fiske et al. who used a five-point Likert scale, I used a seven-point Likert scale to maintain the consistency of the scale across all the evaluation questions and statements.
[12] The OLS regression results are consistent when using the traits separately.

professional, scientific and technical activities industry (including scientific research, and legal, architectural, and engineering activities), and the wholesale and retail industry are the top two industries that hosted the investments of the investors.[13] For additional statistics about the investment experience and preferences of the investors, see Appendix A.4.

**Table 2.1: Descriptive Statistics**

**Panel A: Dependent variables**

| Variable | obs | mean | Std.dev. | min | max |
|---|---|---|---|---|---|
| Proceed to due diligence | 236 | 19.746 | 5.110 | 4 | 28 |
| Pursue a follow-up meeting | 236 | 4.983 | 1.464 | 1 | 7 |
| Interested in business plan | 236 | 5.352 | 1.426 | 1 | 7 |
| Initiate due diligence | 236 | 5.157 | 1.556 | 1 | 7 |
| Recommend to co-investor | 236 | 4.254 | 1.430 | 1 | 7 |
| Perceived competence | 236 | 5.216 | 0.954 | 2 | 7 |
| Competent | 236 | 5.381 | 1.035 | 2 | 7 |
| Proficient | 236 | 5.174 | 1.027 | 2 | 7 |
| Adept | 236 | 5.093 | 1.052 | 2 | 7 |

**Panel B: Investor characteristics**

| Variable | obs | mean | Std.dev. | min | max |
|---|---|---|---|---|---|
| Male investor | 118 | 0.534 | 0.501 | 0 | 1 |
| Age | 118 | 41.559 | 13.051 | 20 | 82 |
| College degree or higher | 118 | 0.797 | 0.404 | 0 | 1 |
| Education: STEM | 118 | 0.483 | 0.502 | 0 | 1 |
| Education: business & economics | 118 | 0.220 | 0.416 | 0 | 1 |
| Risk aversion | 118 | 6.517 | 2.155 | 0 | 10 |
| Work experience ≥5 | 118 | 0.941 | 0.237 | 0 | 1 |
| Investment experience ≥5 | 118 | 0.585 | 0.495 | 0 | 1 |
| Most targeted stage: seed | 118 | 0.034 | 0.182 | 0 | 1 |
| Most targeted stage: early-stage | 118 | 0.153 | 0.361 | 0 | 1 |
| Most targeted stage: late-stage | 118 | 0.059 | 0.237 | 0 | 1 |
| Most targeted stage: private equity | 118 | 0.153 | 0.361 | 0 | 1 |
| Most targeted stage: M&A | 118 | 0.017 | 0.130 | 0 | 1 |
| Most targeted stage: IPO | 118 | 0.051 | 0.221 | 0 | 1 |
| Invested in information & communication industry | 118 | 0.305 | 0.462 | 0 | 1 |
| Invested in wholesale & retail industry | 118 | .356 | .481 | 0 | 1 |

In terms of differences in characteristics between male and female investors, Table 2.2 reports no statistically significant differences in age, education level, risk aversion (Holt & Laury, 2002), and years of professional and investment experience. However, male investors are, on

[13] I used the Standard Industrial Classification (SIC) classes in the UK https://www.ons.gov.uk/businessindustryandtrade/changestobusiness/businessbirthsdeathsandsurvivalrates/adhocs/010081enterprisebirthsanddeathsbystandardindustrialclassificationsicclass

average, more likely to hold a degree in a STEM-related field compared to the females in the sample. Furthermore, in the sample, male and female investors have statistically significant differences in industry preferences (see Appendix A.4 for more details). On average, male investors preferred industries for investment are, in descending order, are the financial and insurance activities industry, the health industry, and the professional, scientific and technical activities industry. In contrast, female investors' preferred industries for investment are, in descending order, the wholesale and retail industry; the professional, scientific, and technical activities industry; and the real estate activities industry.

**Table 2.2: Differences between Male and Female Investors**

| | Male investors | Female investors | diff. |
|---|---|---|---|
| Age | 41.490 | 41.640 | -0.144 |
| | | | (0.953) |
| College degree or higher | 0.794 | 0.800 | -0.00635 |
| | | | (0.933) |
| Education: stem | 0.603 | 0.345 | 0.258*** |
| | | | (0.005) |
| Education: business & economics | 0.222 | 0.218 | 0.00404 |
| | | | (0.958) |
| Risk aversion | 6.381 | 6.673 | -0.292 |
| | | | (0.466) |
| Work experience ≥5 | 0.952 | 0.927 | 0.0251 |
| | | | (0.569) |
| Investment experience ≥5 | 0.571 | 0.600 | -0.0286 |
| | | | (0.756) |
| Most targeted stage: seed | 0.048 | 0.018 | 0.0294 |
| | | | (0.382) |
| Most targeted stage: early-stage | 0.159 | 0.145 | 0.0133 |
| | | | (0.843) |
| Most targeted stage: late-stage | 0.064 | 0.055 | 0.00895 |
| | | | (0.839) |
| Most targeted stage: private equity | 0.143 | 0.164 | -0.0208 |
| | | | (0.757) |
| Most targeted stage: M&A | 0.032 | 0.000 | 0.0317 |
| | | | (0.186) |
| Most targeted stage: IPO | 0.064 | 0.036 | 0.0271 |
| | | | (0.508) |
| Invested in: information & communication industry | 0.349 | 0.255 | 0.0947 |
| | | | (0.269) |
| Invested in: wholesale & retail industry | 0.286 | 0.436 | -0.151* |
| | | | (0.090) |
| Observations | 63 | 55 | 118 |

*p*-values in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

### 2.4.2 Main Analysis

***Male Investors***

To determine the effect of gender and industry treatments on male investors during the screening stage, I performed OLS regression analyses. Table 2.3 presents the regression estimates for both male investors' propensity to proceed to due diligence (Column 1–2) and their perception of the entrepreneurs' competence (Column 3–4). Columns (1) and (3) present the regression estimates of the baseline model that examines the entrepreneur's gender, industry gender composition, and their interaction effect on male investors. Columns (2) and (4) show the regression estimates after adding a set of controls for investors' characteristics and investment experience in the model. As illustrated in Column (1), I find no statistically significant effect of the gender treatment on male investors' propensity to proceed to due diligence ($\beta_{male}$=0.071, p= 0.979). Controlling for investors' characteristics and investment experience, I also find no statistically significant gender effect as illustrated in Column (2) ($\beta_{male}$= 1.327, p=0.672). Male investor's propensity to proceed to due diligence for female-founded startups is similar to the propensity for male-founded startups.

In regard to industry gender composition, as Column (1) reports, the treatment has no statistically significant effect on male investors' evaluations. Male investors are just as likely to proceed to due diligence when screening startups operating in gender-neutral and male-dominated industries. Controlling for investors' characteristics and investment experience, I also find no significant effect of the industry gender composition treatment on male investors as presented in Column (2) ($\beta_{male}$=0.857, p=0.674). Male investors have the same propensity to proceed to due diligence for startups operating in male-dominated and gender-neutral industries. I then examined the interaction effect of gender and industry gender composition treatment. Column (2) in Table 2.3 shows that when controlling for investors' characteristics and investment experience, I do not find a statistically significant interaction effect on male investors' propensity to proceed to due diligence ($\beta_{male}$= 1.357, p=0.571). Compared to female-founded startups operating in gender-neutral industries, female-founded startups operating in male-dominated industries have a similar propensity to proceed to due diligence when screened by male investors.

Table 2.3 also presents the regression estimates of entrepreneurs' competence as perceived by male investors (Column s 3–4). In terms of the effect of entrepreneurs' gender, Column (3) reports that gender has no statistically significant effect on male investors ($\beta_{male}$=-0.310, p= 0.540). Controlling for investors' characteristics and investment, the gender treatment effect

remains statistically insignificant, as reported in Column (4) ($\beta_{male}$=-0.300, p= 0.581). Male investors perceive female entrepreneurs to be as competent as male entrepreneurs who found identical startups.

**TABLE 2.3: Multiple Regression Analysis: Male Investors**

| | Propensity to Proceed to Due Diligence | | Perceived Competence | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Female entrepreneur | 0.071 | 1.327 | -0.310 | -0.300 |
| | (2.747) | (3.115) | (0.502) | (0.541) |
| Male-dominated industry | -0.857 | -0.857 | -0.381 | -0.381 |
| | (1.923) | (2.027) | (0.443) | (0.467) |
| Female entrepreneur x Male-dominated industry | 1.357 | 1.357 | 0.714 | 0.714 |
| | (2.259) | (2.381) | (0.555) | (0.585) |
| Age | | 0.095 | | -0.005 |
| | | (0.061) | | (0.007) |
| College degree or higher | | 1.322 | | -0.273 |
| | | (2.337) | | (0.213) |
| Risk aversion | | -0.363 | | 0.021 |
| | | (0.336) | | (0.054) |
| Most targeted stage: seed | | 0.330 | | -0.132 |
| | | (2.204) | | (0.488) |
| Most targeted stage: early-stage | | -2.540 | | -0.855*** |
| | | (1.648) | | (0.201) |
| Most targeted stage: late-stage | | 1.628 | | -0.466* |
| | | (2.152) | | (0.273) |
| Most targeted stage: private equity | | 3.369* | | 0.933*** |
| | | (1.704) | | (0.233) |
| Most targeted stage: M&A | | -4.226** | | -0.318 |
| | | (2.068) | | (0.553) |
| Most targeted stage: IPO | | 2.535 | | -0.651 |
| | | (2.190) | | (0.508) |
| Invested in: information & communication industry | | -3.367* | | -0.157 |
| | | (1.809) | | (0.174) |
| Invested in: wholesale and retail industry | | 2.424** | | 0.530*** |
| | | (1.149) | | (0.191) |
| Constant | 16.429*** | 13.621*** | 4.810*** | 5.096*** |
| | (1.533) | (4.143) | (0.189) | (0.577) |
| DV mean | 18.889 | 18.889 | 5.04 | 5.04 |
| R-sq | 0.1589 | 0.3187 | 0.1226 | 0.4574 |
| Observations | 126 | 126 | 126 | 126 |

This table presents the OLS regression results for the effect of the entrepreneur's gender and industry gender composition on male investor's propensity to proceed to due diligence (columns 1–2) and the perception of the entrepreneur's competence (columns 3–4). All models control for other experimental interventions including the type of previous investors, expert endorsement, and their interactions. Standard errors in the second row and are corrected for clustering at the investor's level. * p<0.10, ** p<0.05, *** p<0.01.

Examining the industry gender composition treatment on entrepreneurs' competence as perceived by male investors, I find no statistically significant effect ($\beta_{male}$=-0.381, p=0. 393).

Controlling for male investors' characteristics and investment experience, I also find no significant effect of the industry gender composition treatment on male investors, as presented in Column (4). Male investors perceive entrepreneurs operating in male-dominated industries to be as competitive as their counterparts operating in gender-neutral industries. Finally, investigating the interaction effect between gender and industry gender composition, the analysis reported in Column (4) shows no statistically significant interaction effect on the perceived competence ($\beta_{male}$= 0. 714, p=0.227). This finding indicates that male investors perceive female entrepreneurs operating in male-dominated industries to be as competent as female entrepreneurs operating in gender-neutral industries.

***Female Investors***

Table 2.4 presents the regression estimates of examining the effect of an entrepreneur's gender on female investors' propensity to proceed to due diligence (Columns 1–2) and the perceived competence of entrepreneurs (Columns 3–4) during the startup screening stage. Columns (1) and (3) present the regression estimates of the baseline model that examines the entrepreneur's gender, industry gender composition, and their interaction effect on female investors. Columns (2) and (4) show the regression estimates after adding a set of controls for investors' characteristics and investment experience in the model.

The results in Column (1) reveal that gender has a statistically significant effect on female investors' propensity to proceed to due diligence ($\beta_{female}$=6.4, p=0.061). Controlling for investors' characteristics and investment, the gender treatment also has a statistically significant effect on female investors, as reported in Column (2) ($\beta_{female}$=8.845, p= 0.020). Female investors are nearly nine points more likely to proceed to due diligence when screening female-founded startups, which equates to 43 percent of the variable's mean (mean value equals 20.73) and 189 percent of the variable's standard deviation (S.D. equals 4.69). When examining the effect of the industry gender composition treatment on female investors' propensity to proceed to due diligence, as Column (1) reports, I find no statistically significant effect. When controlling for investors' characteristics and investment experience, I also find no significant effect of the industry gender composition treatment, as presented in Column (2) ($\beta_{female}$=-2.4, p=0. 415). Female investors have the same propensity to proceed to due diligence for startups operating in male-dominated and gender-neutral industries. The analysis reported in Column (2) also shows that the treatment interaction effect on the propensity for female investors to proceed is not statistically significant ($\beta_{female}$=0.733, p=0. 829). The likelihood of female investors proceeding to due diligence when

screening female-founded startups operating in male-dominated industries is not significantly higher compared to their propensity to proceed when screening female-founded startups operating in gender-neutral industries.

**Table 2.4: Multiple Regression Analysis: Female Investors**

| | Propensity to Proceed to Due Diligence | | Perceived Competence | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Female entrepreneur | 6.400* | 8.845** | 1.222*** | 1.637*** |
| | (3.339) | (3.696) | (0.396) | (0.348) |
| Male-dominated industry | -2.400 | -2.400 | 0.200 | 0.200 |
| | (2.760) | (2.919) | (0.130) | (0.137) |
| Female entrepreneur x Male-dominated industry | 0.733 | 0.733 | -0.533 | -0.533 |
| | (3.197) | (3.381) | (0.485) | (0.513) |
| Age | | 0.031 | | -0.001 |
| | | (0.042) | | (0.008) |
| College degree or higher | | 0.751 | | -0.253 |
| | | (1.418) | | (0.227) |
| Risk aversion | | 0.234 | | -0.054 |
| | | (0.301) | | (0.049) |
| Most targeted stage: seed | | -2.960 | | -0.290 |
| | | (3.190) | | (0.502) |
| Most targeted stage: early-stage | | 3.282** | | 0.696*** |
| | | (1.516) | | (0.251) |
| Most targeted stage: late-stage | | 5.500*** | | 0.518 |
| | | (1.495) | | (0.438) |
| Most targeted stage: private equity | | 1.045 | | 0.461 |
| | | (1.441) | | (0.287) |
| Most targeted stage: IPO | | -2.613 | | -0.518* |
| | | (3.149) | | (0.307) |
| Invested in: information & communication industry | | -0.880 | | -0.612** |
| | | (1.286) | | (0.248) |
| Invested in: wholesale and retail industry | | 0.754 | | 0.036 |
| | | (1.218) | | (0.174) |
| Constant | 15.600*** | 8.906** | 4.333*** | 4.369*** |
| | (2.942) | (4.435) | (0.145) | (0.702) |
| DV mean | 20.727 | 20.727 | 5.418 | 5.418 |
| R-sq | 0.2535 | 0.3732 | 0.2632 | 0.4605 |
| Observations | 110 | 110 | 110 | 110 |

This table presents the OLS regression results for the effect of the entrepreneur's gender and industry gender composition on female investor's propensity to proceed to due diligence (columns 1–3) and the perception of the entrepreneur's competence (columns 4–6). All models control for other experimental interventions including the type of previous investors, expert endorsement, and their interactions. Standard errors in the second row and are corrected for clustering at the investor's level. * p<0.10, ** p<0.05, *** p<0.01.

Table 2.4 also reports the regression estimates of examining the effect of entrepreneurs' gender on their competence as perceived by female investors (Column 3–4). Column (3) reports that gender has a statistically significant effect (β=1.222, p= 0.003). Controlling for investors' characteristics and investment, the gender treatment has a statistically significant effect, as

reported in Column (4) ($\beta_{female}$= 1.637, p= 0.000). Female investors perceive female entrepreneurs as being nearly two points more competent compared to male entrepreneurs who found identical startups, which equates to 30 percent of the variable's mean (mean value equals 5.418) and 177 percent of the variable's standard deviation (SD equals 0.926). In regard to industry gender composition, as Column (3) reports, the treatment has no statistically significant effect on female investors. When controlling for investors' characteristics and investment experience, I also find no significant effect of the industry gender composition treatment on female investors, as presented in Column (4) ($\beta_{female}$=-0.200, p=0. 150). Female investors perceive entrepreneurs' operating in male-dominated to be as competent as their counterparts operating in gender-neutral industries. I then examined the interaction effect between gender and industry gender composition. The analysis reported in Column (4) shows no statistically significant interaction effect on perceived competence ($\beta_{female}$= -0.533, p=0.303). This finding indicates that female investors perceive female entrepreneurs operating in male-dominated industries to be as competent as female entrepreneurs operating in gender-neutral industries.

Finally, I performed a mediation analysis to determine the extent to which the significant effect of the gender treatment on female investors' propensity to proceed to due diligence is mediated by their perception of female entrepreneur's competence[14]. I find that the proportion of the total effect of the gender treatment that is mediated equals 16 percent (direct effect= 2.174 and total effect= 2.619). These figures indicate that female investors' higher propensity to proceed to due diligence when evaluating female-founded startups arises from their higher perception of female entrepreneurs' competence. Such evidence illustrates that female investors significantly respond to information about the startup team, which has been documented in the literature (Bernstein, Korteweg, & Laws, 2017). Moreover, the evidence attests to the effectiveness of the gender manipulation procedure applied in the experiment and, thus, the experiment's internal validity.

## 2.5 Discussion

Are female entrepreneurs less likely to securing venture capital compared to male entrepreneurs? If so, is the disadvantage driven by biased investors or female-associated factors? What role do investors' inaccurate beliefs as opposed to gender preferences play in shaping the gender gap in funding? This study investigates whether male investors and female investors are

[14] I used SEM command with bootstrapped standard errors and confidence intervals on the full model in STATA.

biased against female entrepreneurs during the screening stage of the fundraising process and unfolds their beliefs about female entrepreneurs. I conducted an experiment in which I manipulate the gender of the entrepreneur (male or female) and the gender composition of the industry (male-dominated industry or gender-neutral industry) to disentangle the different types of discrimination. The experimental design distinguishes between and tests for the following two types of discrimination: taste-based (Becker, 1957) and inaccurate statistical discrimination (Bohren et al., 2019), while controlling for the third type that is accurate statistical discrimination (Arrow, 1973; Phelps, 1972). Typically, economic theories of discrimination are categorized into two types. The first is taste-based discrimination (Becker, 1957), which would involve investors discriminating against female entrepreneurs by making *irrational* investment decisions based on their preference for gender that favor, or disfavor, a certain gender rather than ability and feasibility assessments. The second is statistical discrimination (Arrow, 1973; Phelps, 1972), which would involve investors discriminating against female entrepreneurs by making *rational* investment decisions based on accurate beliefs about the female entrepreneur's ability and investment feasibility. Recently, a new type of discrimination named 'inaccurate statistical discrimination', which highlights the assumption of accurate beliefs in statistical discrimination, has received attention. In the context of this study, inaccurate statistical discrimination would involve investors discriminating against female entrepreneurs by making what is perceived by them to be "*rational*" investment decisions based on beliefs about female entrepreneurs that are perceived to be accurate but are not (i.e., they are inaccurate beliefs).

I find that while eliminating any potential observable and unobservable systematic gender differences (statistical discrimination), male investors do not discriminate against female entrepreneurs; instead they evaluate them similarly to their male peers. A failure to observe any differential treatment of male and female entrepreneurs within and between industries suggests that male investors in my sample do not have any preference for gender (taste-based discrimination). This evidence is inconsistent with Ewens and Townsend (2019), who report that male investors display significantly less interest in female entrepreneurs, thereby suggesting that male investors are biased (taste-based and inaccurate statistical discrimination) against female entrepreneurs. Although the study by Ewens and Townsend uses a unique data set from AngelList, which unlike other data sets observes both successful and unsuccessful fundraising attempts, bias may be driven by gender differences between male-founded and female-founded startups that the study is not capable to control for. Moreover, the observed bias may be driven by systematic differences in certain characteristics between male-founded and female-founded startups that are

unobservable to scholars and probably investors as well, but which are eliminated in my experimental design.

In terms of the effect of the industry's gender composition, I find no significant effect of the industry's gender composition on male investors' evaluations of male-founded and female-founded startups. There are no significant differences in the funding likelihood of male-founded and female-founded startups operating in either male-dominated or female-dominated industries. This evidence is inconsistent with Hebert (2020), who claims that investors have context-dependent stereotypes and only penalize females operating in male-dominated industries while exhibiting a positive bias for females operating in female-dominated industries. The findings are also inconsistent with Kanze et al., (2020) who explore the effect of industry-entrepreneur perceived gender fit on investor's likelihood of funding. The authors suggest that females operating in male-dominated industries are less likely to secure capital compared to female entrepreneurs operating in female-dominated industries. Female entrepreneurs' disadvantage is claimed to be driven by the lack of fit between the entrepreneurs and their industries. Hebert (2020) and Kanze et al., (2020) investigate investors' gender bias as a result of gender preferences and/or stereotypes, nevertheless, they do not control for the potential effect of all the gender differences on the entrepreneur level. Using a particulate experimental design, this study eliminates any systematic gender differences between male and female entrepreneurs that are likely unobservable to scholars and may impact investors' funding likelihood.

Failing to observe any differential treatment of male and female entrepreneurs between industries suggests that male investors in my sample do not have any inaccurate beliefs or stereotypes about female entrepreneurs (inaccurate statistical discrimination). The study findings shed light on the potential role of statistical discrimination based on inaccurate beliefs in driving the gender gap in funding. Consistent with statistical discrimination, Guzman and Kacperczyk (2019) claim that the documented gender discrimination against females decreased significantly with strong signals of growth orientation. This evidence illustrates the significance of female-specific factors as opposed to gender bias in terms of driving the funding gap.

Looking at the behavior of female investors towards female entrepreneurs, I find evidence of positive discrimination in favor of female entrepreneurs. While eliminating any observable and unobservable potential systematic gender differences (statistical discrimination), female investors positively discriminate in favor of female entrepreneurs and evaluate them differently compared to their male peers. Moreover, I find no significant effect of the industry's gender composition on female investors' evaluations of female-led startups. These findings indicate that female investors'

differential treatment of women is explained by taste-based discrimination and not inaccurate statistical discrimination. A possible explanation of the observed positive discrimination towards female entrepreneurs is homophily (Ibarra, 1992; Mcpherson et al., 2001) and similarity attraction (Byrne, 1971). The literature provides evidence that the more female venture capitalists in VC firms correlate with an increase in received funding proposals from female-led startups (Brush et al., 2004). Moreover, Gafni Marom, Robb, and Sade (2020) show that female entrepreneurs in Kickstarter have a higher probability of being backed by a female than a male backer. An alternative explanation for female investors' positive discrimination towards female entrepreneurs is simply that they are supporting whom they believe are competent female entrepreneurs by trying to offset male investors' bias. Overall, a potential implication of the findings is that increasing the number of female investors in the venture capital industry may increase females' share of the venture capital invested, thereby positively contributing to closing the gap.

This paper contributes to the literature on entrepreneurship and gender (Coleman & Robb, 2009; Ewens & Townsend, 2019; Gompers & Wang, 2017; Guzman & Kacperczyk, 2019; Hebert, 2020). The paper provides evidence that improves our understanding of disputed underlying mechanisms of gender bias (taste-based discrimination and inaccurate statistical discrimination) as opposed to accurate statistical discrimination (Arrow, 1973; Phelps, 1972) as a potential explanation for the gender gap in access to capital. Finding evidence of no gender bias among male investors emphasizes the importance of differentiating gender from gender-related behaviors. Moreover, this study highlights the need for more research to investigate the systematic differences between male-founded and female-founded startups, which seems to be consciously or unconsciously observed by investors but not scholars. Second, female investors' positive discrimination in favor of their own gender sheds light on the promising and positive potential impact of female investors in closing the gender gap in funding. Further research on women's investment behavior and preferences would support the design of more effective policies aiming to close the gender gap in access to capital and women's participation in entrepreneurship.

I acknowledge that the study has several limitations. First, the high level of internal validity obtained by using an experimental setting comes at a cost: The relatively artificial setting of the startup evaluation in the experiment. Such a setting with relatively low monetary incentives for VCs means that social-desirability bias may be an issue. Investors may be behaving in a certain way or making a certain decision knowing that it will not have an impact on their real lives. Second, because the setting is narrowed to only include the screening stage of the decision-making process, I cannot extend the findings of this study to the other stages of the process. As a result, I

cannot measure and identify their effects on the final investment decision. Finally, the entrepreneur's gender was implied using names and pronouns, which may have gone unnoticed by some investors. However, the majority of funding cold pitches, proposals, and executive summaries do not state the gender of the team members and, therefore, I did not explicitly state the gender to eliminate the risk of exposing the manipulated treatment. I also did not use pictures to eliminate the effect of perceived attractiveness on investors.

## 2.6 Conclusion

The issue of gender disparity in venture capital funding has been well documented and investigated in the literature. However, its drivers and underlying mechanisms remain unsettled and disputed (e.g., Gornall & Strebulaev, 2020; Ewens & Townsend, 2019; Guzman & Kacperczyk, 2019). A stream of research claims that the observed disparity is the outcome of investors' discriminatory behavior against female entrepreneurs. Some scholars suggest that investors' underfunding of female-led startups reflects prejudice against or inaccurate beliefs about females. This study extends the gender bias stream of research by examining whether male investors and whether female investors are less likely to fund female entrepreneurs and, if so, whether the disadvantage is industry-dependent. I conduct a randomized lab-in-the-field experiment to explore how the entrepreneur's gender and the industry gender composition (male-dominated vs. gender-neutral) influence investors' evaluations during the screening stage of the fundraising process. The study finds that male investors do not discriminate against female entrepreneurs and evaluate them similarly to their male peers across industries. Their propensity to proceed to due diligence for a female-led startup is not statistically different than it is for a male-led startup. On the other hand, evidence suggests that female investors positively discriminate in favor of female entrepreneurs across industries. Their propensity to proceed to due diligence for a female-led startup is significantly higher than it is for male-led startups. Altogether, the findings suggest that the documented gender gap during the screening stage in the industry may not be the outcome of biased male investors. This sheds light on the potential role of systematic gender difference on the capital demand-side (accurate statistical discrimination) in driving the gender gap in funding. In regard to the highlighted potential role of female investors in closing the gender gap in the industry, the study suggests that having more female investors would potentially increase female entrepreneurs' access to startup capital, thereby positively contributing to closing the gap.

# Appendix A

## Appendix A.1: Sample of the Proposals Used in the Experiment

### Startup (1):

**YellowFit** is a mobile app that supports users around the world on their journeys to healthier and happier lives. Its approach draws on powerful pairings: nutrition and exercise; mind and body. The team managed to build an engaging and approachable way for people to achieve their personal fitness goals. Through this app, users will get on track and stay there by offering a patented unique set of exercises, meal plans, and recipes tailored to them and their goals along with guidance, resources, and reminders to build healthy habits for life. In addition, this app enables users to track their meals and activities outside the plan and it provides daily challenges and tips for extra motivation.

With regards to the management team, it consists of, first, **Sophie Brown** (CEO & Co-Founder). She graduated from a top 10 university worldwide majoring in Business Administration and she has **4** years of industry-related experience. Second, **Emily Taylor** (CFO & Co-Founder). She graduated from a top 10 university worldwide majoring in Accounting and Finance and She has **3** years of industry-related experience.

Currently, you are conducting an initial screening of this venture who is offering an equity stake of **35%** for an amount of capital that is thought to be fair. Finally, you should know that **YellowFit** has received an investment from **Business angels** but these prior investors will not interfere with your ownership target.

### Startup (2):

**earthii** is a start-up that delivers the freshest and purest forms of natural wellness in one delicious single-serving shot. The shots are expertly crafted and cold pressured to maintain ingredients in the closest possible form to the living plants they originated from. The team believes that nature alone should determine the color and flavor of the Wellness Shots and is dedicated to providing the highest quality, which extends far beyond Organic. The ingredients are exclusively brought from the top tier of organic farms and the shots are free from artificial colors or any type of sweeteners – not even stevia, honey, or sugar. The crafting and cold-pressing process have been patented.

With regards to the management team, it consists of, first, **Jessica Davies** (CEO & Co-Founder). She graduated from a top 10 university worldwide majoring in International Business and she has **5** years of industry-related experience. Second, **Amy Green** (COO & Co-Founder). She graduated from a top 10 university worldwide majoring in Supply Chain Management and she has **2** years of industry-related experience.

Currently, you are conducting an initial screening of this venture who is offering an equity stake of **35%** for an amount of capital that is thought to be fair. Finally, you should know that **earthii** has received an investment from **Business angels** but these prior investors will not interfere with your ownership target.

## Appendix A.2: Risk Aversion Test Used in the Experiment (Holt & Laury, 2002)

| | Option A | Option B |
|---|---|---|
| **Decision (1)** | **£300** with a probability of 50%, **£0** otherwise | **£25** for sure |
| **Decision (2)** | **£300** with a probability of 50%, **£0** otherwise | **£50** for sure |
| **Decision (3)** | **£300** with a probability of 50%, **£0** otherwise | **£75** for sure |
| **Decision (4)** | **£300** with a probability of 50%, **£0** otherwise | **£100** for sure |
| **Decision (5)** | **£300** with a probability of 50%, **£0** otherwise | **£125** for sure |
| **Decision (6)** | **£300** with a probability of 50%, **£0** otherwise | **£150** for sure |
| **Decision (7)** | **£300** with a probability of 50%, **£0** otherwise | **£175** for sure |
| **Decision (8)** | **£300** with a probability of 50%, **£0** otherwise | **£200** for sure |
| **Decision (9)** | **£300** with a probability of 50%, **£0** otherwise | **£225** for sure |
| **Decision (10)** | **£300** with a probability of 50%, **£0** otherwise | **£250** for sure |

**Appendix A.3: Gender and Ethnicity Survey Results of Names Used in the Experiment**

| First Name | Last Name | Gender | Correct Gender Perception (%) | Correct Ethnic Perception as White (%) |
|---|---|---|---|---|
| Thomas | Edwards | Male | 100 | 94.23 |
| Daniel | White | Male | 100 | 90.38 |
| Matthew | Wilson | Male | 100 | 90.38 |
| Jack | Smith | Male | 96 | 98.08 |
| Sophie | Brown | Female | 97 | 90.38 |
| Emily | Taylor | Female | 98 | 97.12 |
| Jessica | Davies | Female | 98 | 94.23 |
| Amy | Green | Female | 97 | 95.19 |

**Appendix A.4 Descriptive Statistics: Detailed Investor Characteristics**

| | Male investors | | Female investors | | Total | | |
|---|---|---|---|---|---|---|---|
| Investment Experience (invested in or identified as) | Obs | Mean | Obs | Mean | Obs | Mean | Diff. |
| Private Equity Fund | 61 | .721 | 54 | .63 | 115 | .678 | 0.0831 |
| | | | | | | | (0.375) |
| Venture Capital Fund | 59 | .39 | 52 | .269 | 111 | .333 | 0.0906 |
| | | | | | | | (0.315) |
| Angel Syndicate | 57 | .123 | 53 | .094 | 110 | .109 | 0.0292 |
| | | | | | | | (0.639) |
| Private Equity Investor | 63 | .429 | 55 | .382 | 118 | .407 | 0.0260 |
| | | | | | | | (0.788) |
| Venture Capitalists | 63 | .063 | 55 | .018 | 118 | .042 | 0.0531 |
| | | | | | | | (0.201) |
| Business Angel | 63 | .048 | 55 | .2 | 118 | .119 | -0.102* |
| | | | | | | | (0.086) |
| Agriculture, forestry & fishing | 63 | .111 | 55 | .109 | 118 | .11 | 0.0111 |
| | | | | | | | (0.854) |
| Production (Mining, energy, utilities, and manufacturing) | 63 | .349 | 55 | .164 | 118 | .263 | 0.189** |
| | | | | | | | (0.026) |
| Construction | 63 | .302 | 55 | .127 | 118 | .22 | 0.191** |
| | | | | | | | (0.017) |
| Wholesale and retail | 63 | .286 | 55 | .436 | 118 | .356 | -0.122 |
| | | | | | | | (0.196) |
| Transport & storage | 63 | .159 | 55 | .018 | 118 | .093 | 0.126** |
| | | | | | | | (0.020) |
| Accommodation & food services | 63 | .206 | 55 | .164 | 118 | .186 | 0.0235 |
| | | | | | | | (0.760) |
| Information & communication | 63 | .349 | 55 | .255 | 118 | .305 | 0.127 |
| | | | | | | | (0.165) |
| Financial & insurance activities | 63 | .444 | 55 | .164 | 118 | .314 | 0.278*** |
| | | | | | | | (0.002) |
| Real estate activities | 63 | .349 | 55 | .273 | 118 | .314 | 0.107 |
| | | | | | | | (0.245) |
| Professional, scientific & technical activities | 63 | .381 | 55 | .345 | 118 | .364 | 0.0471 |
| | | | | | | | (0.621) |
| Business administrative & support services | 63 | .27 | 55 | .182 | 118 | .229 | 0.0766 |
| | | | | | | | (0.358) |
| Education | 63 | .143 | 55 | .145 | 118 | .144 | -0.0296 |
| | | | | | | | (0.666) |
| Health | 63 | .413 | 55 | .236 | 118 | .331 | 0.147 |
| | | | | | | | (0.106) |
| Arts, entertainment, recreation, and other services | 63 | .127 | 55 | .182 | 118 | .153 | -0.0310 |
| | | | | | | | (0.667) |

*p*-values in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Chapter 3

# She Couldn't Agree More: The Role of Failure Attribution in Shaping the Gender Gap in Competition Persistence[15]

**Manar Alnamlah**

Department of Strategy and Innovation

Copenhagen Business School

**Christina Gravert**

Department of Economics and Center for Economic Behavior and Inequality

University of Copenhagen

[15] Status: working paper. Alnamlah, M., & Gravert, C. (2020). She Could Not Agree More: The Role of Failure Attribution in Shaping the Gender Gap in Competition Persistence. *CEBI Working Paper Series*, (25/20). Retrieved from www.cebi.ku.dk

## 3.1 Introduction

Despite the growth in women's labor market participation in all kinds of previously male-dominated domains, women remain underrepresented in competitive and high-reward domains such as corporate senior leadership and entrepreneurship. The share of female physicians and financial managers climbed to 41% and 54% respectively in 2019 from 13% and 24% in the mid-70s, yet the share of female CEOs in the Fortune 500 list is far from these figures, hovering at less than 8% (Hinchliffe, 2020; Wootton, 1997). In such a competitive domain, women are not only heavily underrepresented but are also less likely to persist after setbacks. For instance, women rejected in the recruitment process for senior executive roles in the past are less likely to consider another position in the same firm relative to men (Brands & Fernandez-Mateo, 2017). Similarly, in entrepreneurship, the odds of reentry after a business failure of the already underrepresented female entrepreneurs are significantly lower compared to their male counterparts (Simmons et al., 2019).

Failure and setbacks are organic and fundamental elements of these competitive domains and, therefore, resilience and persistence after setbacks are keys to *making it* in these domains – be it by securing venture capital for a start-up after many failed fundraising attempts, being awarded a patent after appealing to rejected categories and negotiating patent rights, winning a grant for scientific research after several rejections, or publishing an academic paper after a series of rejections, reviews, and revisions. Existing studies in the experimental economics literature investigating the gender differences in effects of competition outcomes (win or loss) on the subsequent willingness to compete again are limited. The literature suggests that competition loss negatively impacts women's subsequent performance in the following competition (Buser, 2016; Gill & Prowse, 2014) and their willingness to compete again (Buser & Yuan, 2019). These findings indicate that women's underrepresentation in competitive domains may not be entirely driven by women's lower likelihood to self-select into these domains due to their lower preference for competition. Women's underrepresentation may also be driven by how the subpopulation of women who have self-selected into competitive domains competes against men, reacts to failure, responds to negative feedback and persists after setbacks.

In this study, we examine the impact of failure attribution on men's and women's persistence in competition. We ask whether receiving negative attributional feedback attributing the failure to one of the three causal attributions – luck, effort and ability – causally affects the subsequent willingness to compete compared to receiving negative performance feedback

(absolute and relative performance) and, if so, whether the effect varies by gender. Since it is impossible to prevent women from experiencing failure in competitive workplaces or entrepreneurial settings, it is important to understand how women who had self-selected into competition respond to failure and different types of negative feedback. Thus, this study aims to explore how women react to failure attributional feedback and whether it can mitigate the gender gap in persistence.

To address our research question, we conduct a large laboratory experiment with 667 subjects. Our design builds on the experiment in Buser and Yuan (2019). In our experiment, subjects perform a real effort task of calculating the sum of five two-digit numbers in two rounds. In both rounds, participants choose a compensation scheme of either receiving a piece-rate payment (PR) that pays for their own performance without regard to the performance of the assigned anonymous opponent or entering a winner-takes-all competition that pays for their own performance if the subject's score is higher than the opponent's and zero otherwise. Having multiple competitions while allowing participants to decide about their competition entry rather than forcing everyone to compete, enables us to create a setting that mimics the reality of competition entry and then test subsequent competitiveness. Accounting for the willingness to enter into a competition enables us to obtain more accurate results and draw more meaningful conclusions about the gender differences in persistence after losing the competition. The performance of participants of both compensation schemes is compared to the performance of a randomly matched opponent from the same session. Next, participants receive their performance feedback (absolute and relative score) and an announcement of whether they have won or lost. This is followed by attributional feedback attributing the loss/win to bad luck, lack of effort, or lack of ability depending on the treatment group except for the control group that receives no attributional feedback. Conditional on the score, winning and losing in our experimental design can be seen as exogenous. Participants then decide whether they want to compete or work for a piece rate in the next round.

Our findings contribute to the understanding of the gender differences in persistence after a competition loss and how they may shape the gender gap in career choices and labor market participation. Our analysis focuses on the subjects who have an initial preference for competition and competed in the first round. The analysis reveals several findings, the first being, we find no significant gender difference in the effect of losing and receiving performance feedback on the subsequent willingness to compete. Women are just as likely as males to compete again after losing and learning about their performance. Second, we show significant gender differences in

the willingness to compete after losing a competition and receiving feedback that attributes the loss to bad luck and ability. Compared to men, women are more likely to compete when their loss is attributed to bad luck. In contrast, women are significantly less likely to compete after losing when their loss is attributed to a lack of ability relative to their male counterparts. Third, we find no gender differences in the effect of effort attribution. Conditional on competing, women are just as likely as men to compete again after losing when their loss is attributed to a lack of effort. Lastly, we find that for women attributing failure to bad luck has no significant effect on their *confidence (beliefs)* while still having a significant positive effect on their *re-entry into competition (action)*. In contrast, attributing failure to lack of ability has both an effect on *beliefs* and *actions*.

Our study has important implications for the negative feedback design and thus women's underrepresentation in the labor market, especially in competitive fields. It is impossible for women working in competitive workplaces, going through the process of senior recruitment, or seeking to secure venture capital to sustain their startups, to avoid experiencing failure. Nevertheless, to potentially prevent women who have an initial preference for competition from dropping out after failure (leaky pipeline), our findings suggest providing performance feedback that emphasizes the measures of absolute and relative performance. Furthermore, in the case of attributional feedback, the findings suggest emphasizing the role of effort or the role of luck as opposed to the role of ability when providing attributional feedback. In other words, any feedback provided to women should refrain from attributing failure to their lack of ability. Such feedback mechanisms would potentially retain failing women who have preferences for competition in their competitive fields. Preventing competitive women from dropping out would positively contribute to women's participation in the labor market, business survival, job creation, innovation and economic growth.

Our work contributes to several strands of the literature. First, we contribute to the literature on the gender differences in preference for competition (e.g., Croson & Gneezy, 2009; Niederle & Vesterlund, 2007, 2011) by showing that the gender differences in competition entry do not predict gender differences in persistence for the subpopulation of women who self-select into competition. Second, we contribute to the established performance feedback literature (Alan & Ertac, 2019; Berlin & Dargnies, 2016; Buser, Gerhards, & van der Weele, 2018; Wozniak, Harbaugh, & Mayr, 2014) and the growing literature on gender differences in reactions to competition outcomes (Buser, 2016; Buser & Yuan, 2019; Mobius, Niederle, Niehaus, & Rosenblat, 2014) by showing that there are no gender differences in persistence after losing a

competition when performance feedback is provided. Women and men choose to compete again after losing at a similar rate. Third, we contribute to the literature on the attributional theory and achievement motivation (Schuster, Forsterlung, & Weiner, 1989; Weiner, 1985, 2000; Weiner et al., 1987) and extend the performance feedback literature by examining the gender differences in response to attributional feedback. We show that attributional feedback of a competition loss using commonly cited causal attributions of luck, effort, and ability has a significant effect in shaping the gender difference in persistence after losing. Lastly, we contribute to growing literature on the drivers and implications of gender diversity in the labor market (Fernandez-mateo & Rubineau, 2019; Gompers & Wang, 2017; Hoogendoorn et al., 2013; Lyngsie & Foss, 2017; Solal & Snellman, 2019). We show the significant impact of attributional feedback on women's persistence in the competition, which potentially indicates that failure attributional feedback is in part shaping women's underrepresentation in competitive and high-reward domains.

The remainder of this paper is structured into five sections. Section 2 introduces the relevant literature on the gender differences in competitiveness and the effect of competition loss. Section 3 illustrates the experimental design and general procedure. Section 4 introduces the data. Section 5 reports the results. Section 6 discusses the study findings and implications. Finally, Section 7 summarizes the study conclusions.

## 3.2 Literature Review

### 3.2.1 Gender Differences in Competitiveness

The experimental economics literature has largely established that women are significantly less willing to compete compared to men, which was originally found by Niederle & Vesterlund (2007). This observed gender differences in preferences for competition entry has been shown by a growing body of work to be relevant for the labor market outcomes by predicting career choices (Bertrand, 2011; Buser et al., 2018, 2014; Reuben, Wiswall, & Zafar, 2017) and by documenting this gap in competitiveness in the field (Flory, Leibbrandt, & List, 2015). According to Niederle & Vesterlund (2007), the gap in competition entry is not explained by ability, risk aversion, and feedback aversion. Instead, they suggest that gender differences in overconfidence play a significant role in explaining the gender gap in competition entry: men are found to be substantially more overconfident than women. Moreover, the gap in competition entry is also explained by gender differences in preferences for competition. Nevertheless, studies in the literature show inconsistent evidence about the potential underlying mechanisms explaining

the observed gap in competition entry. Sutter and Glätzle-Rützler (2015) show that the gender gap in competition entry among young children persists after controlling for gender differences in overconfidence, performance and risk attitudes. Controlling for the same factors, Grosse and Riener (2010) inconsistently show that the gap in competition entry persists. However, it only persists in a quantitative task as opposed to verbal tasks. Shedding light on the potential role of stereotypes in driving the gender gap in competition.

Acknowledging that women are found to be less confident than men (Niederle & Vesterlund, 2007), several studies have argued that if women act upon wrong beliefs about their ability in their decision to shy away from competitions then feedback should close the gender gap in competition entry (Berlin & Dargnies, 2016; Ertac & Szentes, 2011; Wozniak et al., 2014). Exploring the role of feedback in belief-updating and promoting women's competitiveness, the literature shows that men and women are found to process performance feedback and update their beliefs about their abilities differently (Berlin & Dargnies, 2016; Buser et al., 2018). While Cason, Masters and Sheremeta (2010) claim that prior knowledge about relative performance does not eliminate the gender gap in the competition entry, Wozniak, Harbaugh and Mayr (2014) show that such feedback has a significant effect on closing that gap. Wozniak et al. (2014) argue that women's low rate of competition entry is mostly an outcome of ambiguity about their relative ability. Thus, performance feedback serves as a substitute for affirmative action that encourages high-ability women to enter the competition. Brandts, Groenert and Rott (2015) further investigate the role of advice as an alternative to affirmative action to address the gender gap in competition entry. Although the gender gap in entry persists, they find advice to have a positive effect on the efficiency of the competition entry decisions in terms of economic gains. Receiving advice increases the confidence and competition entry likelihood of high-performing women while decreases the entry likelihood of weak-performing men.

### 3.2.2 Gender Difference in the Effect of Competition Loss

The substantial interest in the gender differences in preference for competition entry and its role in driving women's underrepresentation in competitive fields has raised questions about the preferences for competition *per se* beyond the entry point. Does the existing evidence on the gender differences in competition entry extends to gender differences in persistence? Are women less likely to persist after losing a competition than men? Or is the subpopulation of women who exhibit competitiveness by self-selecting into competition different from the population of women? How does this subpopulation of women compete against men, respond to feedback, react

to failure, and persist after setbacks? What role do the preferences of this subpopulation play in shaping women's underrepresentation in competitive fields? Although existing studies in literature exploring the potential effects of competition outcomes are limited, the majority of the empirical and experimental evidence in the literature suggests that rejection or competition loss has a different impact on the subsequent willingness to compete of men and women. Evaluating patent applications in the United States (USPTO) over a decade, Aneja, Reshef and Subramani (2020) provide causal evidence that female-dominated innovator teams appeal less after initial rejections compared to male-dominated teams. Brands and Fernandez-Mateo (2017) combine survey, field, and experimental data and find that rejection in the executive recruitment process negatively influences women's subsequent willingness to compete for a senior position offered by the same rejecting firm. Rejection triggers women's belonging uncertainty and confirms their lack of belonging to the senior executive environment, where their leadership abilities are negatively stereotyped.

Competition outcomes – winning and losing – are the most frequent, if not the only, way we learn about our relative ability. However, competition outcomes do not only serve as feedback about relative ability but also elicit different reactions. The experimental economics literature shows that people perform worse and pick a more challenging target after losing a competition (Buser, 2016; Gill & Prowse, 2014), while they are more likely to donate after winning (D. L. Chen, 2019). Other studies examine the potential gender difference in the effect of tournament outcomes. In a series of a real-effort task – the *slider* – competitions, Gill and Prowse (2014) investigate the gender difference in the effect of a competition outcome (win or loss) on subsequent performance. They find that losing a competition has a significant effect on effort. After losing, women reduce their performance in the following round, while men only reduce their effort when the prize is large. They argue that gender differences in actual and expected responses to win and loss are contributing to women's underrepresentation in the labor market. Similarly, Buser (2016) finds women to be discouraged and perform worse at a subsequent identical task after losing, while men seek more challenging targets. Women's worse performance is suggested to be possibly explained by an effort decline. In Buser (2016), all participants competed in a winner-takes-all competition to investigate the effects of competition outcomes. However, to create a more realistic setting, competition entry should be optional rather than forcing everyone to compete. Recently, Buser and Yuan (2019) conducted a laboratory experiment with optional competition entry and used field data from the Dutch Math Olympiad to investigate the impact of losing on men and women's willingness to compete again. Their

results show that women are less likely to select themselves into a competition again after experiencing a loss. They argue that the negative impact of loss is not explained by gender differences in risk attitude, initial beliefs, or updated beliefs. Instead, it is driven by a change in women's preference for competition. The Dutch Math Olympiad field data further show that the negative effect of experiencing loss on girls' willingness to compete persists for a long-term period.

### 3.2.3 Competition Loss Attributions

Few studies in the experimental economics literature have investigated the gender differences in the effect of competition outcomes on competitiveness and persistence. The experimental economics literature, to our knowledge, has not investigated gender differences in response to causal attributions of competition outcomes – win or loss – and the subsequent willingness to compete. However, Shastrya, Shurchkova and Xiab (2020) have recently explored the gender difference in self-attribution in response to negative feedback. They examine the gender differences in the effect of negative feedback (whether payment is above or below the group's average payment) on the willingness to enter a competition. They show that women who hold a positive self-evaluation (above-average expected payment) are less likely to attribute positive feedback (above-average payment) to ability as opposed to luck compared to men. On the other hand, women who hold a positive self-evaluation are more likely to attribute negative feedback to lack of ability as opposed to bad luck compared to men. Interestingly, they find no gender differences in the effect of receiving expected negative feedback (below-median expected and actual payment) and unexpected positive feedback (below-median expected and above-median actual payment).

In the psychology literature, the causal attribution of achievement outcomes has been long investigated. According to the attributional theory of achievement motivation, all causal attributions in response to achievement outcomes share three common properties: (1) locus of causality (internal vs. external), (2) controllability (controllable vs. uncountable), and (3) stability (recurrent vs. nonrecurrent) (Weiner, 1985, 2000; Weiner et al., 1987). The four main perceived causes to achievement outcomes are found to be task difficulty (external, uncontrollable, and stable), ability (internal, uncontrollable, and stable), effort (internal, controllable, and unstable) and luck (external, uncontrollable, and unstable). On the gender differences in attributions of achievement outcomes, the psychology literature suggests that internal and stable causes such as ability are more likely to be used by men to attribute their outcome of success whereas these same

causes are more likely to be used by women to attribute their outcomes of failure (Bar-Tal, 1978; Frieze, 1975; McMahan, 1973). In stereotypically perceived masculine domains like mathematics, young girls tend to attribute their success to ability less and effort more compared to boys (Parsons, Meece, Adler, & Kaczala, 1982; Wolleat, Pedro, Becker, & Fennema, 1980). Nevertheless, the gender difference in causal attribution is also documented in attributing the outcome of verbal tasks that are stereotypically perceived to be feminine (Parsons, Adler, & Meece, 1984).

Causal attributions have motivational consequences. Attributing failure and its underlying negative feedback to a lack of effort as opposed to a lack of ability shifts the behavioral outcome from discouraged subsequent goal pursuit to motivation to do so (Gillham, Shatté, Reivich, & Seligman, 2001; Hong, Dweck, Chiu, Lin, & Wan, 1999). Furthermore, according to the attribution theory, causal attributions of achievement outcomes by the main actor (intrapersonal) are influenced by causal attributions of an involved observer of the actor (e.g. teacher or competition judge) (Weiner, 2000). Hence, the gender differences in responses to receiving negative attributional feedback in competitive settings could explain the gender gap in persistence after losing and thus women's underrepresentation in the labor market.

## 3.3 Experiment

### 3.3.1 Experimental Design and Procedure

In this section, we first introduce the experimental design and procedure and then discuss the employed treatments. We conducted an incentivized laboratory experiment that allows us to investigate the causal effect of competition loss on subjects' persistence in competition. Our experimental design is based on Niederle and Vesterlund (2007) and Buser and Yuan (2019).[16] Participants earn money based on their performance in a real effort task of adding up sets of five two-digit numbers. This task is selected intentionally as it has a component of luck, effort, and ability. First, luck lies in the random combination of numbers and the random assignment of opponents. Second, the effort lies in the time and attempts invested in performing the task. Finally,

[16] Our design is an extension of the Buser and Yuan (2019) experiment in which participants only receive performance feedback about whether they won or lost before they can decide to compete again. This specification is identical to our control group, however, we add three treatments in which we randomly assigned casual attribution statements that attribute the win/loss to either luck, effort, or ability. We do not follow Buser and Yuan (2019) in the choice of six rounds, as we assumed that the largest effect would result from the first attributional feedback and further rounds, while increasing power, are correlated with earlier rounds and thus do not provide new information.

the ability component in the selected task lies in the skill to quickly add up numbers. For more details on the experimental design and questionnaire, please see Appendix B.5.

The experiment consists of two rounds. First, participants are presented with instructions and given three minutes to practice the task. After the practice round, they learn about their absolute performance (score). Then, they are informed of the number of participants present in the same session and that they are randomly assigned to an anonymous (including gender anonymity) opponent from the same session. At the beginning of each round, participants decided on the compensation scheme for their performance. They can choose between a noncompetitive piece-rate compensation scheme (PR), which pays one point per correct answer disregarding the performance of the randomly assigned and anonymous opponent, or a competitive compensation scheme (C), which pays two points per correct answer if the participant's score is higher than the opponent's and zero otherwise. In the case of a tie, winning or losing is randomly determined. Conditional on the participant's score (performance), winning and losing can be seen as exogenous. One point is worth 0.50 Euros/GBP and one out of the two rounds is randomly drawn for payment. Randomly selecting one round to be paid out eliminates income effects as a potential confounding factor and prevents hedging. Enabling participants to decide about their competition entry rather than forcing everyone to compete, allows us to create a setting that mimics the reality of competition entry. This feature in our design allows us to obtain more accurate results and draw a more meaningful conclusion about the gender difference in persistence after losing.

In each round, participants are given three minutes to solve as many sets of five two-digit numbers as they can. In both rounds, the participant's performance is compared to a randomly chosen opponent's performance, regardless of the opponent's choice. To avoid any strategic behavior in round 2, the performance of a participant in round 2 is compared to a random participant in round 1 (the chance of drawing the same opponent as in round 1 is 1/N-1). This fact is clearly communicated to the participants. After each round, all participants receive feedback on their absolute and relative performance regardless of their compensation scheme choice. In other words, they learn their score (absolute performance) and then whether they have (or would have) won or lost against their randomly assigned opponent (relative performance). Choosing piece-rate does not prevent participants from getting feedback, thus eliminating this motivational channel for avoiding or choosing competition. We denote the feedback that includes both absolute and relative performance outcomes as "performance feedback". For participants who choose the competitive compensation scheme, the feedback reads "You scored X correct answers. You scored higher (lower) than your opponent. You therefore won (lost) against your opponent."

While for participants who choose the piece rate payment scheme, the feedback reads "You scored X correct answers. You scored higher (lower) than your opponent. You therefore would have won (lost) against your opponent."

To investigate how individuals respond to feedback regarding outcome's causal attributions, we provided feedback using three of the main perceived causes of achievement outcomes presented by Weiner et al. (1987) and Weiner (1985) in the psychology literature. These are luck, effort, and ability. We denote this second type of feedback as "attributional feedback". In the experiment, participants are randomized into one of four treatment groups: (i) the Luck Treatment group, (ii) the Effort Treatment group, (iii) the Ability Treatment group, and (iv) the Control group. While the control group receives no further feedback after the first round of performance feedback, the other three groups see an additional attributional feedback statement that attributes their outcome in round one to luck, ability, or effort. Participants in each of the three treatment groups view the following statements in addition to the performance feedback (absolute and relative performance) they receive after completing the task.

***Luck Treatment:***

"You (would have) lost! You must have been unlucky when solving the task. " OR "You (would have) won! You must have been lucky when solving the task."

***Ability Treatment:***

"You (would have) lost! You must not be that good at this task." OR "You (would have) won! You must be good at this task."

***Effort Treatment:***

"You (would have) lost! You must not have worked hard solving the task." OR "You (would have) won! You must have worked hard solving the task. "

To summarize, the timeline of the experiment is as follows:

1. Practice round:
    - Perform the task of solving as many sets of five two-digit numbers as they can for three minutes
2. Round One:
    - Predict how one's own performance in round one will rank compared to other participants' performance in round one
    - Choose a compensation scheme (piece rate or competitive compensation scheme)

- Perform the task for three minutes
- Receive feedback on absolute and relative performance (performance feedback)
- Receive feedback on outcome attribution (attributional feedback) depending on treatment group and except for control group

3. Round Two:
    - Predict how one's own performance in round two will rank compared to other participants' performance in round one
    - Choose a compensation scheme (piece rate or competitive compensation scheme)
    - Perform the task for three minutes
    - Receive feedback on absolute and relative performance: "performance feedback"
4. Post-experiment questionnaire (see Appendix B.5 for more details on the questionnaire)

The laboratory experiment was created in z-Tree (Fischbacher, 2007) and conducted at the University of Hamburg and University College London. Participants were recruited via the laboratories' online recruiting websites from a participant pool of students from all faculties. In total, 676 individuals participated in the experiment and we excluded 9 participants with missing gender, which resulted in a total sample of 667 participants. They participated in 34 sessions with 9 to 30 participants each. On average, each session has 22 participants.

### 3.3.2 Measures

***Willingness to Compete***

We elicited the subject's willingness to compete using a binary choice between a non-competitive piece-rate compensation scheme (PR) and a competitive compensation scheme (C). The non-competitive piece-rate compensation scheme (PR) is based on the participants' performance alone, where they are paid one point per correct answer. On the other hand, the competitive compensation scheme (C) is based on participants' performance being higher than their anonymous and randomly assigned opponent. They are paid two points per correct answer if the participant's score is higher than the opponent's and zero otherwise. It is to be noted that one point is worth 0.50 Euros/GBP.

***Confidence***

The confidence level, the subject's perceived chance of winning in each round, is computed as the difference between the number of participants in the session and the subject's belief about his/her rank. Before the start of each round, we elicit subjective beliefs about their

relative performance in the upcoming round. In particular, we ask subjects to predict how their performance will rank relative to the other participants' performance in round one. In round one, the question reads "Before we start, we would like you to guess how well you think you will do in comparison to the other participants who are in the lab with you. There are N people in the lab today including yourself. What do you think your rank will be in the upcoming round?" In round two, the question reads "There are N people in the lab today including yourself. What do you think your rank will be in the next round compared to the performance of the other participants in the previous round? Please choose a value between 1 and N, where 1 means that you think your performance will be the best and N means that you think your performance will be the worst." By comparing their performance to their peers' performance in round one in both rounds, subjects do not need to consider how others will react to the feedback they were given. They only need to consider their own performance and whether that led to success or failure. The belief elicitation was incentivized, where a participant received a bonus payment of 2 points if the prediction was within plus-minus one of the actual rank. The variable is calculated as (number of participants per session - Predicted Rank)/ (number of participants per session − 1) and ranges in value between 0 (low) and 1 (high).

***Score and Additional Measures***

The real effort task score is calculated for each round and measured by the number of tasks solved correctly. After the experimental task, participants were asked to fill out a short questionnaire before they receive their payments. The questionnaire elicited their perception of the task, their perceived attribution of success and failure as well as several personality traits. We measure impatience, risk willingness, competitiveness, and persistence based on the survey questions by Falk, Becker, Dohmen, Huffman and Sunde (2016). For example, to elicit risk willingness, we asked the subjects to answer the following question: "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" using a scale from 0 = (completely unwilling to take risks) to 10 (very willing to take risks). To elicit competitiveness, we asked participants to answer the following question: "In general, how competitive do you consider yourself to be?" using a scale from 0 (not competitive at all) to 10 (very competitive). Furthermore, we measured the subjects' optimism, grit, growth mindset, and locus of control. Finally, the questionnaire asks for the participants' sociodemographic and personal characteristics such as age, gender, degree of education, the field of study and parents' level of education.

## 3.4 Data

Table 3.1 presents descriptive statistics of the participants' characteristics, the experimental choices, and outcomes for the overall sample and separately for each gender. Table 3.1 also shows the *t-statistics* and *p-values* of the mean differences between male and female subjects. The average age of the participants is 25 years and 56% of them are women.[17] With respect to education, around 34% of the participants are in the science and technology field of study. By design, half of the participants are residents of the United Kingdom and the other half of Germany.

**Table 3.1: Descriptive Statistics by Gender**

| | All | | Male | | Female | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean | diff. | t-test |
| Female | 667 | 0.56 | 291 | 0.00 | 376 | 1.00 | - | - |
| Age | 667 | 25.31 | 291 | 25.91 | 376 | 24.84 | 1.07** | (2.36) |
| Risk willingness | 667 | 4.50 | 291 | 5.17 | 376 | 3.98 | 1.19*** | (5.80) |
| Optimism | 667 | 5.87 | 291 | 5.97 | 376 | 5.79 | 0.17 | (0.79) |
| Science & technology | 667 | 0.34 | 291 | 0.42 | 376 | 0.27 | 0.15*** | (4.15) |
| Score in practice round | 667 | 5.06 | 291 | 5.27 | 376 | 4.89 | 0.38** | (2.18) |
| Compete in R1 | 667 | 0.37 | 291 | 0.51 | 376 | 0.26 | 0.25*** | (6.97) |
| Confidence in R1 | 667 | 0.61 | 291 | 0.67 | 376 | 0.56 | 0.12*** | (6.74) |
| Score in R1 | 667 | 6.52 | 291 | 6.93 | 376 | 6.20 | 0.73*** | (3.67) |
| Rank in R1 (norm.) | 667 | 0.52 | 291 | 0.49 | 376 | 0.54 | -0.05** | (-2.45) |
| Lost in R1 | 667 | 0.48 | 291 | 0.46 | 376 | 0.49 | -0.03 | (-0.74) |
| Earnings in R1 | 667 | 3.77 | 291 | 4.26 | 376 | 3.40 | 0.86*** | (3.55) |
| Compete in R2 | 667 | 0.43 | 291 | 0.52 | 376 | 0.37 | 0.15*** | (3.88) |
| Confidence in R2 | 667 | 0.61 | 291 | 0.67 | 376 | 0.56 | 0.12*** | (6.22) |
| Score in R2 | 667 | 6.89 | 291 | 7.31 | 376 | 6.56 | 0.75*** | (3.48) |
| Earnings in R2 | 667 | 4.31 | 291 | 4.81 | 376 | 3.92 | 0.89*** | (3.11) |
| Total earnings | 667 | 9.77 | 291 | 10.34 | 376 | 9.32 | 1.02*** | (3.72) |
| United Kingdom | 667 | 0.46 | 291 | 0.45 | 376 | 0.46 | -0.00 | (-0.10) |

Note: This table presents the full sample means as well as the means of each gender group for gender, age, science and technology as a field of education, risk willingness (1-10), optimism (1-10), as well as the United Kingdom as country of residence. The table also presents the full sample means as well as the means of each gender group for the experimental choices and outcomes including the subject's score on the practice round, the choice to compete in R1, confidence in R1 (perceived chance of winning), the average score in R1, normalized within-session rank in R1, losing against the opponent in R1, earnings in R1, subject's choice to compete in R2, confidence in R2 (perceived chance of winning), earnings in R12, the average score in R2 and, the total earnings. Risk willingness and Optimism are self-rated questionnaire measures. Earnings are in Euros/GBP. Standard decisions are in parentheses. The last two columns report the t-statistics and p-values of the mean differences between male and female subjects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In the experiment, approximately 37% of the participants chose to compete in the first round rather than taking the piece-rate compensation. On average, participants solved 6.52

[17] We did not explicitly balance on gender to avoid drawing attention to this feature. 56% female participants in a group of 9 to 30 participants is on average 1 person more of either gender, which should have drawn less suspicion than sending participants home from the session if the quota had been reached.

problems correctly, resulting in average earnings of 3.77 Euro/GBP in the first round. Conditional on choosing the competitive compensation scheme in the first round, 41% of all participants lost the competition and as a result received zero earnings in this round. With regard to the second round, around 43% of the subject chose the competitive compensation scheme over the piece rate. The total earnings in this study vary between 5 and 22.5 Euro/GBP and the average total earning is 9.77 Euros/GBP including a 5 Euro/GBP show-up fee.

As reported in Table 3.1, women, on average, are younger than men. They are less likely to be associated with science and technology fields of education and are less willing to accept risk. These statistical differences in education (Kahn & Ginther, 2017) and risk preferences (Croson & Gneezy, 2009) between men and women are consistent with the literature. Furthermore, women are less likely to enter into the competition compared to women. In total, 51% of the men, but only 26% of women, choose the competitive compensation scheme. Similarly, on average, women in the first round are less confident (perceived chance of winning) and perform worse by 0.73 points compared to men. Women's total earnings are lower by 1 Euro/GBP relative to men's total earnings.

Since we are interested in the causal effect of failure attribution on those who choose to compete, our experimental design does not force participants to enter into the competition. Therefore, these initial differences in competitiveness are not problematic for our estimation, nevertheless, we account for them in all our regressions. However, ensuring that our variables of interest are balanced across treatment groups is important for our estimation to be internally valid. Therefore, we conducted an ANOVA test of equality of all four treatment group means to check the success of the randomization procedure. We find that gender, age, risk willingness, total earnings, choice of the compensation scheme, score, confidence, rank, the rate of loss, and earnings in round one are all balanced across the four treatment groups. The randomization checks that confirm the validity of the randomization procedure are reported in Appendix B.1.

## 3.5 Results

### 3.5.1 The Effect of Performance and Attributional Feedback

As a first step, we replicate the analysis of Buser and Yuan (2019) on whether losing a competition decreases the willingness to compete. We also extended the analysis to investigate the effect of competition loss (would-be loss) on the subsequent confidence and score. At the end of round one and before choosing the compensation scheme for round two, participants receive

the "performance feedback". They learn their absolute score as well as the relative performance of whether they (would have) won/lost against their randomly matched opponent. Note that all participants receive this feedback, irrespective of whether they chose the piece rate or competitive compensation scheme at the beginning of the round. Conditional on a participant's own score, the outcome – win or loss – of round one is a random treatment as it depends on the score of a randomly assigned match. All reported regressions are clustered at the subject level and control for score fixed effects (following the estimation strategy by Buser and Yuan, 2019). Furthermore, all regressions control for age, risk willingness, optimism, confidence in R1, normalized rank, session fixed effects and country fixed effects. Note that the normalized rank of each individual within the session is included to allow for differences in session size.

To investigate the effect of competition loss (would-be loss) on participants receiving performance feedback only (control group), Table 3.2 reports ordinary least squares (OLS) regressions. We estimate a set of regressions of the subsequent willingness to compete in round two (Columns 1-3), the confidence level before round two (Columns 4-6), and the score in round two (Columns 7-9) on the experimental treatment dummies (luck, effort, and ability attributional feedback) and whether the subject has lost in the first round. The results are reported for the whole sample, as well as separately for those who choose to compete and those who choose the piece-rate compensation in round one. As reported in Columns 2 and 3, losing a competition and receiving performance feedback for both those who choose to compete in the initial round and those who do not compete have a statistically negative effect on the subsequent willingness to compete. The estimate is larger for those who choose to compete in the initial round. Those who choose the piece-rate compensation are 31 percentage points less likely to start competing after losing compared to would-be winners. Those who choose to compete in the first round are 53 percentage points less likely to compete than the winners. For both groups, the confidence is significantly reduced after losing. The effect sizes are identical for both groups (Columns 5 and 6). Unsurprisingly, there is no effect of losing on the subsequent score for either group (Columns 8 and 9).

To study the effect of negative performance and attributional feedback on subjects' persistence after losing, we narrow our investigation of the effect of our experimental treatments on those who choose to compete in round one. We analyze the effect of receiving attributional feedback that attributes the loss to bad luck, lack of effort and lack of ability on the loser's subsequent willingness to compete, confidence and score. As illustrated in Table 3.3, we do not find a significant effect of attributing a loss to bad luck, lack of effort, and lack of ability on the

**Table 3.2: Multiple Regression Analysis: The Effect of Negative Performance Feedback on Subsequent Willingness to Compete, Confidence Level, and Score**

| | Compete in R2 | | | Confidence in R2 | | | Score in R2 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | All | C R1 | PR R1 | All | C R1 | PR R1 | All | C R1 | PR R1 |
| Luck Feedback | -0.008 | -0.066 | 0.021 | 0.027* | -0.003 | 0.050** | 0.447* | 0.074 | 0.758** |
| | (0.056) | (0.055) | (0.084) | (0.014) | (0.017) | (0.022) | (0.243) | (0.412) | (0.298) |
| Effort Feedback | 0.029 | -0.055 | 0.089 | 0.020 | -0.018 | 0.042** | 0.180 | 0.321 | 0.045 |
| | (0.059) | (0.042) | (0.082) | (0.012) | (0.016) | (0.017) | (0.261) | (0.468) | (0.284) |
| Ability Feedback | 0.010 | -0.029 | 0.043 | 0.031* | -0.006 | 0.060** | 0.158 | 0.489 | -0.043 |
| | (0.077) | (0.052) | (0.111) | (0.016) | (0.020) | (0.024) | (0.242) | (0.336) | (0.308) |
| Lost in R1 | -0.411*** | -0.533*** | -0.314*** | -0.130*** | -0.129*** | -0.123*** | 0.404 | 0.000 | 0.528 |
| | (0.060) | (0.120) | (0.091) | (0.017) | (0.030) | (0.023) | (0.274) | (0.618) | (0.366) |
| Constant | -0.058 | 0.712*** | -0.320* | 0.298*** | 0.355*** | 0.263*** | -0.416 | -1.037 | 0.231 |
| | (0.149) | (0.240) | (0.187) | (0.053) | (0.100) | (0.087) | (0.902) | (1.674) | (1.032) |
| Score FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Session FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 667 | 244 | 423 | 667 | 244 | 423 | 667 | 244 | 423 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 (columns 1-3), confidence in R2 (Column 4-6), score in R2 (7-9) on dummies for luck, effort, and ability attributional feedback treatment dummies and a dummy for whether the individual lost in round one. Results are presented for the whole sample, those who competed in R1, and those who chose piece-rate compensation in R1 respectively. All regression control for gender, age, risk willingness (1-10), optimism (1-10), confidence in R1 (perceived chance of winning), normalized rank within the session, score fixed effects, session fixed effects, and country fixed effects. Standard errors in the second row and they are corrected for clustering at the subject level. * p<0.10, ** p<0.05, *** p<0.01.

**Table 3.3: Multiple Regression Analysis: The Effect of Negative Attributional Feedback on Subsequent Willingness to Compete, Confidence Level, and Score for Subjects Who Competed in R1**

| | Compete in R2 | | | Confidence in R2 | | | Score in R2 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Luck Feedback | -0.066 | -0.066 | -0.066 | -0.003 | -0.003 | -0.003 | 0.074 | 0.074 | 0.074 |
| | (0.055) | (0.055) | (0.055) | (0.017) | (0.017) | (0.017) | (0.412) | (0.412) | (0.412) |
| Effort Feedback | -0.055 | -0.055 | -0.055 | -0.018 | -0.018 | -0.018 | 0.321 | 0.321 | 0.321 |
| | (0.042) | (0.042) | (0.042) | (0.016) | (0.016) | (0.016) | (0.468) | (0.468) | (0.468) |
| Ability Feedback | -0.029 | -0.029 | -0.029 | -0.006 | -0.006 | -0.006 | 0.489 | 0.489 | 0.489 |
| | (0.052) | (0.052) | (0.052) | (0.020) | (0.020) | (0.020) | (0.336) | (0.336) | (0.336) |
| Lost in R1 | -0.533*** | -0.533*** | -0.533*** | -0.129*** | -0.129*** | -0.129*** | 0.000 | 0.000 | 0.000 |
| | (0.120) | (0.120) | (0.120) | (0.030) | (0.030) | (0.030) | (0.618) | (0.618) | (0.618) |
| Luck Feedback x Lost in R1 | 0.030 | | | -0.028 | | | 0.011 | | |
| | (0.139) | | | (0.046) | | | (0.700) | | |
| Effort Feedback x Lost in R1 | | -0.096 | | | -0.040 | | | -0.612 | |
| | | (0.132) | | | (0.038) | | | (0.740) | |
| Ability Feedback x Lost in R1 | | | 0.131 | | | -0.075 | | | -0.107 |
| | | | (0.195) | | | (0.057) | | | (0.675) |
| Constant | 0.712*** | 0.712*** | 0.712*** | 0.355*** | 0.355*** | 0.355*** | -1.037 | -1.037 | -1.037 |
| | (0.240) | (0.240) | (0.240) | (0.100) | (0.100) | (0.100) | (1.674) | (1.674) | (1.674) |
| Score FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Session FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 (columns 1-3), confidence in R2 (Column 4-6), score in R2 (7-9) on luck, effort, and ability attributional feedback treatment dummies, a dummy for whether the individual lost in round one, as well as the interaction terms between the treatments and losing in R1. All regression control for gender, age, risk willingness (1-10), optimism (1-10), confidence in R1 (perceived chance of winning), normalized rank within the session, score fixed effects, session fixed effects, and country fixed effects. Results are presented for the subjects who competed in R1 and received the luck attributional feedback, effort attributional feedback, and ability attributional feedback respectively. Standard errors in the second row and they are corrected for clustering at the subject level. * p<0.10, ** p<0.05, *** p<0.01.

subsequent willingness to compete in round two (Columns 1-3), the confidence level before round two (Columns 4-6), or the subsequent score (Columns 7-9). Compared to those who receive only performance feedback, those who also receive attributional feedback attributing are just as likely to compete in the subsequent round.

### 3.5.2 Gender Differences in the Effect of Performance and Attributional Feedback

In this section, we examine the gender differences in the response to attributional feedback. We replicate the analysis of the previous section by gender to investigate gender differences in willingness to compete after losing in round two. Tables 3.4 reports regressions of the subsequent willingness to compete (Columns 1-3), the confidence level before round two (Columns 4-6), the score in round two (Columns 7-9) on treatment dummies, competition loss in round one dummy, female dummy, as well as the interaction between the latter two variables and the treatment dummies. The results are presented for the whole sample and separately for those who choose to compete and those who choose the piece-rate compensation in round one.

As previously reported, losing a competition and receiving only performance feedback has a significant negative effect on the subsequent willingness to compete of those who choose to compete in round one and those who do not (see Table 3.2). Looking at the interaction effect of *Female* and *Losing in round one* for those who choose to compete in round one, we do not find significant gender differences in the effect of negative performance feedback on the subsequent willingness to compete again (Column 2), the confidence level before round two (Column 5), and the subsequent score round (Column 7). For the analysis in Table 3.4, we use our whole sample, to estimate a joint effect of the impact of losing on competing and the interaction with gender regardless of the treatment. While the estimates are negative and thus in line with previous findings by Buser and Yuan (2019), our larger replication[18] does not find significant gender differences in any of our outcome variables. Moreover, we conduct an additional analysis only considering the 62 participants who chose to compete in round one and received only performance feedback (control group, the replication of Buser and Yuan (2019)). Similarly, we find a precisely estimated zero for the interaction effect (see Appendix B.2 for details).

Next, we investigate the effect of providing attributional feedback that attributes the loss to bad luck, lack of effort, and lack of ability on the loser's subsequent willingness to compete, confidence level before round two, and performance in round two. We present in Table 3.5 the

[18] 247 subjects who competed in round one compared to 86 who competed in Buser and Yuan (2019) round one.

**Table 3.4: Multiple Regression Analysis: The Gender Difference in the Effect of Negative Performance Feedback on Subsequent Willingness to Compete, Confidence Level, and Score**

| | Compete in R2 | | | Confidence in R2 | | | Score in R2 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | All | C R1 | PR R1 | All | C R1 | PR R1 | All | C R1 | PR R1 |
| Luck Feedback | -0.006 | -0.053 | 0.022 | 0.027* | -0.002 | 0.049** | 0.434* | 0.104 | 0.751** |
| | (0.057) | (0.058) | (0.085) | (0.014) | (0.017) | (0.022) | (0.246) | (0.443) | (0.301) |
| Effort Feedback | 0.030 | -0.049 | 0.091 | 0.019 | -0.017 | 0.041** | 0.173 | 0.335 | 0.032 |
| | (0.059) | (0.041) | (0.082) | (0.012) | (0.016) | (0.017) | (0.260) | (0.478) | (0.286) |
| Ability Feedback | 0.011 | -0.022 | 0.044 | 0.030* | -0.006 | 0.060** | 0.154 | 0.505 | -0.048 |
| | (0.077) | (0.052) | (0.111) | (0.016) | (0.020) | (0.024) | (0.240) | (0.340) | (0.308) |
| Lost in R1 | -0.391*** | -0.472*** | -0.276*** | -0.136*** | -0.125*** | -0.144*** | 0.294 | 0.141 | 0.304 |
| | (0.059) | (0.132) | (0.095) | (0.019) | (0.038) | (0.026) | (0.344) | (0.753) | (0.433) |
| Female | 0.033 | 0.012 | 0.079 | -0.023* | -0.014 | -0.037* | -0.043 | 0.009 | -0.013 |
| | (0.031) | (0.034) | (0.048) | (0.013) | (0.012) | (0.018) | (0.193) | (0.334) | (0.254) |
| Lost in R1 x Female | -0.035 | -0.136 | -0.058 | 0.011 | -0.008 | 0.032 | 0.188 | -0.309 | 0.341 |
| | (0.049) | (0.113) | (0.057) | (0.020) | (0.031) | (0.025) | (0.252) | (0.565) | (0.336) |
| Constant | -0.077 | 0.648** | -0.350* | 0.304*** | 0.352*** | 0.280*** | -0.312 | -1.184 | 0.410 |
| | (0.149) | (0.235) | (0.182) | (0.057) | (0.102) | (0.089) | (0.869) | (1.654) | (1.022) |
| Score FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Session FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 667 | 244 | 423 | 667 | 244 | 423 | 667 | 244 | 423 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 (columns 1-3), confidence in R2 (Column 4-6), score in R2 (7-9) on dummies for luck, effort, and ability attributional feedback treatment dummies, a dummy for whether the individual lost in round one, a dummy for gender, as well as an interaction term between gender and losing in R1. Results are presented for the whole sample, those who competed in R1, and those who chose piece-rate compensation in R1 respectively. All regression control for age, risk willingness (1-10), optimism (1-10), confidence (perceived chance of winning), normalized rank within the session, score fixed effects, session fixed effects, and country fixed effects. Standard errors in the second row and they are corrected for clustering at the subject level. * p<0.10, ** p<0.05, *** p<0.01.

regressions of the subsequent willingness to compete (Columns 1-3), the confidence level before round two (Columns 4-6), the score in round two (Columns 7-9) on dummies for the treatments of luck, effort, and ability attributional feedback, whether the subject has lost in the first round, gender dummy, and the interaction between the latter two variables and the attributional feedback dummies (depending on the treatment). Column 1 in Table 3.5 provides evidence that attributional feedback that attributes a competition loss to bad luck has a significant positive effect on the subsequent willingness to compete for women compared to men. Women who competed and lost in the luck attribution treatment are 41 percentage points more likely to compete in the following round than men who competed and received the same feedback (Column 1). We do not find any significant gender differences in attributing a loss to bad luck on the subsequent confidence and score in round two. We find no significant gender differences in the subsequent willingness to compete (Column 2), confidence level (Column 5), and score (Column 4) of those who chose to compete in the initial round and whose loss is attributed to lack of effort.

Finally, we investigate the gender difference in the effect of attributing a loss to lack of ability. This is where we find the most interesting results. Column 3 in Table 3.5 shows a negative and strongly significant result for our interaction term. Women whose loss in round one is attributed to their lack of ability are significantly less likely to compete again in round two. Compared to men, women are 57 percent less likely to compete again after losing and receiving feedback attributing their loss to their lack of ability (Column 3). Concerning the subsequent confidence level after receiving the ability attributional feedback, we find that women experience a significant decrease of 13 percentage points in their confidence level (Column 6). There is no significant effect on scores in round two.

With regard to men, as reported in Table 3.5, receiving attributional feedback that attributes their loss to bad luck or lack of effort has no significant effect on their subsequent willingness to compete, confidence level, and score in the following round compared to men who receive no attributional feedback. However, we find a significant positive effect on men's willingness to compete after losing and being exposed to the lack of ability feedback. Compared to men who lose and receive no attributional feedback, men who lose and receive the ability attributional feedback are 41 percentage points more likely to compete after again (Column 3). However, there is no significant effect of ability attributional feedback on men's confidence level and subsequent score in round two.

**Table 3.5: Multiple Regression Analysis: The Gender Difference in the Effect of Negative Attributional Feedback on Subsequent Willingness to Compete, Confidence Level, and Score for Subjects Who Competed in R1**

| | Compete in R2 | | | Confidence in R2 | | | Score in R2 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Luck Feedback | -0.048 | -0.058 | -0.048 | 0.008 | -0.003 | -0.002 | -0.060 | 0.094 | 0.111 |
| | (0.057) | (0.060) | (0.058) | (0.021) | (0.017) | (0.017) | (0.579) | (0.437) | (0.446) |
| Effort Feedback | -0.048 | -0.087 | -0.047 | -0.017 | -0.028 | -0.018 | 0.325 | 0.258 | 0.338 |
| | (0.041) | (0.061) | (0.041) | (0.016) | (0.022) | (0.015) | (0.485) | (0.540) | (0.480) |
| Ability Feedback | -0.022 | -0.025 | 0.007 | -0.005 | -0.006 | -0.009 | 0.485 | 0.500 | 0.551 |
| | (0.052) | (0.053) | (0.031) | (0.020) | (0.020) | (0.021) | (0.335) | (0.346) | (0.485) |
| Lost in R1 | -0.442*** | -0.460*** | -0.528*** | -0.125*** | -0.115*** | -0.138*** | 0.107 | 0.148 | 0.102 |
| | (0.128) | (0.146) | (0.139) | (0.038) | (0.041) | (0.038) | (0.792) | (0.743) | (0.783) |
| Female | 0.015 | -0.011 | 0.028 | -0.006 | -0.020 | -0.015 | -0.120 | -0.037 | 0.033 |
| | (0.033) | (0.042) | (0.044) | (0.016) | (0.016) | (0.013) | (0.404) | (0.339) | (0.364) |
| Luck Feedback x Lost in R1 | -0.112 | | | -0.022 | | | -0.014 | | |
| | (0.156) | | | (0.047) | | | (0.839) | | |
| Luck Feedback x Lost in R1 x | 0.405* | | | -0.028 | | | 0.023 | | |
| Female | (0.236) | | | (0.087) | | | (0.891) | | |
| Effort Feedback x Lost in R1 | | -0.123 | | | -0.069 | | | -0.619 | |
| | | (0.195) | | | (0.044) | | | (0.855) | |
| Effort Feedback x Lost in R1 x | | 0.063 | | | 0.065 | | | 0.016 | |
| Female | | (0.269) | | | (0.059) | | | (1.421) | |
| Ability Feedback x Lost in R1 | | | 0.409** | | | -0.016 | | | 0.094 |
| | | | (0.186) | | | (0.058) | | | (0.955) |
| Ability Feedback x Lost in R1 x | | | -0.569*** | | | -0.127* | | | -0.387 |
| Female | | | (0.201) | | | (0.064) | | | (1.244) |
| Constant | 0.639** | 0.657*** | 0.595** | 0.345*** | 0.352*** | 0.346*** | -1.078 | -1.161 | -1.236 |
| | (0.240) | (0.226) | (0.232) | (0.103) | (0.098) | (0.101) | (1.669) | (1.598) | (1.665) |
| Score FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Session FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 (columns 1-3), confidence in R2 (Column 4-6), score in R2 (7-9) on luck, effort, and ability attributional feedback treatment dummies, a dummy for whether the individual lost in the previous round, a dummy for gender, as well as the interaction terms between the treatments, losing in R1, and gender dummy. All regression control for age, risk willingness (1-10), optimism (1-10), confidence in R1 (perceived chance of winning), normalized rank within the session, score fixed effects, session fixed effects, and country fixed effects. Results are presented for the subjects who competed in R1 and received the luck, effort, and ability attributional feedback respectively. Standard errors in the second row and they are corrected for clustering at the subject level. * p<0.10, ** p<0.05, *** p<0.01.

As a robustness check, we replicate the analysis of Table 3.5 using only a limited set of controls (confidence in R1, normalized rank within the session, score fixed effects, and session fixed effects). While the point estimates stay almost identical, our standard errors increase slightly, thus the effect of bad luck is no longer significant. The gender difference in ability is still highly significant at the 1-percent level (see Appendix B.3 for details).

To evaluate the extent to which the subsequent confidence influences the decision to not drop out and compete in the following round, we conducted an exploratory mediation analysis. Following Hicks and Tingley (2011), we test how the updated confidence explains the relationship between women and their decision to remain in the competition in round two. Confidence level in round one has a significant mediation effect in women's subsequent willingness to compete after attributing their loss to lack of ability. The ACME (average causal mediated effect) of confidence level in round one is (-0.058) with a 95% confidence interval ranging from -0.13 to -0.01. The ADE (average direct effect) is -0.37 with a 95% confidence interval ranging from -0.63 to -0.09. The total effect of the mediation analysis of confidence in round two is -0.42 with a 95% confidence interval ranging from -0.68 to -0.16. Thus, the updated confidence of women who choose to compete after attributing their loss to lack of ability explains 14% of the decrease in their willingness to compete in the following round.

## 3.6 Discussion

Failure is a fundamental element of competitive and high-reward domains such as STEM fields, innovation, corporate senior leadership and entrepreneurship. Thus, resilience to failures and persistence are keys to success in such environments. This paper investigates the gender difference in the willingness to compete after losing. It estimates the effect of receiving attributional feedback attributing the competition loss to bad luck, lack of effort, and lack of ability on the likelihood to persist and compete in the subsequent round, conditional on entry into the competition in the first place.

Confirming previous findings in the literature, we find that losing a competition and receiving performance feedback, which involves receiving feedback about absolute and relative performance, has a significant negative effect on subsequent willingness to compete. Those who have initial preferences for competition (competed in round one) and those who do not have such preferences (chose piece-rate compensation) experience the negative effect of losing. Since the study examines the persistence after a competition loss, the remaining findings are reported only for those who have an initial preference for competition and self-select into the competitive

compensation scheme in the first round. Although the literature suggests that women are less confident and less likely to enter a competition, we find no significant gender differences in the subsequent willingness to compete and confidence level after losing and receiving performance feedback (absolute and relative performance). Men and women have the same likelihood of persistence in the competition after losing and receiving performance feedback. These findings are consistent with Wozniak et al. (2014) who claims that receiving performance feedback has a significant impact on competition choices and can eliminate the gender gap in competition entry. However, these findings are inconsistent with the findings of Buser and Yuan (2019), which suggest that women are less likely to compete again after losing and receiving performance feedback than men. It is plausible, that within their sample of women, both in the lab experiment as well as in the Math Olympiad, a higher share of women attributed their loss to a lack in their ability rather than to bad luck or low effort. Especially in the Math Olympiad sample, this seems plausible given the evidence of a stereotype threat of women being of lower mathematical ability than men. Our explanation is, however, partly in contradiction to Coffman et al. (2019) who find that both men and women react stronger to feedback in gender congruent domains and when the feedback is positive. Lastly, the analysis shows no evidence of differential reaction to winning and receiving positive feedback between men and women.

We find that gender differences in the likelihood to persist after losing emerge when we analyze reactions to attributional feedback. Women are more likely than men to compete again if their loss is externally attributed to bad luck. There are no gender effects when losing is attributed to a lack of effort. Most interestingly, the largest gender differences appear in the case where losing is attributed to a lack of ability. Compared to men, women are significantly less likely to persist and compete again after receiving negative feedback attributing their loss to a lack of ability. These results are confirmed and slightly larger for a sub-sample of high-ability women (see Appendix B.4 for details)[19]. Interestingly, ability attribution only had a significant effect after a loss, not after winning.

Recently, Shastry et al. (2020) examined the gender differences in the effect of *self-attributing* noisy performance feedback to luck and ability on competition entry. Using an online experiment, they measure entry into a competition after, first, receiving relative feedback (payment) about one's place in the ability distribution, and second, eliciting outcome (payment) attribution by asking participants about the role of their luck as opposed to their ability in

[19] These results should considered exploratory given the lack of power for this sub-sample. The experiment was not designed to test for sub-groups. Nevertheless, they may inspire additional research.

determining the outcome[20]. They find that women are more likely to self-attribute failure to lack of ability while men are more likely to attribute it to bad luck. While our experiment is not designed to identify the mechanisms that explain why receiving attributional feedback attributing failure to a lack of ability compared to lack of effort or bad luck has a negative effect on persistence, the results are in line with the confirmation bias theory. Receiving attributional feedback possibly confirms/contradicts women's inner causal attributions (for a review on confirmation bias see Rabin and Schrag (1999)). Potentially, receiving feedback attributing competition loss to lack of ability confirms women's existing self-attribution of the loss to their lack of ability, which is documented by Shastry et al. (2020). Supporting our argument, our results show that attributing women's loss to a lack of ability has a significant negative effect on their subsequent confidence level (beliefs) and their decision to compete again (action). Alternatively, we find that attributing women's loss to bad luck has no significant effect on their subsequent confidence level (beliefs) while still having a significant positive effect on their decision to compete again (action). Thus, we argue that potentially receiving feedback attributing competition loss to bad luck contradicts women's existing causal attribution of the loss to their lack of ability.

Women's tendency to internalize feedback and failure potentially explains the insignificant effect of loss attribution to effort (Dweck, Davidson, Nelson, & Enna, 1978; Ryckman & Peckham, 1987). Although both effort and ability are *internal* causes, effort, unlike ability, is perceived to be a more controllable and unstable cause for loss and thus allows for higher expectations for future performance (Folmer et al., 2008). It is also possible that women, like men, simply discarded the effort attributional feedback due to common wording (*You lost! You must not have worked hard solving the task*) leading them to behave similarly to the women in the control group who did not receive any attributional feedback.

With regard to men, according to the literature they are more likely to disregard evaluative feedback (Cleveland, Lim, & Murphy, 2007; Roberts & Nolen-Hoeksema, 1989; Vecchio & Anderson, 2009) and attribute failure to external factors (Dweck et al., 1978; Ryckman & Peckham, 1987), which may explain the insignificant effect of attributing the loss to bad luck and a lack of effort on their subsequent willingness to compete and confidence levels. However, interestingly, men are more likely to compete again when their loss is attributed to their lack of ability. This higher likelihood to compete again after the negative feedback about their ability may

[20] Our experiment elicits who wants to compete in round one before receiving any feedback. Thus, we are able to measure the effect of attributional feedback for subjects who are willing to compete and those who are not independently.

be explained by an increase in testosterone, which is found to predict losers' willingness to compete again and subsequent aggressive behavior (Carré, Putnam, & McCormick, 2009; Mehta & Josephs, 2006).

Our findings highlight how an individual's reactions to competition loss can strongly be influenced by the way the competition loss is attributed in received attributional feedback regardless of how accurate and reliable the feedback is. In our study, ability was purposely ambiguously measured via a task that required ability, effort and some luck. Further, the feedback was given by a faceless computer. Yet it led to significant changes in behavior. Therefore, our study has important implications for negative feedback design and thus women's underrepresentation in the labor market, especially in competitive fields. As it is impossible to avert the experience of failure among women in competitive workplaces, it is important and necessary to design better feedback mechanisms. Feedback provided after failure is suggested to communicate the objective performance information including absolute and relative performance. Alternatively, in the case of attributional feedback, our findings suggest emphasizing the role of effort, or the role of luck in women's failures, as opposed to the role of ability would potentially mitigate the gender gap in persistence after losing a competition. Overall, negative feedback provided to women after losing a competition is suggested to refrain from attributing failure to their lack of ability in order to preserve their competitiveness. These enhanced feedback mechanisms are likely to positively contribute to the retention of the subpopulation of women who have an initial preference for competition in their fields. Preventing women from dropping out of competitive environments "*leaky pipeline*" would potentially advance their representation in these environments and the labor market overall.

Our work contributes to several strands of the literature. First, this paper builds on and extends the gender differences in preferences for competition literature (e.g., Croson & Gneezy, 2009; Niederle & Vesterlund, 2007, 2011) by showing that the gender differences in preferences for competition entry do not extend to the persistence in the competition. Women who self-select into the competition are just as likely to persist after losing and receiving performance feedback as men. The literature examines the gender differences in preferences for competition and the underlying mechanisms shaping these preferences. It suggests that there are gender differences in competition entry where women are less willing to enter competitive environments relative to men which accounts for a significant proportion of the gender gap in career choice (Buser et al., 2014). It also addresses the age origin of this gap starting as early as kindergarten (Sutter &

Glätzle-Rützler, 2015) and the role of socioeconomic background in shaping the competitiveness among men and women (Almås, Cappelen, Salvanes, Sørensen, & Tungodden, 2016).

Second, this work speaks to the established *performance feedback* literature (Alan & Ertac, 2019; Berlin & Dargnies, 2016; Buser et al., 2018; Wozniak et al., 2014) and the growing literature on the gender differences in reactions to competition outcomes (Buser, 2016; Buser & Yuan, 2019; Mobius et al., 2014) by showing no gender differences in persistence after losing a competition and receiving negative performance feedback. The literature provides evidence that there are gender differences in processing performance feedback and belief updating; however, the evidence is inconsistent with regard to the impact of such differences on the preferences for competition (Berlin & Dargnies, 2016; Buser et al., 2018). While Cason, Masters, and Sheremeta (2010) show that prior knowledge about relative performance does not eliminate the gender gap in competition entry, Wozniak, Harbaugh, and Mayr (2014) claim that such feedback has a significant effect on closing that gap. Moreover, the literature claims that negative performance feedback has an impact on, first, the subsequent willingness to seek challenges, where losers seek more challenging targets (Buser, 2016) and, second, women's subsequent willingness to compete again, where they are more likely to drop out with respect to men (Buser & Yuan, 2019).

Third, by examining the effect of causal attributions of bad luck, lack of effort, and lack of ability on the persistence of men and women after a competition loss, this paper contribute to the literature on the attributional theory and achievement motivation (Weiner, 1985, 2000; Weiner et al., 1987). We find significant gender differences in persistence after losing a competition and receiving attributional feedback that attributes the outcome to bad luck or a lack of ability (Weiner, 1985; Weiner et al., 1987) These gender differences in response to loss attributional feedback may be contributing to women's underrepresentation and the *leaky pipeline* in competitive and high-reward domains.

Fourth, this work contributes to growing literature on the drivers and implications of gender diversity in the labor market (Fernandez-mateo & Rubineau, 2019; Gompers & Wang, 2017; Hoogendoorn et al., 2013; Lyngsie & Foss, 2017; Solal & Snellman, 2019). We highlight the role of feedback in shaping women's representation in the economy. We show that improved feedback mechanisms have a significant impact on women's persistence in the competition. Providing attributional feedback that emphasizes the role of effort or luck rather than ability in women's failure mitigates the gender gap in the drop-out rate. Thus, improved women's persistence would possibly advance gender diversity in the labor market.

Fifth, this paper contributes to the understanding of the causal relationship between beliefs and actions, particularly how beliefs map into actions (Barron & Gravert, 2021; Costa-Gomes & Weizsäcker, 2008; Duffy & Tavits, 2008; Settele, 2020). We presenting evidence of the different effects of attributional causes (luck, effort, ability) on women's belief-updating about their chances of winning and consequently their action of competing again after losing. Receiving feedback attributing a competition loss to back luck does not influence women's beliefs about their chances of winning after while it raises their propensity to compete again (action). On the other hand, receiving feedback attributing a competition loss to a lack of ability negatively updates women's beliefs about their chances of winning after and reduces their propensity to compete again (action).

Finally, this study speaks to the growing body of work that examines whether preferences and skills are malleable (Alan, Baydar, Boneva, Crossley, & Ertac, 2017; Alan, Boneva, & Ertac, 2019; Alan & Ertac, 2018; Kautz, Heckman, Diris, ter Weel, & Borghans, 2014; Kosse, Deckers, Pinger, Schildberg-Hörisch, & Falk, 2020). Andersen, Ertac, Gneezy, List, and Maximiano (2013) provide compelling evidence from matrilineal and patriarchal societies that socialization at a young age plays an important role in shaping competitiveness preferences. In recent work, Alan and Ertac (2019) suggest that the willingness to compete is a malleable trait during childhood. They show that exposing elementary students to a grit intervention, which emphasizes the role of effort in achievement can mitigate the gender gap in competitiveness. We show that a seemingly small intervention in which we randomize the way the negative feedback is conveyed can have sizeable impacts on individual behavior and the gender gap in competitiveness.

## 3.7 Conclusion

Existing studies in the literature investigating the gender differences in effects of winning or losing suggest that women are more likely to drop out after losing across different fields and in the lab (Aneja et al., 2020; Buser & Yuan, 2019; Fernandez-Mateo & Fernandez, 2016). These studies shed the light on the possibility that women's underrepresentation in competitive fields is not exclusively dependent on women's lower likelihood to self-select into these fields due to their preferences for competition. They also suggest that women's responses to loss and the associated negative feedback could play a role in shaping their underrepresentation in the labor market. In this paper, we examine the impact of failure causal attribution on men's and women's persistence in the competition. We ask whether receiving negative attributional feedback that attributes a competition loss to one of the three causal attributions - bad luck, lack of effort, and lack of ability

- causally affects the subsequent willingness to compete compared to receiving performance feedback (absolute and relative performance) and, if so, whether the effect varies by gender.

Using a laboratory experiment, several findings emerge that contribute to our understanding of the gender differences in competitiveness beyond the entry point and how these differences may shape women's underrepresentation in the labor market. We find no gender differences in the willingness to compete after losing. However, when the loss is randomly attributed to bad luck, women increase their willingness to compete, while they are less likely to compete when their loss is randomly attributed to a lack of ability. There is no gender difference when a loss is randomly attributed to a lack of effort. Developing a deeper understanding of the circumstance under which women have a negative reaction to losing in a competition could help to design better feedback mechanisms that contribute to women's persistence. The negative effect of attributing a loss to a lack of ability could be driving women away from competitive and high-reward domains costing a significant economic loss in a form of growth, job creation and innovation. To prevent such loss, it is crucial to maintain those women who have preferences for competition and at the same time are high in ability. Nevertheless, it is impossible to prevent them from experiencing failure in competitive workplaces or entrepreneurial settings. Therefore, emphasizing performance measures, the role of luck, or the role of effort in the outcome of failure rather than the role of ability could improve gender equality in persistence, which, as a result, could contribute to reducing women underrepresentation in competitive and high-reward domains.

**Notes:**

This study has been approved by the UCL Research Ethics Committee (Project ID number: 9287/003).

# Appendix B

**Appendix B.1: Descriptive Statistics by Treatment Group**

| | (1) Luck | (2) Effort | (3) Ability | (4) Control | (5) p-value |
|---|---|---|---|---|---|
| Female | 0.517 | 0.579 | 0.586 | 0.578 | 0.536 |
| | (0.501) | (0.495) | (0.494) | (0.496) | |
| Age | 25.43 | 25.66 | 24.70 | 25.36 | 0.496 |
| | (5.674) | (6.555) | (4.700) | (6.083) | |
| Science & technology | 0.348 | 0.306 | 0.342 | 0.357 | 0.758 |
| | (0.478) | (0.462) | (0.476) | (0.481) | |
| Risk willingness | 4.567 | 4.492 | 4.349 | 4.565 | 0.878 |
| | (2.708) | (2.820) | (2.509) | (2.725) | |
| Optimism | 6.073 | 6.060 | 5.480 | 5.786 | 0.184 |
| | (2.764) | (2.671) | (2.814) | (2.984) | |
| Score in practice round | 4.994 | 4.978 | 4.980 | 5.305 | 0.496 |
| | (2.231) | (2.201) | (2.257) | (2.369) | |
| Competed in R1 | 0.365 | 0.377 | 0.316 | 0.403 | 0.452 |
| | (0.483) | (0.486) | (0.466) | (0.492) | |
| Score in R1 | 6.404 | 6.601 | 6.250 | 6.812 | 0.238 |
| | (2.579) | (2.524) | (2.466) | (2.671) | |
| Confidence in R1 | 0.623 | 0.613 | 0.568 | 0.621 | 0.129 |
| | (0.231) | (0.235) | (0.228) | (0.237) | |
| Rank in R1 (norm.) | 0.527 | 0.512 | 0.538 | 0.490 | 0.494 |
| | (0.293) | (0.276) | (0.298) | (0.279) | |
| Lost in R1 | 0.534 | 0.443 | 0.493 | 0.435 | 0.221 |
| | (0.500) | (0.498) | (0.502) | (0.497) | |
| Earnings in R1 | 3.792 | 3.626 | 3.539 | 4.159 | 0.306 |
| | (3.075) | (3.117) | (2.908) | (3.370) | |
| Total earnings | 9.928 | 9.603 | 9.541 | 9.995 | 0.570 |
| | (3.431) | (3.618) | (3.349) | (3.773) | |
| United Kingdom | 0.433 | 0.448 | 0.487 | 0.461 | 0.793 |
| | (0.497) | (0.499) | (0.501) | (0.500) | |
| Observations | 178 | 183 | 152 | 154 | |

Note: This table presents the full sample means as well as the means of each treatment group for gender, age, science and technology as a field of education, risk willingness (1-10), optimism (1-10), as well as the United Kingdom as country of residence. The table also presents the full sample means as well as the means of each gender group and treatment group of the experimental choices and outcomes in round one including the subject's score on the practice round, the choice to compete, average score, confidence (perceived chance of winning), normalized within-session rank, losing against the opponent, earnings in R1, and total earnings. Risk willingness and Optimism are self-rated questionnaire measures. Earnings are in Euros/GBP. Standard decisions are in parentheses. Column (5) presents p-values from ANOVA test of equality of all four treatment group means.

**Appendix B.2: Multiple Regression Analysis: The Gender Difference in the Effect of Negative Attributional Feedback on Subsequent Willingness to Compete for Subjects Who Competed in R1**

| | Compete in R2 | |
|---|---|---|
| | (1) | (1) |
| Lost in R1 | -0.514*** | -0.311* |
| | (0.136) | (0.160) |
| Female | -0.039 | -0.011 |
| | (0.049) | (0.062) |
| Lost in R1 x Female | -0.073 | -0.191 |
| | (0.231) | (0.212) |
| Constant | 0.960*** | 1.321*** |
| | (0.051) | (0.282) |
| Score FE | Yes | Yes |
| Session FE | Yes | Yes |
| Controls | No | Yes |
| Observations | 62 | 62 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 for those who only received performance feedback (control group) on a dummy for whether the individual lost in the previous round, a dummy for gender, as well as their interaction term. Controls include normalized rank within the session and country fixed effects. Standard errors in the second row and they are corrected for clustering at the subject level. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix B.3: Multiple Regression Analysis: The Gender Difference in the Effect of Negative Attributional Feedback on Subsequent Willingness to Compete, Confidence level, and Score for Subjects Who Competed in R1**

| | Compete in R2 | | | Confidence in R2 | | | Score in R2 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Luck Feedback | -0.041 | -0.042 | -0.031 | -0.003 | -0.008 | -0.005 | -0.214 | 0.089 | 0.102 |
| | (0.060) | (0.059) | (0.056) | (0.017) | (0.015) | (0.015) | (0.531) | (0.341) | (0.345) |
| Effort Feedback | -0.078 | -0.046 | -0.081 | -0.026 | -0.028 | -0.028 | 0.098 | 0.314 | 0.101 |
| | (0.049) | (0.055) | (0.049) | (0.017) | (0.025) | (0.018) | (0.403) | (0.461) | (0.401) |
| Ability Feedback | 0.049 | 0.039 | 0.005 | -0.034 | -0.033 | -0.014 | 0.408 | 0.391 | 0.424 |
| | (0.069) | (0.065) | (0.033) | (0.020) | (0.020) | (0.022) | (0.297) | (0.310) | (0.432) |
| Lost in R1 | -0.435*** | -0.399*** | -0.554*** | -0.162*** | -0.136*** | -0.160*** | -0.074 | 0.194 | -0.032 |
| | (0.094) | (0.079) | (0.072) | (0.024) | (0.023) | (0.022) | (0.540) | (0.444) | (0.480) |
| Female | 0.015 | -0.013 | 0.037 | -0.008 | -0.021 | -0.013 | -0.265 | -0.119 | -0.036 |
| | (0.031) | (0.034) | (0.043) | (0.014) | (0.017) | (0.012) | (0.399) | (0.355) | (0.347) |
| Lost in R1 x Luck Feedback | -0.108 | | | 0.024 | | | 0.261 | | |
| | (0.153) | | | (0.040) | | | (0.621) | | |
| Luck Feedback x Lost in R1 x Female | 0.404 | | | -0.029 | | | -0.023 | | |
| | (0.250) | | | (0.090) | | | (0.888) | | |
| Lost in R1 x Effort Feedback | | -0.210 | | | -0.061* | | | -0.549 | |
| | | (0.141) | | | (0.036) | | | (0.682) | |
| Effort Feedback x Lost in R1 x Female | | 0.089 | | | 0.092 | | | -0.118 | |
| | | (0.247) | | | (0.056) | | | (1.429) | |
| Lost in R1 x Ability Feedback | | | 0.458*** | | | 0.012 | | | 0.337 |
| | | | (0.134) | | | (0.046) | | | (0.761) |
| Ability Feedback x Lost in R1 x Female | | | -0.574*** | | | -0.128* | | | -0.296 |
| | | | (0.191) | | | (0.067) | | | (1.094) |
| Constant | 0.557** | 0.609** | 0.487* | 0.332*** | 0.338*** | 0.320*** | 0.213 | 0.105 | -0.090 |
| | (0.263) | (0.242) | (0.240) | (0.084) | (0.074) | (0.074) | (1.076) | (1.049) | (1.076) |
| Score FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Session FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | No | No | No | No | No | No | No | No | No |
| Observations | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 (columns 1-3), confidence in R2 (Column 4-6), score in R2 (7-9) on luck, effort, and ability attributional feedback treatment dummies, a dummy for whether the individual lost in the previous round, a dummy for gender, as well as interaction terms between treatments, losing in R1, and gender dummy. All regressions control for confidence in R1 (perceived chance of winning), normalized rank within the session, score fixed effects, and session fixed effects. Standard errors in the second row and they are corrected for clustering at the subject level. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix B.4: Multiple Regression Analysis: The Gender Difference in the Effect of Ability Attributional Feedback on Subsequent Willingness to Compete for the High-ability Subjects Who Competed in R1**

| | Compete in R2 |
|---|---|
| | (1) |
| Luck Treatment | -0.079 |
| | (0.057) |
| Effort Treatment | -0.078** |
| | (0.035) |
| Ability Treatment | -0.014 |
| | (0.026) |
| Lost in R1 | -0.353 |
| | (0.267) |
| Female | 0.014 |
| | (0.048) |
| Ability Treatment x Lost in R1 | 0.144 |
| | (0.337) |
| Female x Lost in R1 | 0.123 |
| | (0.210) |
| Ability Treatment x Female | -0.054 |
| | (0.128) |
| Ability Feedback x Lost in R1 x Female | -0.844** |
| | (0.331) |
| Constant | 0.871*** |
| | (0.241) |
| Score FE | Yes |
| Session FE | Yes |
| Country FE | Yes |
| Controls | Yes |
| Observations | 144 |

Note. This table presents the results from least squares regressions of willingness to compete in R2 ability attributional feedback treatment dummy, a dummy for whether the individual lost in the previous round, a dummy for gender, as well as interaction terms between treatments, losing in R1, and gender dummy. All regression control for age, risk willingness, optimism, confidence in R1 (perceived chance of winning), normalized rank within the session, score fixed effects, session fixed effects, and country fixed effects. Results are presented for the sub-sample of the high-ability subject (above median) who competed in R1 and received the ability attributional feedback. Standard errors in the second row and they are corrected for clustering at the subject level. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

## Appendix B.5: Experiment Screens and Questionnaire

### Instructions

Welcome to this experiment. The experiment consists of three parts. In two of the parts you will be asked to work on a computer task. The last part consists of a questionnaire. You will get paid if you complete all three parts. Your earnings will be expressed in points. Each point is worth 50 cents. At the end, the computer will randomly determine which of the first two parts will be relevant for payment. Since you do not know which of the parts will be selected it is in your best interest to work in each part as if it is the one that counts.

### Instructions for the task:

The task consists of calculating the sum of five randomly chosen two-digit numbers.

Example: 52+34+41+74+69=?

You cannot use a calculator to determine the sums. You are, however, welcome to write the numbers down and make use of the provided scratch paper. Before we start with the experiment, you will have three minutes to practice the task. You will receive further instructions on the screen.

Please raise your hand now, if there are any further questions. Otherwise we will now start the experiment on the screens.

**FROM HERE ON THE INSTRUCTIONS ARE ON THE SCREEN ONLY**

**SCREEN 1**

Welcome to this experiment.

In this experiment, you will earn money for your performance in a task. The experiment has 2 rounds and the task is the same in both rounds.

Your earnings will be expressed in points. Each point is worth 50 cents.

**SCREEN 2**

The task consists of calculating the sum of five randomly chosen two-digit numbers. Example: 24+56+97+71+45=?

**SCREEN 3**

Before we start with the experiment, we will give you 3 minutes to practice the task. When you are done with reading the instructions, please click OK. The practice will start when everybody is ready.

**SCREEN 4**

*Math tasks for 3 minutes*

**SCREEN 5**

You scored X correct answers.

**SCREEN 6**

Thank you for completing the practice round. You are now about to start Round 1 of the experiment. Again, you will be given 3 minutes to calculate the correct sum of a series of five 2-digit numbers.

Before we start, we would like you to guess how well you think you will do in comparison to the other participants who are in the lab with you. There are <N|1> people in the lab today including yourself. What do you think your rank will be in the upcoming round? Please choose a value between 1 and N, where 1 means that you think your performance will be the best and N means that you think your performance will be the worst.

You will receive a bonus of 2 points if your guess is within a range of plus-minus 1 of your true

rank in the next round. Make your best guess to receive the bonus points.
*INPUT*

**SCREEN 7**

This is round 1 of the experiment.

You will be given 3 minutes to calculate the correct sum of a series of five 2-digit numbers.

You will be able to choose how you want to be paid for your performance. Depending on your choice, your payment for this round will depend only on your own performance in the task or on your performance compared to the performance of an opponent. This opponent is randomly selected by the computer among all the other participants who are in the lab with you.

**SCREEN 8**

On the next screen, you will be able to choose how you would like to be paid for your performance in this round. You have the following two options:

1. Piece-rate pay: You receive 1 point for every correct answer in the task.
2. Competition pay: You receive 2 points for every correct answer in the task if you perform better than your randomly selected opponent and zero points otherwise. In case of a tie, the winner is randomly determined.

We will inform you immediately after the task whether you performed better than your opponent or not. You will receive this feedback irrespective of how you choose to get paid for the task.

**SCREEN 9**

Which compensation scheme do you choose for this round?

1. Piece-rate pay (1 point per correct answer)
2. Competition pay (2 points per correct answer if you win, nothing otherwise) Click OK when you're ready to begin with the task.

**SCREEN 10**

*Math tasks for 3 minutes*

**SCREEN 11**

You scored correct answers.

(Piece rate) You scored lower/scored higher than your opponent. You therefore WOULD HAVE lost/won against your opponent.

(Competition) You scored lower/scored higher than your opponent. You therefore lost/won against your opponent.

**SCREEN 12**

[If competition scheme:]

1. [Treatment 1:] You lost! You must have been unlucky when solving the task. OR You won! You must have been lucky when solving the task.
2. [Treatment 2:] You lost! You must not be that good at this task. OR You won! You must be good at this task.
3. [Treatment 3:] You lost! You must not have worked hard solving the task. OR You won! You must have worked hard solving the task.
4. [Control: ] Please wait until we continue.

[If piece rate scheme:]

1. [Treatment 1:] You would have lost! You must have been unlucky when solving the task. OR You would have won! You must have been lucky when solving the task.
2. [Treatment 2:] You would have lost! You must not be that good at this task. OR You would have won! You must be good at this task.
3. [Treatment 3:] You would have lost! You must not have worked hard solving the task. OR You would have won! You must have worked hard solving the task.
4. [Control:] Please wait until we continue.

**SCREEN 13**

Thank you for completing Round 1. You are now about to start Round 2 of the experiment. Again, you will be given 3 minutes to calculate the correct sum of a series of five 2-digit numbers.

Before we start, again we would like you to guess how well you think you will do in comparison to the other participants who are in the lab with you. There are <N|1> people in the lab today including yourself.

We have stored everyone's performance from round 1. What do you think your rank will be in the **upcoming round** compared to everyone's performance in the **previous round**? Please choose a value between 1 and N, where 1 means that you think your performance will be the best and N means that you think your performance will be the worst.

*INPUT*

You will receive a bonus of 2 points if your guess is within a range of plus-minus 1 of your rank in the next round compared to the other participant's previous ranks. Make your best guess to receive the bonus points.

**SCREEN 14**

This is round 2 of the experiment.

You will be given 3 minutes to calculate the correct sum of a series of five 2-digit numbers.

You will be able to choose how you want to be paid for your performance. Depending on your choice, your payment for this round will depend only on your own performance in the task or on your performance compared to the performance of an opponent.

This time we will compare your performance in the **upcoming round** with a randomly selected opponent's performance in the **previous round**.

**SCREEN 15**

On the next screen, you will be able to choose how you would like to be paid for your performance in this round. You have the following two options:

1. Piece-rate pay: You receive 1 point for every correct answer in the task.
2. Competition pay: You receive 2 points for every correct answer in the task if you perform better than your randomly selected opponent and zero points otherwise. In case of a tie, the winner is randomly determined.

We will inform you immediately after the task whether you performed better than your opponent or not. You will receive this feedback irrespective of how you choose to get paid for the task.

**SCREEN 16**

Which compensation scheme do you choose for this round?

1. Piece-rate pay: You receive 1 point for every correct answer in the task.
2. Competition pay: You receive 2 points for every correct answer in the task if you perform better than your randomly selected opponent and zero points otherwise.

Click OK when you're ready to begin with the task.

**SCREEN 17**

*Math tasks for 3 minutes*

**SCREEN 18**

You scored correct answers.
(Piece rate) You scored lower/scored higher than your opponent. You therefore WOULD HAVE lost/won against your opponent.

(Competition) You scored lower/scored higher than your opponent. You therefore lost/won

against your opponent.

**SCREEN 19**

Instructions for Decision Part

In this task we ask you to make 4 choices between a **sure payment** and a **lottery**.

We will present you with **four** different situations. You have 30 seconds to make each of the four decisions.
One of the choices you make will be randomly chosen for payment.

The payment from this task will be added to your payment from the previous task

**SCREEN 20**

*DECISION TASK* *4 Scenarios*

**SCREEN 21**

[Round 1] The round that was randomly chosen for payment is Round 1: You scored X correct answers. You chose piece-rate pay/competition pay. You receive Y for the task. Your rank assessment was not accurate/accurate and you therefore do not receive/receive Z points bonus. On top of that you receive x

Euros for the decision task. Your earnings are therefore ZZ points. Including the show-up fee of 5 Euros your total earnings in Euros are XXX.

[Round 2] The round that was randomly chosen for payment is Round 2: You scored X correct answers. You chose piece-rate pay/competition pay. You receive Y for the task. Your rank assessment was not accurate/accurate and you therefore do not receive/receive Z points bonus. Your earnings are therefore ZZ points. On top of that you receive x Euros for the decision task. Including the show-up fee of 5 Euros your total earnings in Euros are XXX.

**SCREEN 22**

We will now start the last part of the experiment. In the following questionnaire we want to get to know you better. Your honest answers will greatly improve our research. Thank you!

**START EXIT QUESTIONNAIRE**

## Exit Questionnaire

### Task Specific Questions Part 1

1. How much did you enjoy working on the task? (0 = not at all to 5 = very much)
2. How challenging did you perceive the task? (0 = not at all to 5 = very much)
3. How much effort did you exert during the task? (0 = not very much to 5 = very much)
4. How exhausting did you perceive the task? (0 = not very much to 5 = very much)

### Task Specific Questions Part 1

Please move the slider to the position which best represents your opinion

5. On a scale from 0% to 100% percent how much do you think luck (vs. your performance) contributed to your outcome in the task? (Slider)
6. On a scale from 0% to 100% percent how much do you think trying hard (vs. being good at math) contributed to your outcome in the task? (Slider)

### Personal Questions 1

On a scale from 0 to 10:

7. Are you generally an impatient person, or someone who always shows great patience?
8. Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?
9. Are you generally an optimistic person or do you expect things to go wrong?
10. In general, how competitive do you consider yourself to be?
11. In general, how quickly do you give up on a task if you don't succeed in it from the first time?

### Personal Questions 2

For each of the following statements, please choose how well the statement describes you. (1 = not at all like me to 5 = very much like me)

1. New ideas and new projects sometimes distract me from previous ones.
2. Setbacks don’t discourage me.
3. I have been obsessed with a certain idea or project for a short time but later lost interest.
4. I am a hard worker.
5. I often set a goal but later choose to pursue a different one.
6. I have difficulty maintaining my focus on projects that take more than a few months to complete.
7. I finish whatever I begin.
8. I am diligent.

**Personal Questions 3**

For each of the following statements, please choose to what extent you agree/disagree with the statement. (1 = completely disagree to 5 = completely agree)

1. You have a certain amount of intelligence, and you can't really do much to change it.
2. You can always substantially change how intelligent you are.
3. Your talent in an area is something about you that you can't change very much.
4. No matter who you are, you can significantly change your level of talent.
5. Some people are good at math while others are not. There is not much you can do to really change that.
6. No matter how smart you are, you can always change your math skills quite a bit.
7. Women are not as good at math as men.
8. Women and men have the same natural ability to acquire technical skills as men.
9. I am good at math.

**Personal Questions 4**

Please state which statement is closer to your opinion? Is it closer or much closer? (A Much closer, A closer, B closer, B much closer)

A. What happens to me is my own doing.
B. Sometimes I feel that I don't have enough control over the direction my life is taking.

A. When I make plans, I am almost certain that I can make them work.
B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune.

A. In my case getting what I want has little or nothing to do with luck.
B. Many times we might just as well decide what to do by flipping a coin.

A. Many times I feel that I have little influence over the things that happen to me.
B. It is impossible for me to believe that chance or luck plays an important role in my life.

**Personal Questions 5**

Please move the slider to the position which best represents your opinion.

1. Where do you see yourself compared to people in your age group in the UK/in Germany when it comes to intelligence? (0 - least intelligent, 100 - most intelligent).
2. Where do you see yourself compared to people in your age group in the UK when it comes to working hard? (0 - work the least hard, 100 - work the hardest).
3. How do you think your family (parents) income compares to other people in the UK (in percent)? (0 - poorest, 100 - richest)
4. 4What is your mother's level of education? (A-Level, Technical/vocational training, University degree, Higher degree (Master's, Ph.D.))
5. What is your father's level of education? (A-Level, Technical/vocational training,

University degree, Higher degree (Master's, Ph.D.))

**General Questions**

1. Age (in years)
2. Gender (male/female)
3. What is your field of study? (Arts/Science and Technology/Health/ Business and Social Science/Other)

Chapter 4

# Gender Dynamics and Entrepreneurs' Resilience in Venture Funding

**Manar Alnamlah**

**Orsola Garofalo**

**Ali Mohammadi**

Department of Strategy and Innovation

Copenhagen Business School

**Christina Rott**

Department of Management and Organization

Vrije Universiteit Amsterdam

## 4.1 Introduction

*"Our day job is crushing entrepreneurs' hopes and dreams. Our main skill is saying no, and getting people not to hate us." Marc Andreessen, partner at Andreessen Horowitz, one of the largest venture capital firms*

*"Every VC in Silicon Valley turned us down. … as I go from venture capitalist to venture capitalist to venture capitalist — …. — and each and every one of them said no" Marc Benioff, Salesforce founder.*

Besides being underrepresented, female entrepreneurs still have significantly less access to financial resources to support their ventures (Brush et al., 2014; Ewens & Townsend, 2019; Gompers & Wang, 2017; Guzman & Kacperczyk, 2019). According to Pitchbook, in 2019 in the US, of every $100 of VC financing, female-founded ventures received only $2.7. In the Nordic countries, which are frequently among the top 10 countries in terms of gender equality indices, women received only $1.3 during the same year.[21] Considerable interest in the gender gap dilemma within the industry and among policymakers and scholars has brought several issues to light, the first being a significant lack of gender diversity in the capital supply-side. Men make up more than 90% of venture capitalists (Gompers & Wang, 2017). This gender disparity among industry gatekeepers has spurred the establishment of many initiatives across the globe to increase the proportion of women investors (e.g., Kaden, 2019). However, empirical research examining the effect of the investors' gender on the funding gender gap remains limited. The second issue is extremely high rates of funding rejection with roughly 1% of all considered proposals eventually receiving funding (Gompers et al., 2020; Petty & Gruber, 2011). The entrepreneurship literature documents gender differences in reaction to failure and rejection. Female entrepreneurs have lower odds of re-entry after venture failure (Simmons et al., 2019). They are less likely to relaunch a failed reward-based crowdfunding campaign and are more likely to anticipate rejection when applying for a bank loan (Greenberg et al., 2019; Moro, Wisniewski, & Mantovani, 2017). Such evidence raises many questions regarding whether there are gender differences in response to rejections during the fundraising process and, if so, how these differences shape the funding gender gap. We argue that considering both the role of resilience in fundraising and the gender

[21] https://medium.com/speedinvest/female-founders-and-speedinvest-partner-up-to-level-the-playing-field-for-women-in-tech-c70f4b0293c8

dynamics between investors and entrepreneurs would improve our understanding of the funding gender gap phenomenon and its underlying mechanisms. Thus, this paper investigates entrepreneurs' resilience and the role of the investors' gender during the fundraising process.

Increasing the proportion of women investors can reduce the gender gap in the entrepreneurial finance market through two mechanisms. First, having evidence that indicates male investors are systematically biased against female entrepreneurs (Ewens & Townsend, 2019; Gompers & Wang, 2017) suggests that increasing women's share in the industry might mitigate the scale of the bias effect. Second, female investors may reduce the gender gap through their positive bias in favor of their own gender. Female investors' preference for gender is potentially shaped by gender homophily (see, e.g., McPherson, Smith-Lovin, & Cook, 2001), which would mean they are more likely to be associated and form connections with entrepreneurs from their gender group. Moreover, their preference is potentially shaped by similarity attraction (Byrne, 1971), which would mean they are attracted to and rate female entrepreneurs more positively due to reduced uncertainty and because of the estimated rewards (e.g., easier communication). A report by the Diana Project shows that venture capital firms with female VCs attract more female-led ventures, which is probably due to homophily in networking (Brush et al., 2004).[22] Other scholars show that female investors have a higher preference for investment relationships with female entrepreneurs (Gafni et al., 2020; Greenberg & Mollick, 2017) and are more likely to express interest and invest in female entrepreneurs (Alnamlah, 2020; Ewens & Townsend, 2019). Hence, we explore investor-entrepreneur gender dynamics by examining the effect of the gender of the rejecter (investor) on entrepreneurs' responses to funding rejection.

As the introductory quotes highlight, resilience in fundraising is very important since the fundraising process is characterized by an exceptionally high rejection rate. Investors receive many funding proposals each year; however, they are only able to invest in a handful of them (Gompers et al., 2020). Varying levels of resilience among male and female entrepreneurs may explain the gender gap even if, in an ideal situation, other demand-side (statistical discrimination) and supply-side (taste-based discrimination and inaccurate beliefs) discriminations do not exist. Recent theories from patenting (Aneja et al., 2020; Jensen et al., 2018) and executive recruitment (Brands & Fernandez-Mateo, 2017) claim that women have lower resilience, i.e., the ability to bounce back after rejection and loss, and that this gender difference in resilience may, to some extent, explain women underrepresentation. In contrast, theories from politics (Bernhard & De

[22] The Diana Project was established in 1999 and is involved in research activities, forums, and scholarship focusing on women entrepreneurs and their growth.

Benedictis-Kessner, 2020) suggest that women candidates are not less likely to persist after losing compared to men. Besides the inconsistent theories, the characteristics of rejection in entrepreneurial finance are unique relative to other settings due to several factors. First, alongside the extraordinary rejection rate, funding rejections are not exclusively driven by investment opportunity lack of financial viability (Shafi, Mohammadi, & Johan, 2020). VC firms reject investment opportunities due to geographical focus, industry focus, unavailable funds, and/or time constraints (Gompers et al., 2020; Petty & Gruber, 2011). Second, investing in an entrepreneurial venture is associated with a high level of uncertainty and the investors' evaluations of future success are highly inaccurate, which is evidenced by the fact that more than 50% of investments made by VCs do not generate a return or result in a successful exit (Cochrane, 2005; Gompers et al., 2020; Gompers & Lerner, 2001; Korteweg & Sorensen, 2010). There are many anecdotal pieces of evidence that highly valuable and successful firms such as Airbnb, E-bay, Google, PayPal, Salesforce, Zoom, and Klarna were rejected by at least one investor before they managed to successfully secure funds.[23] Third, funding rejections are unique relative to other settings due to the relatively more severe consequences of not "bouncing back" on both the venture-level and individual level. Inability to access financial resources is a substantial threat to the venture's survival (Aldrich & Ruef, 2006; Shane & Stuart, 2002). Moreover, venture failure is not only associated with a loss of personal income but also negative emotions such as disappointment, anger, shame, and grief (Cope, 2011; Shepherd, 2003; Ucbasaran, Shepherd, Lockett, & Lyon, 2013).

In this paper, we argue that our understanding of the gender gap in the entrepreneurial finance market is incomplete if we do not consider entrepreneurs' resilience during the fundraising process and the role of investor-entrepreneur gender dynamics. Thus, we experimentally examine whether there is a gender difference in entrepreneurs' resilience while seeking to secure external capital and whether entrepreneurs' resilience is influenced by the gender of the investor. We launched a two-stage venture competition with a significant monetary prize to examine the effect of the judge's gender in the first stage on the participation of losing entrepreneurs in the second stage. An empirical examination of the aforementioned questions is difficult since standard data sources only provide information on entrepreneurial ventures that have already successfully

[23] For example, Bessemer Venture partners, which is one of the oldest venture capital firm in the US, provided a list of companies that they had the opportunity to invest in but decided to reject and https://www.forbes.com/sites/alejandrocremades/2019/02/05/these-entrepreneurs-were-rejected-hundreds-of-times-before-bringing-in-billions/?sh=2f55ff155c67

secured investment. Therefore, it is not possible to observe: 1) the number of unsuccessful fundraising attempts and previous rejections; 2) the timing and characteristics of the subsequent fundraising attempts; 3) the characteristics of the rejecter (e.g., performance, geographic location, gender, etc.). Recent studies use data from crowdfunding platforms (e.g., AngelList or Kickstarter) to study investors' biases toward female entrepreneurs and failed female campaigns (Ewens & Townsend, 2019; Greenberg et al., 2019). Our experimental design enables us to isolate the causal mechanisms for the exhibited attitude after experiencing a loss in the first stage. The second stage allows us to observe the resilience of entrepreneurs. Furthermore, an experimental design enables us to observe and randomly assign the gender of the potential investor or judge. This is an important feature of the experimental design since female entrepreneurs might self-select into investors to pitch their business based on the perceived probability of loss. Lastly, to prevent the competition loss from being the outcome of gender bias, the judges evaluate the business in a gender blind process.

Our sample consists of 403 UK-based entrepreneurs, who have, on average, nine years of entrepreneurial experience and run ventures that employ, on average, two full-time employees. On the one hand, the results show that there is no gender gap in resilience while seeking to secure financial resources. This means female and male entrepreneurs participate at a similar rate in the second venture competition after losing in the first. On the other hand, we observe that resilience is moderated by the gender of the judge. Male entrepreneurs are more likely to participate in the second competition when they are assigned to a female judge while there is no change among female entrepreneurs. We also find that the effect of the judge's gender is more pronounced in more ambiguous situations (i.e., when the outcome of the first competition is not yet known). In additional analyses, we show that in a gender-blind assessment process, both male and female judges assign lower scores to female-owned ventures. The result is robust to the inclusion of the industry of the venture and the language characteristics of the venture pitch. This gap in the assigned scores may indicate the existence of statistical discrimination in our sample.

We contribute to the literature on gender and entrepreneurship. Prior literature has focused on the differential rate of success in fundraising among male and female entrepreneurs (Brush et al., 2014; Coleman & Robb, 2009; Ewens & Townsend, 2019; Snellman & Solal, 2020). We focus on the behavior of entrepreneurs after rejections and document that there are no gender differences in resilience and capital seeking. In particular, we find no gender difference in entrepreneurs' competition participation after losing. These findings speak to the body of work that provides inconsistent evidence about gender differences in persistence in several contexts (Aneja et al.,

2020; Bernhard & De Benedictis-Kessner, 2020; Brands & Fernandez-Mateo, 2017; Greenberg et al., 2019; Jensen et al., 2018). We also show that the investors' gender affects the resilience of entrepreneurs by increasing the participation rate of male entrepreneurs. This counter-intuitive result may indicate a side-effect of increasing the number of female investors. More female investors may improve the resilience of male entrepreneurs consequently leading to greater gender inequality in the entrepreneurial finance market.

## 4.2 Theoretical Background

### 4.2.1 Gender Gap in Entrepreneurial Finance

A stream of research in the literature on the gender gap in funding argues that, all else being equal, female entrepreneurs are at a disadvantage in terms of accessing capital (Brooks et al., 2014; Coleman & Robb, 2009; Ewens & Townsend, 2019; Gompers & Wang, 2017). Female entrepreneurs' disadvantage is claimed to be the outcome of differential treatment originating in the capital supply-side. Brooks, Huang, Kearney, and Murray (2014) provide evidence of gender bias in a field and an experimental setting. Analyzing the video recordings of three entrepreneurial pitch competitions in the U.S. judged by angel investors, they show that female entrepreneurs are significantly less likely to win by 60% compared to their male counterparts. Their additional experimental evidence claims that students (not investors) prefer pitches presented by male entrepreneurs compared to identical ones presented by female entrepreneurs. Around 68% of the subjects chose to fund the video pitches with a male narrator compared to 32% who chose to fund pitches with a female narrator. Similarly, Hu and Ma (2020) examined pitch videos for high-ranking accelerators and conducted a lab experiment also using pitch videos to test the mechanism. They find that the performance of all-female teams during a pitch has a greater impact on investment decisions compared to all-male teams. All-female teams are heavily penalized for not fitting in with their gender stereotypes of being positive and warm compared to men. When co-presenting a pitch with male teammates, women are ignored and overlooked by the judges. Ewens and Towsnend (2019) have also identified consistent evidence of a systematic gender bias among angel investors. Using a unique dataset from AngelList in which the investor-founder interactions for both funded and unfunded startups are observable, they find that female entrepreneurs receive significantly less interest and less capital from male investors compared to observably similar male entrepreneurs. The authors argue that male investors' bias against female entrepreneurs can potentially be explained by gender homophily.

The magnitude of the gender gap and the role of the underlying mechanisms of the capital supply in shaping the observed gender gap remain heavily disputed. Hebert (2020) argues that the observed gender bias in funding is not the outcome of a systematic bias against women but is entirely driven by gender stereotypes and inaccurate beliefs about women. Furthermore, she claims that the gender gap equity funding persists overall but is reversed in female-dominated sectors. Based on survey data of the entrepreneur population and corporate tax files in France, Hebert shows that female entrepreneurs who found ventures in female-dominated sectors are no longer at a disadvantage. She claims that female entrepreneurs in female-dominated sectors are more likely to be financed by external equity investors compared to their male entrepreneurs. On the other hand, Gornall and Strebulaev (2020) show that investors are not biased against female entrepreneurs during the early stages of fundraising. In a large-scale field experiment where cold pitches (via emails) of fictitious ventures were sent to BA and VC investors, they show that female entrepreneurs received more interest relative to identical pitches sent by male entrepreneurs. The authors highlight the potential role of networking frictions in driving the documented funding gap.

Another stream of research examines the role of female-related factors in explaining the funding disparity between male and female entrepreneurs. It has been argued that the well-established gender differences in accumulated employment and managerial experience (Boden & Nucci, 2000; DeTienne & Chandler, 2007), risk attitudes (Croson & Gneezy, 2009), and preferences for competition (Niederle & Vesterlund, 2007) contribute to women's representation in entrepreneurship. Thus, these gender differences potentially play a role in women's disadvantage in accessing capital as well. The literature suggests that a systematic gender sorting into founding ventures with different growth orientations explains a substantial share of the gender gap in access to capital (Guzman & Kacperczyk, 2019). Women are less likely to found ventures in industries associated with venture capital such as IT or biotechnology. Besides, their founded ventures are less likely to exhibit growth orientation via various means such as the entity's legal structure (e.g., partnership or LLC) and presence of patent or trademark. The literature also documents gender differences in terms of utilized capital sources and pursuing behavior. Women are less likely to pursue bank loans or external equity and are more likely to resort to personal savings, family and friends, and credit (Coleman & Robb, 2009; de Andrés et al., 2020; Hebert, 2020). Women ask for smaller loans (Fackelmann & De Concini, 2020) and set lower fundraising goals for early equity financing (Ewens & Townsend, 2019). They are found to be less proactive in terms of reaching out to VCs compared to men, which highlights networking frictions that may contribute to the gender gap in funding (Howell & Nanda, 2019).

The considerable interest in tackling the gender gap in funding among scholars and policy-makers has highlighted the significance of addressing the issue of gender diversity among industry gatekeepers, of which 90% are men (Gompers & Wang, 2017). Few studies have shed light on the potential role of female investors in closing the gender gap in the entrepreneurial finance market. Evidence in the literature suggests that a high proportion of women decision-makers, whether they be venture capitalists in VC firms or selectors in accelerator programs, attracts a relatively high number of proposals and applications by female entrepreneurs (Brush et al., 2004; Dutt & Kaplan, 2020). A longitudinal database of angel groups in the U.S. collected by the Center of Venture Research provides evidence that the gender composition of angel groups significantly predicts their investment behavior (Becker-Blease & Sohl, 2011). Gender-diverse angel groups with females as a minority are significantly less likely to invest. Ewens and Towsnend (2019) argue that the funding gap is driven by biased male investors dominating the industry decisions. They also show that female entrepreneurs in AngelList receive more interest and they are more likely to successfully raise capital from female investors. Considering the role of gender homophily and the weak evidence of positive bias among female investors, they claim that increasing the proportion of female investors may partially offset men's bias and reduce the funding gap.

### 4.2.2 Rejection and Entrepreneurial Resilience

Entrepreneurs often encounter inevitable obstacles and serious threats to their venture's survival, which a significant proportion of entrepreneurs fail to outlive (Gompers & Lerner, 2001; Wiklund, Baker, & Shepherd, 2010). Securing financial resources is a prominent obstacle confronted by many entrepreneurs while being one of the most significant factors for a venture's survival and success (Aldrich & Ruef, 2006; Shane & Stuart, 2002). The extraordinary risks, high ambiguity, high competitiveness, and resource scarcity in entrepreneurship contribute to the funding's extremely low acceptance rates and frequent rejections (Gompers & Lerner, 2001; Politis, 2005; Shepherd, Douglas, & Shanley, 2000). At most, 3% of the applications to respected startup accelerators such as Y Combinator (YC) and Techstars are accepted.[24] Moreover, less than 28% of investment opportunities considered by a VC firm are invited to the management and only 1% of the funding opportunities considered result in an investment (Gompers et al., 2020). Thus, rejection and failure are central elements in the process of securing financial resources. However,

[24] https://www.forbes.com/sites/paulinaguditch/2017/05/30/get-into-a-top-startup-accelerator/?sh=5ecbdbd7725f

it is noteworthy that funding rejections are not exclusively driven by financial feasibility and do not rule out future investment (Gompers et al., 2020). Funding proposals are rejected for various reasons including fund availability, product focus, stage focus, industry focus, geographical focus, and/or time constraints (Gompers et al., 2020; Petty & Gruber, 2011).

Existing studies that examined the gender differences in response to failure and rejection across multiple settings have shown inconsistent results. Research in social psychology provides inconsistent results about the effect of social rejection (exclusion or ostracism) on women's stress. While experimental evidence shows no change in women's stress levels following a lab-based exclusion using a Cyberball game (Williams, Cheung, & Choi, 2000), other experimental evidence show an increase in their stress levels when they are asked to speak publicly after being excluded (Weik, Maroof, Zöller, & Deinzer, 2010). The experimental economics literature also finds inconsistent evidence about women's persistence after losing a competition. Buser and Yuan (2019) show that women are less likely to compete again after losing a competition. They claim that women's lower likelihood to persist is the outcome of changes in preference for competition rather than risk preference or confidence. On the other hand, Alnamlah and Gravert (2020) provide inconsistent evidence from the lab showing no gender gap in terms of persistence after losing. In patenting, observational data suggests that there are gender differences in terms of persistence. The United States Patent and Trademark Office (USPTO) data shows that female-led teams appeal less and are less likely to continue the patent process after early rejections, which are common (Aneja et al., 2020). The authors claim that the observed gender differences in persistence explain almost half of the gender gap in the awarded patents. Based on a setting that closely connected ours, Brands and Fernandez (2017) recently examined the gender differences in terms of responses to rejection in the executive recruitment context. Using field, survey, and experimental data, they find that women are less likely to consider an executive job offered by a firm that has rejected them in the past. The authors suggest that rejection triggers women's belonging uncertainty to the field due to the negative stereotypes associated with women leaders. Therefore, women are more attuned to procedural justice and, thus, are more likely to interpret rejection as unfair, thereby confirming their belief that they do not belong. Evidence from politics shows no gender difference in persistence among electoral candidates (Bernhard & De Benedictis-Kessner, 2020), which is inconsistent with evidence from patenting and executive recruitment. Data on state and local elections in the United States over seven decades suggests that an electoral loss decreases the candidate's likelihood of running again. However, women candidates are not more sensitive to electoral losses and, thus, they are not more likely to quit politics after losing.

Few scholars have examined gender differences in entrepreneurs' responses to entrepreneurial failures and rejections. According to Simmons et al. (2019), female entrepreneurs are found to be less likely to re-enter into entrepreneurship after venture failure is compared to male entrepreneurs. The authors argue that the public stigma of venture failure is possibly more discouraging for experienced female entrepreneurs who are pursuing re-entry than it is for their male peers. In reward-based crowdfunding, Greenburg, Kuppuswamy, and Mollick (2019) examine men's and women's persistence after a campaign failure. Using archival data from approximately 190,000 projects posted on a crowdfunding platform (Kickstarter), they find that women are significantly less likely to relaunch their crowdfunding campaign after a failed first attempt. Conditional on relaunching after failure, women take longer to relaunch their camping after the failed attempt. The authors claim that the gap in campaign relaunch rate is explained, in part, by women's reassessment of opportunities, which is possibly driven by their lower confidence due to failure compared to men. Exploring women's access to bank credit, Moro, Wisniewski, and Mantovani (2017) investigated the Survey of Access to Finance of Enterprise (SAFE), which collects information about ventures within the European Union. Although they find no evidence of discrimination against female-led ventures regarding accessing bank loans, they find that women apply for loans at a lower rate compared to men. The gender gap in loan applications is driven by women's anticipation of rejection, which is possibly due to perceived discrimination against their gender. Taken together, this evidence highlights the little investigated role that resilience may play with regard to the gender gap in entrepreneurial finance. Moreover, the aforementioned evidence highlights the unaddressed role gender dynamics may play regarding an entrepreneur's resilience when attempting to secure financial resources. We argue that investor-entrepreneur gender dynamics influence entrepreneurs' resilience in terms of securing financial resources and may, therefore, explain the gender gap in funding.

Resilience has been receiving increased attention in the entrepreneurship literature recently. However, the literature is fragmented and inconsistent with regard to its use of the popular concept of resilience, which has been widely adopted as a metaphor instead of a construct. Drawing on the psychology literature, we define *psychological resilience* as the ability to bounce back after a negative or stressful experience such as failure and the flexibility in terms of being able to adapt to these events (J. H. Block & Block, 1980; J. Block & Kremen, 1996; Carver, 2010; Lazarus, 1993). Only a few studies have investigated the role individual resilience plays in entrepreneurial entry and outcomes. Bullough, Renko, and Myatt (2014) examined the effect of entrepreneurs' resilience and self-efficacy on entrepreneurial intentions in adverse conditions of

war and find it to be positive. Moreover, Fisher, Maritz, and Lobo (2016) investigated entrepreneurs' resilience and whether it plays a role in entrepreneurial success. They find that entrepreneurs as a population are more resilient and that resilience is linked to entrepreneurial success.

## 4.3 Method

### 4.3.1 Venture Competitions

Similar to accelerators, incubators and crowdfunding platforms, venture competitions have emerged in the startup ecosystems to support and fund new ventures and nascent entrepreneurs. These competitions provide cash prizes, quality certification and valuable exposure to investors while having an important educational role through feedback. Typically, competitions are open to the public and consist of multiple rounds, in each round entrepreneurs present (pitch) their ideas and business models to a panel of judges for 5-15 minutes. Then, judges evaluate the pitches and assign scores that determine the winners of the round. It is worth noting, that usually there are multiple winners in each round and the final winners are announced on the competition's website. Winning a competition has been found to increase the likelihood of subsequent external funding (Howell, 2020). These venture competitions are typically organized and sponsored by universities, corporations, and governments. Among the well-known venture competitions are TechCrunch Disrupt, Y Combinator Demo Day, Harvard Business School (HBS) New Venture Competition, and the MIT $100K Entrepreneurship Competition.

### 4.3.2 Experimental Design and Procedure

To examine judge-entrepreneur gender dynamics and the impact of losing a competition on entrepreneurs' resilience and, subsequently, the gender gap in funding, we conduct a lab-in-the-field experiment through a real venture competition. The experimental design enables us to control for decision-maker (i.e., investors) characteristics other than their gender such as race, reputation, and gender preferences. As a result, we were able to isolate the causal effect of the exhibited attitude after experiencing loss or rejection. Furthermore, the experimental design allows us to recruit and observe equal samples of male and female entrepreneurs. Unlike laboratory experiments, lab-in-the-field experiments are conducted in natural settings and employ a theoretically relevant population, who are otherwise unlikely to physically go to a laboratory (Gneezy & Imas, 2017). Nevertheless, this experimental approach applies standardized and validated paradigms identical to those used in laboratory experiments, which allows one to

establish causality while maintaining the internal validity of the findings and increasing their external validity. Our experimental design intends to achieve the following goals: 1) to observe a sample with a similar representation of both male and female entrepreneurs; 2) to control for all decision-maker (investor or judge) characteristics other than gender (e.g., race and reputation); 3) to control for self-selection for male or female judges (investors).

In the venture competition that constituted two stages, we employed a 2x2x2 between-subjects factorial design. The eight treatments differentiate the entrepreneur's gender (male or female), the judge's gender (male or female), and the feedback about the competition's outcome (with or without feedback) in which entrepreneurs learn about their loss in the first competition (see Figure 4.1 for more details).

**Figure 4.1 Overview of the Treatments**

| | Loss Feedback | | | |
|---|---|---|---|---|
| | Male Entrepreneur | | Female Entrepreneur | |
| Male Judge | Male entrepreneur randomly assigned to a male judge and did not receive loss feedback<br>*(Baseline group)* | Male entrepreneur randomly assigned to a male judge and received loss feedback<br>*(Group 1)* | Female entrepreneur randomly assigned to a male judge and did not receive loss feedback<br>*(Group 2)* | Female entrepreneur randomly assigned to a male judge and received loss feedback<br>*(Group 3)* |
| Female Judge | Male entrepreneur randomly assigned to a female judge and did not receive loss feedback<br>*(Group 4)* | Male entrepreneur randomly assigned to a female judge and received loss feedback<br>*(Group 5)* | Female entrepreneur randomly assigned to a female judge and did not receive loss feedback<br>*(Group 6)* | Female entrepreneur randomly assigned to a female judge and received loss feedback<br>*(Group 7)* |

To conduct our experiment, we used a pool of active British entrepreneurs recruited using Prolific, an online platform based in the United Kingdom, which is used to recruit participants for surveys and experiments (Palan & Schitter, 2018; Peer et al., 2017). We define an active entrepreneur as an individual who owns and manages a business venture. During the recruitment process, we screened out active entrepreneurs who were enrolled as a student at an educational

institution to ensure that all the subjects in our study were full-time entrepreneurs. We managed to recruit 524 entrepreneurs, who completed the two stages of our competition and their respective questionnaires. We excluded responses that pitched non-profit ventures and future business ideas. To eliminate careless responses, we excluded those that failed two out of three attention checks, those that had an unclear venture pitch or if the pitch text was less than fifteen words, those whose text was not gender-blind, those that pitched more than one venture, failed our two manipulation checks, or if the provided information about gender and country of residence did not match the records held by the platform.[25] We further excluded responses that were three standard deviations below or above the average duration of each of the competition stages to account for low attention. Also, we randomly excluded responses to reduce the sample size to accommodate our small number of judges. Finally, we excluded the winners and only retained the entrepreneurs who had lost the competition for the analysis. This resulted in a total sample of 403 active entrepreneurs who were residents of the United Kingdom. We used Qualtrics to program and conduct the experiment.

***Stage 1: Venture Competition A***

Entrepreneurs access the competition application online. In the beginning of entrepreneurs read about the venture competition (Competition A) and details about the prize, evaluation criteria, evaluation process, and acceptance rate. Competition (A) offers a prize of £3000 with an acceptance rate of 10%. Next, entrepreneurs are randomly assigned to either a male or a female judge and are presented with the judge summary page. On the judge summary page, there is a message that communicates that their application has been randomly assigned to the presented judge. Below the message, there is an anonymous and gendered silhouette picture (man or woman) followed by the judge's full name. The gender of a judge is implicitly indicated by the first name and the anonymous and gendered silhouette picture (see Appendix C.1 for more details). Following Gornall and Strebulaev (2019), the first-name selection process went through the following steps. First, we retrieved the dataset of the top 100 baby names in England and Wales from the British Office for National Statistics and retained the names that have been on the list since the early 70s.[26] Second, to avoid gender ambiguity, we removed gender-ambiguous or unisex

[25] To ensure the internal validity of our findings, we conducted two manipulation checks. To check whether entrepreneurs perceived the correct judge gender, we asked them to indicate the biological sex of the judge who had been randomly assigned to evaluate their pitch. To check whether entrepreneurs had understood that they had lost, we asked them to indicate the outcome of competition A and whether they had won or lost.

[26] Top 100 Baby Names in England and Wales (1904-1994)
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/babynamesenglandandwalestop100babynameshistoricaldata

names based on a list published by Jörg Michael.[27] The remaining first names were randomly matched with the top 5 surnames in the UK according to Oxford References.[28] Finally, to prevent our judges from being associated with real people who have matching characteristics, we searched LinkedIn and excluded the full names that appeared on the first page and belong to people with relevant characteristics (e.g., venture capital investor, angel investor, banker, entrepreneur, or working in an incubator or accelerator). In doing so, we mitigate the effect of judge-associated characteristics (e.g., associations, prestigious education, network, or race) on entrepreneurs' participation as a result of wrongly identifying the person on LinkedIn as the competition judge.

After the judge summary page, entrepreneurs continue to the competition application form, where they answer three questions about their age group, biological sex, and country of residence. Next, they nominate their business by pitching a short description (maximum 800 characters) explaining the problem addressed by the business, the product or service, and the adopted revenue model. Entrepreneurs are instructed to pitch their venture using venture-related information and without mentioning any personal information (e.g., names of the founders, city of residence, country of residence, gender, age, ethnicity, etc.). For random samples of venture pitches nominated by male and female entrepreneurs, please see Appendix C.5 and C.6. Once the application form has been submitted, the entrepreneurs begin answering the pre-treatment questionnaire. The questionnaire collects data about entrepreneurs' absolute and relative confidence, risk willingness, big five personality traits, and entrepreneurial self-efficacy. On average, it took participants 15 minutes to complete this stage.

***Pitch Assessment***

Next, the submitted and gender-blind pitches are evaluated and assessed by the randomly assigned judge. Each judge is assigned to assess 100 pitches and is instructed to accept the top 10%. The judges assess the viability and quality of the businesses based on a scale from 0%-poor to 100%-outstanding. Calculating the average of their values (viability and quality) resulted in the pitch's overall assessment score (0%-poor to 100%-outstanding). We managed to recruit a total of 10 judges. We intentionally recruited an equal number of male and female judges to allow us to manipulate the judge's gender treatment effectively. The majority of judges have a degree in business and economics and 80% have a master's degree or higher. On average, the judges have approximately 10 years of professional experience. More specifically, they have professional experience with startup valuation, startup mentoring, startup funding, or startup pitches.

[27] Jörg Michael, ftp://ftp.heise.de/pub/ct/listings/0717-182.zip (Retrieved February 25, 2020)
[28] https://www.oxfordreference.com/view/10.1093/acref/9780199677764.001.0001/acref-9780199677764

Moreover, the majority have worked for an accelerator or an incubator at some point in their professional career.

***Stage 2: Venture Competition B***

Two weeks later, entrepreneurs receive a new online link. They are first reminded about the competition's overall purpose. Next, they are randomly assigned to one of two groups: one with and one without feedback about the outcome of competition (A).[29] The first group (with feedback) receives feedback about whether they have won or lost competition (A). They are then asked whether they wanted to participate in competition (B). The second group (without feedback) receives feedback about whether they have won or lost competition (A) at the end of the study after competition (B).

At the beginning of this stage, the participants read information about competition (B), which includes the evaluation criteria and the evaluation process. Competition (B) offers multiple prizes up to £3000 with multiple acceptance rates. Before starting the application, entrepreneurs are randomly assigned to a new judge, although the judge's gender is the same in both competitions. If an entrepreneur was randomly assigned to a male judge in competition (A), the entrepreneur would be randomly assigned to a new male judge in the subsequent competition (competition (B)). Before transitioning to the application form, entrepreneurs indicate whether they would like to participate in the new competition. If yes, they have to choose one of four prize-probability combinations, which elicit their risk aversion. The options are £3000 with a 5% probability, £1500 with a 10% probability, £999 with a 15% probability, and £750 with a 20% probability. Next, they are asked to complete the application form, which is identical to the form they have to fill out for competition (A). After submitting the application, entrepreneurs who have been assigned to the second feedback group (without feedback) receive feedback about whether they have won or lost competition (A).

Finally, participants fill out the post-treatment questionnaire, which collects data about the perceived causes of competition (A) outcome (win vs. loss), sense of belonging, fear of failure, entrepreneurial activities, business performance, socioeconomic status, and demographics (please see Appendix C.7 for the full questionnaire). On average, it took participants 18 minutes to complete this stage. Furthermore, the average duration of the full experiment is 33 minutes. Excluding competition prizes, participants were paid, on average, £4.35 (including participation

[29] Participants who won in competition (A) were also randomly assigned to one of two groups - one with and one without feedback about competition (A) outcome. They either were told the they had won or they were not told anything about the outcome until the end of the study.

fees and bonus payment if applicable). Payments were processed online through the payment system of Prolific.

### 4.3.3 Measures

***Dependent Variables***

To measure whether any of our treatments elicit an effect on participants' preferences regarding the newly offered competition, we employ two dependent variables. First, we employ *Resilience*, which is a binary measure that is equal to 1 if participants indicated that they would like to participate in the new venture competition instead of dismissing the offer. Second, we employ *Subsequent risk aversion*, which is a binary measure that is equal to 1 if the participant's subsequent risk aversion is higher. To measure the participant's *Subsequent risk aversion*, we ask those who have chosen to participate in the new competition to indicate their preference regarding the prize amount and probability combination that they would like to apply for while maintaining the expected value constant across the offered combinations. The prizes range from large amounts with lower probabilities that elicit low risk aversion (Option A: £3000 with a 5% probability and Option B: £1500 with a 10% probability) to smaller amounts with higher probabilities that elicit high-risk aversion (Option C: £999 with a 15% probability and Option D: £750 with a 20% probability).

***Explanatory Variables***

In this experiment, three explanatory variables are measured in relation to the dependent variables. First, *entrepreneur's gender*, which is a binary measure that equals 1 if entrepreneurs indicated that their biological sex is female and 0 otherwise. Second, *judge's gender*, which is operationalized as an indicator set to 1 if the entrepreneur was randomly assigned to a female judge. Finally, *loss feedback*, which takes the value 1 if entrepreneurs received feedback that they have lost in the first venture competition before being offered to participate in the second competition (competition (B)). Otherwise, the variable is set to 0 for those who received their loss feedback at the end of the study.[30]

***Control Variables***

To account for the potential confounding effect of the various entrepreneur and venture characteristics on our outcome variables, we construct many variables organized as follows. First,

[30] Winners were also randomly assigned to either "with win feedback" or "without win feedback" groups. The first group received feedback that they have won in the first venture competition before being offered to participate in the second competition (competition (B)). The second group received their win feedback at the end of the study.

we control for competition-related characteristics. We construct the pitch number of words to account for an entrepreneur's effort exhibited in pitching the venture. To control for the quality of the venture and the entrepreneur's perception of the quality of the venture, we construct the normalized within-judge *venture overall score* and the *quality belief* variables. We elicited entrepreneurs' beliefs about the relative quality of their venture by asking them to estimate the overall score that would be assigned to the venture by the judge on a scale from 0%-Poor to 100%-outstanding. The belief elicitation was incentivized, whereby an entrepreneur received a bonus payment of £1.50 if the estimation was within the range of ±2% of the judge's actual overall score for the venture. The variable is calculated as the difference between the estimated overall score for the venture and the actual overall score and ranges in value from -1 (low) to 1 (high).[31]

Second, we control for venture-level characteristics. Since the aim of this study is to examine the treatment effect on the individual level, we control for the venture's age and performance. The performance is measured relative to competitors to account for variation in performance that may have been driven by industry effects. However, due to the recent Covid-19 pandemic that led to unprecedented disruption of commerce across economies, we control for the venture's performance pre and post Covid-19. We construct these two variables to account for the influence of exogenous factors such as the economic conditions on the venture's performance. Following (Baron, Mueller, & Wolfe, 2016; Mueller, Wolfe, & Syed, 2017), for both *pre-pandemic venture performance* and *post-pandemic venture performance*, we measure venture performance relative to competitors. Entrepreneurs are asked to evaluate the performance of their venture *pre* and *post-pandemic* compared to competitors according to the following criteria: Growth in sales, growth in profitability, debt position, return on assets, gross profit margin, net profit margin, and the ability to fund growth from profit using a seven-point Likert scale ranging from 1 (much worse than competitors) to 7 (much better than competitors). The average value of the responses is used to construct the performance measure with higher values indicating better performance. Furthermore, we measured *Covid-19 performance impact* by employing a measure of the economic recession impact on performance used in prior research (e.g., Geroski and Gregg 1996, Lai et al. 2016, Latham 2009). We ask entrepreneurs to "assess the impact of the recent pandemic of Covid-19 on your business performance" using a seven-point Likert scale ranging from 1 (very negatively impacted) to 7 (very positively impacted).

[31]Belief = (estimated venture overall score - actual venture overall score)/(100)

Third, we control for individual-level attributes, demographics, and personal characteristics. To account for the possibility that experience facilitates the development of resilience and correlates with entrepreneurial risk-taking, we construct *entrepreneurial experience*. Entrepreneurial experience is operationalized as the total number of years as founder or co-founder. In regards to demographics and personal characteristics, we control for the entrepreneur's age, its squared term ($age^2$), and education using a dummy variable that takes the value of 1 if the entrepreneur has a *college degree or higher*. We also account for the heterogeneity in initial *risk willingness* across entrepreneurs and genders using Dohmen et al. (2011) measure. Entrepreneurs are asked to indicate their perceived willingness to take risks in general using a scale from 1 (completely unwilling to take risks) to 11 (very willing to take risks). The literature presents evidence of gender differences in terms of personality traits (Weisberg, DeYoung, & Hirsh, 2011) and suggests that some of these traits may influence an entrepreneur's entry into entrepreneurship, exit, and venture performance (for review, see Kerr, Kerr, & Xu, 2018). Therefore, we account for these differences using the Big-five model, which is the most established trait model in psychology and has been used in entrepreneurship research recently (Goldberg, 1992). The model constitutes the following five broad dimensions of traits: *extraversion*, *agreeableness*, *conscientiousness*, *neuroticism*, and *openness to experience*. Entrepreneurs answered a total of 20 questions, 4 for each trait, using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score for each trait is the sum of the response values.

Finally, we control for industry fixed effects since industries are determinants of venture performance and may influence the competition evaluations and outcomes due to differences in judges' investment preferences. We included 18 industry dummy variables according to the European statistical classification of economic activities, NACE (Nomenclature of Economic Activities). In addition to industry fixed effects, we control for judge fixed effects to account for judge-specific differences that may influence the evaluation such as preferences or optimism.

## 4.4 Results

### 4.4.1 Descriptive Statistics

Panel A in Table 4.1 reports the descriptive statistics for the entrepreneurs' characteristics while Panel B reports the descriptive statistics for the characteristics of the pitched venture. Statistics are presented for the whole sample, and for male entrepreneurs, and female entrepreneurs. Panel A shows that the average age of the entrepreneurs in our sample is 41 years,

which aligns with the findings of previous work that the average founding age is in the late 30s or early 40s (Azoulay, Jones, Kim, & Miranda, 2020; Dahl & Sorenson, 2012; Kautonen, Down, & Minniti, 2014). Female entrepreneurs account for approximately 53% of our sample while 64% of the entrepreneurs hold or a college degree or higher. Concerning professional experience, the entrepreneurs have, on average, 16 years of work experience and 9 years of entrepreneurial experience.

**Table 4.1: Descriptive Statistics by the Entrepreneur's Gende**r

| | All | | Male entrepreneur | | Female entrepreneur | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean | diff. | t-test |
| **Panel A. Entrepreneurs' characteristics** | | | | | | | | |
| female | 403 | 0.53 | 188 | 0.00 | 215 | 1.00 | | |
| Age | 403 | 40.65 | 188 | 41.02 | 215 | 40.33 | 0.69 | (0.59) |
| College or higher | 403 | 0.64 | 188 | 0.57 | 215 | 0.70 | -0.13*** | (-2.70) |
| Risk willingness | 403 | 8.03 | 188 | 8.50 | 215 | 7.61 | 0.89*** | (3.75) |
| Work experience | 403 | 16.38 | 188 | 17.69 | 215 | 15.24 | 2.45** | (2.18) |
| Entrepreneurial experience | 403 | 9.36 | 188 | 10.02 | 215 | 8.79 | 1.23 | (1.41) |
| **Panel B. Ventures' characteristics** | | | | | | | | |
| Venture age | 403 | 7.00 | 188 | 7.20 | 215 | 6.82 | 0.37 | (0.49) |
| Venture size | 403 | 1.98 | 188 | 2.61 | 215 | 1.42 | 1.19*** | (2.88) |
| Incorporated | 403 | 0.22 | 188 | 0.29 | 215 | 0.16 | 0.13*** | (3.15) |
| Pre-pandemic performance | 403 | 4.48 | 188 | 4.41 | 215 | 4.53 | -0.13 | (-1.28) |
| Post-pandemic performance | 403 | 4.05 | 188 | 4.05 | 215 | 4.05 | 0.01 | (0.06) |
| Covid-19 performance impact | 403 | 3.21 | 188 | 3.17 | 215 | 3.25 | -0.08 | (-0.47) |
| Wholesale and retail | 403 | 0.11 | 188 | 0.09 | 215 | 0.13 | -0.05 | (-1.58) |
| Information and communication | 403 | 0.13 | 188 | 0.15 | 215 | 0.11 | 0.04 | (1.26) |
| Professional, scientific and technical activities | 403 | 0.07 | 188 | 0.09 | 215 | 0.06 | 0.02 | (0.95) |
| Education | 403 | 0.08 | 188 | 0.05 | 215 | 0.11 | -0.06** | (-2.20) |
| Arts, entertainment and recreation | 403 | 0.22 | 188 | 0.23 | 215 | 0.21 | 0.02 | (0.48) |
| Other services activities | 403 | 0.16 | 188 | 0.13 | 215 | 0.18 | -0.05 | (-1.48) |

Note: This table presents the descriptive statistics of entrepreneurs in our sample (Panel A) and the ventures pitched in the competition (Panel B). The number of observations and the means are reported for the overall sample and by gender. The last two columns report the t-statistics and p-values of the mean differences between male and female entrepreneurs. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

With regard to venture characteristics, Panel B reports that the ventures pitched in the competition, on average, have been in operation for 7 years and have 2 full-time employees. The average size of the ventures in our sample is similar to that found in a number of studies such as Huang, Joshi, Wakslak, and Wu (2020), in which the average venture size is 2.17 employees, and Ewens and Townsend (2019), in which the average venture size is 1.27 employees. The majority of the pitched ventures operate in the following industries: Arts, entertainment and recreation

(22%), other services activities (16%), information and communication (13%), and wholesale and retail (11%). Finally, more than 22% of the ventures are incorporated.

Table 4.1 also presents the differences in characteristics between male and female entrepreneurs. Consistent with the literature, female entrepreneurs in our sample are more likely to hold a graduate degree (e.g., Hebert, 2020), have a lower risk willingness (Bönte & Piegeler, 2013), and less professional experience (e.g., Ewens & Townsend, 2019). Furthermore, female-led ventures are smaller in size (Cowling et al., 2020), and less likely to be incorporated (Guzman & Kacperczyk, 2019). Female entrepreneurs in our sample are more likely to be operating in the education industry. This result aligns with the figures reported in the Longitudinal Small Business Survey (2019) that female-led businesses are most likely to be in the education industry, which accounts for approximately 32% of all female-led businesses.[32]

Table 4.2 presents the venture competition descriptive statistics. As can be seen, 49% of the entrepreneurs were randomly assigned to a female judge. On average, the text for the venture pitches is 94 words in length. The average overall score for the ventures in competition A is 44 out of 100. When asked whether they wanted to participate in competition B, 84% of the entrepreneurs chose to participate instead of dismissing the offer. Conditional on participation in competition B, only 34% of the entrepreneurs exhibited higher subsequent risk aversion by selecting larger prize amounts with lower probabilities.

**Table 4.2: Venture Competition Descriptive Statistics by the Entrepreneur's Gender**

| | All | | Male entrepreneur | | Female entrepreneur | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | N | Mean | N | Mean | diff. | t-test |
| Resilience | 403 | 0.84 | 188 | 0.85 | 215 | 0.83 | 0.01 | (0.36) |
| Subsequent risk aversion | 346 | 0.66 | 164 | 0.63 | 182 | 0.69 | -0.06 | (-1.26) |
| Female judge | 403 | 0.49 | 188 | 0.47 | 215 | 0.50 | -0.03 | (-0.58) |
| Loss feedback | 403 | 0.54 | 188 | 0.57 | 215 | 0.51 | 0.06 | (1.25) |
| Venture overall score | 403 | 43.56 | 188 | 43.96 | 215 | 43.21 | 0.76 | (0.43) |
| Venture overall score (normalized) | 403 | -0.00 | 188 | 0.03 | 215 | -0.03 | 0.06 | (1.41) |
| Quality belief | 403 | 0.15 | 188 | 0.18 | 215 | 0.12 | 0.06** | (2.18) |
| Pitch number of words | 403 | 94.41 | 188 | 94.18 | 215 | 94.61 | -0.44 | (-0.13) |

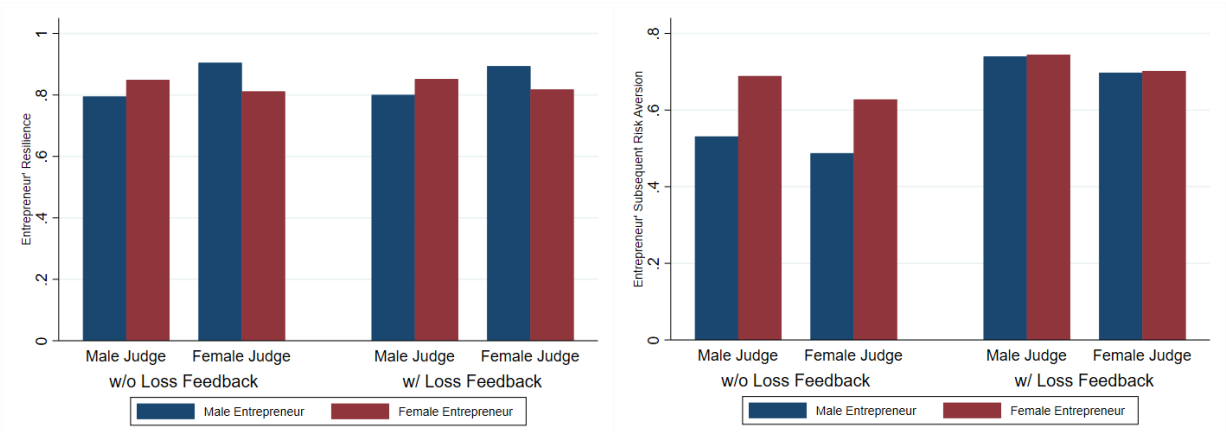
Note: This table presents the descriptive statistics of ventures pitched in the venture competition. The number of observations and the means are reported for the overall sample and by gender. Entrepreneur's resilience equals 1 if participated in subsequent competition B. Subsequent risk aversion equals 1 if risk aversion is higher in the following competition. Venture's overall score ranges from 0 to 100. The last two columns report the t-statistics and p-values of the mean differences between male and female entrepreneurs. * p < 0.1, ** p < 0.05, *** p < 0.01.

[32] Longitudinal Small business Survey (2019) - SME Employers
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/889656/LSBS_2019_employers.pdf

### 4.4.2 Main Results

To ensure the internal validity of our findings, we conducted randomization checks to ensure that the random assignments of treatments in our experiment were successful. The p-values from an ANOVA test of equality of all eight treatment group means are not statistically significant (see Appendix C.2 for more details). This indicates that the eight treatment groups are balanced in terms of observable characteristics and that the experiment random assignment was successful. Our main analysis consists of several sets of ordinary least square (OLS) regressions that examine the effect of the entrepreneur's gender, the judge's gender, and loss on the entrepreneur's resilience and subsequent risk aversion. All models control for industry fixed effects, competition-related observables, venture-related characteristics, entrepreneur's demographics, personal characteristics, and entrepreneurial experience. Accounting for heteroscedasticity, all regression models are reported with robust standard errors. Figure 4.2 illustrates the resilience and the subsequent risk aversion of entrepreneurs in each treatment.

**Figure 4.2: Entrepreneurs Gender Difference in Resilience and Subsequent Risk Aversion**




Note: The figure on the left-hand plots the means of entrepreneurs' decision to participate in the subsequent competition (Resilience) for those who are assigned to a male and female judge and for those who did and do not receive feedback about their loss in the previous competition. Resilience is a binary indicator where 1 equal to participation in a subsequent competition. The figure on the right-hand plots the means of entrepreneurs' subsequent risk aversion in the following competition for those who are assigned to a male and female judge and for those who did and do not receive feedback about their loss in the previous competition. Subsequent risk aversion is a binary indicator where 1 equal to higher risk aversion.

#### *Gender Differences in Resilience*

Panel A in Table 4.3 reports regression results for the effect of the entrepreneur's gender, the judge's gender, and loss on the entrepreneur's resilience, which is a binary indicator for the entrepreneur's decision to participate in the following competition. Column 1 reports the estimate of the baseline model and column 2 introduces controls for industry fixed effects, the number of

words in the pitch for competition (A), venture overall score (normalized), the entrepreneur's elicited belief about venture quality, venture age, venture size, pre-pandemic venture performance (1-7), post-pandemic venture performance (1-7), covid-19 performance impact (1-7), entrepreneur's age, age square, earning a college degree or higher, entrepreneurial experience in years, risk willingness (1-11), as well as the Big 5 Personality traits. Columns 3 and 5 further control for judge fixed effects. Examining the effect of a competition loss on the entrepreneurs' rate of participation in the subsequent competition, the results reported in Table 4.3 shows that we do not find a statistically significant effect of loss feedback on the entrepreneurs' resilience. Receiving loss feedback has no significant effect on the likelihood of the entrepreneurs' participation in the second competition (competition B). Those who are unaware of their loss in competition (A) participate in competition (B) at a similar rate to those who are informed about their loss in competition (A).

**Table 4.3: Multiple Regression Analysis: the Effect of Entrepreneurs Gender, Judges Gender, and Loss Feedback on Entrepreneurs Resilience**

| | Resilience | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| **Panel A: Regression Coefficients** | | | | | |
| Female entrepreneur | -0.014 | -0.017 | -0.018 | 0.054 | 0.055 |
| | (0.037) | (0.038) | (0.038) | (0.057) | (0.058) |
| Loss feedback | -0.001 | -0.006 | -0.001 | -0.002 | 0.004 |
| | (0.037) | (0.038) | (0.039) | (0.038) | (0.039) |
| Female judge | 0.028 | 0.052 | | 0.130** | |
| | (0.037) | (0.039) | | (0.054) | |
| Female entrepreneur x Female judge | | | | -0.143* | -0.148** |
| | | | | (0.074) | (0.074) |
| Constant | 0.833*** | 0.299 | 0.303 | 0.264 | 0.349 |
| | (0.040) | (0.335) | (0.332) | (0.336) | (0.329) |
| **Panel B: Post-Estimation Tests** | | | | | |
| Gender Gap with Female Judge | | | | -0.090* | -0.092* |
| [F-test p-value] | | | | [0.0674] | [0.0547] |
| Impact of Female Judge on Female Ent. | | | | -0.014 | - |
| [F-test p-value] | | | | [0.7962] | |
| R square | 0.002 | 0.111 | 0.120 | 0.120 | 0.130 |
| Controls | No | Yes | Yes | Yes | Yes |
| Sector FE | No | Yes | Yes | Yes | Yes |
| Judge FE | No | No | Yes | No | Yes |
| Observations | 403 | 403 | 403 | 403 | 403 |

Note: This table presents the results from least squares regressions of the entrepreneur's resilience (1=if participated in subsequent competition B). Controls include Big 5 Personality traits, Overall Assessment (Normalized), Pitch number of words, venture age, venture size, pre-pandemic venture performance (1-7), Post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, age square, education (1=college degree or higher), entrepreneurial experience in years, risk willingness (1-11), as well as the elicited belief about venture quality. Robust standard errors reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

We also do not find a statistically significant difference in the effect of the judge's gender on female entrepreneurs' participation. Although male judges have a positive but insignificant effect on female entrepreneurs' participation in the subsequent competition compared to their male counterparts, females do not significantly participate at a higher or lower rate when assigned to a female judge compared to a male judge. As reported in column 4, the marginal effect of female judges on female entrepreneurs is insignificant and close to zero (-0.01). However, being assigned to a female judge has a positive and statistically significant effect at 5% on the resilience of male entrepreneurs. Male entrepreneurs are 13 percentage points more likely to participate in the subsequent competition when the assigned judge is a woman relative to a man (column 4). In terms of economic magnitudes, the coefficient suggests that male entrepreneurs are 15.5% (=0.130/0.84) more likely to participate in the subsequent competition and exhibit resilience when judged or evaluated by a woman.[33]

When examining the gender differences among those who are assigned to a female judge, we find statistically significant gender differences (column 4). Controlling for fixed judge effect, the findings reported in column 5 are consistent and more pronounced. Compared to female entrepreneurs, males are 9 percentage points more likely to participate in the subsequent competition when assigned to a female judge (columns 4 and 5). In terms of economic magnitudes, the coefficient suggests that male entrepreneurs are 11% (=-0.09/0.84) more likely to participate in the subsequent competition and exhibit resilience when judged or evaluated by a woman. The estimates in Panel B of Table 4.3 confirm the positive and significant effect of female judges on male entrepreneurs' rate of participation in the subsequent round (columns 4 and 5). Female judges increase male entrepreneurs' resilience by an estimated 9 percentage points (regression estimate F-tests, p=0.05).

Interestingly, the positive significant effect of female judges on male entrepreneurs' participation is only carried over for those who do not receive feedback about their loss (β=-0.213, p=0.10) (see column 2, Appendix C.3). Males who are informed about their loss participate at a similar rate compared to their female peers when assigned to a female judge. This result suggests that negative feedback in a context with high ambiguity has a positive effect in closing the gender gap in terms of entrepreneurs' participation rate. Moreover, we find no statistically significant gender differences in terms of the effect of receiving loss feedback. Male and female entrepreneurs participate in the second competition (competition B) at a similar rate. Female entrepreneurs who

[33] Economic magnitudes=(β/ DV mean)

are informed about their loss participate in the subsequent competition at a similar rate compared to their male counterparts (see Appendix C.3 for more details). We also do not find the gender of the judge to significantly moderate the effect of receiving loss feedback on the entrepreneurs' participation in the subsequent competition (Appendix C.3). Compared to male judges, losing a competition judged by women has no significant influence on the entrepreneurs' resilience.

To summarize, we find no gender differences in terms of resilience. The likelihood of participation in the second competition after losing in the first is similar for both male and female entrepreneurs. Although we did not find any gender differences between male and female entrepreneurs when they are assigned to a male judge, female judges on the other hand significantly increase male entrepreneurs' likelihood of participating in the second competition compared to their female counterparts. These results indicate that female judges in our sample, unlike male judges, increase the gender gap in entrepreneurs' resilience. Moreover, the effect of the judge's gender is more pronounced in high ambiguity context, i.e., when the loss of competition (A) is not yet communicated (without loss feedback). In a context with very high ambiguity such as the entrepreneurial context, feedback about the venture serves as a communication tool or a signal that seems to reduce the gender differences in resilience.

***Gender Differences in Subsequent Risk Aversion***

Panel A in Table 4.4 reports regression results for the effect of the entrepreneur's gender, judge's gender, and receiving feedback about the competition loss on the entrepreneur's subsequent risk aversion conditional on participating in the second competition (competition B). Subsequent risk aversion is a binary indicator for the entrepreneur's preference regarding the prize and probability combination, which they compete for in competition B. Column 1 reports the estimate of the baseline model and column 2 introduces controls for industry fixed effects, the number of words in the pitch for competition A, venture overall score (normalized), the entrepreneur's elicited belief about the quality of the venture, venture age, venture size, pre-pandemic venture performance (1-7), post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, age square, having a college degree or higher, entrepreneurial experience in years, risk willingness (1-11), as well as the Big 5 Personality traits. Columns 3 and 5 further control for judge fixed effects.

Table 4.4 shows that conditional on participating in competition B, there are no significant gender differences in terms of the subsequent risk aversion. Male and female entrepreneurs who are assigned to a male judge and choose to participate in the following competition exhibit similar risk attitudes in the subsequent round. On the other hand, column 2 shows that receiving feedback

about losing has a positive significant effect on the entrepreneur's subsequent risk aversion. This result indicates that when entrepreneurs are assigned to male judges and receive feedback about their loss in competition (A), those who decide to participate in competition (B) have a significantly higher risk aversion relative to those who do not receive feedback about losing. Losing significantly increases the subsequent risk aversion by 12 percentage points for both male and female entrepreneurs at a similar rate when assigned to a male judge (column 2). With regard to economics magnitudes, entrepreneurs who receive feedback about losing are 17% = (0.115/0.66) less likely to seek risker targets when assigned to a male judge. Controlling for judge fixed effect, the findings are consistent (column 3). When examining the interaction effect between loss feedback and the gender of the entrepreneur, we find no significant gender gap in the observed negative effect of receiving loss feedback on the subsequent risk aversion (see Appendix C.4).

**Table 4.4: Multiple Regression Analysis: The Effect of Entrepreneurs Gender, Judges Gender, and loss feedback on Entrepreneurs Resilience**

| | Subsequent risk aversion | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| **Panel A: Regression Coefficients** | | | | | |
| Female entrepreneur | 0.071 | 0.031 | 0.027 | 0.028 | 0.024 |
| | (0.051) | (0.056) | (0.057) | (0.056) | (0.057) |
| Loss feedback | 0.133*** | 0.115** | 0.103* | 0.078 | 0.053 |
| | (0.051) | (0.055) | (0.057) | (0.075) | (0.079) |
| Female judge | -0.051 | -0.096* | | -0.135* | |
| | (0.051) | (0.054) | | (0.081) | |
| Female Judge x Loss Feedback | | | | 0.072 | 0.095 |
| | | | | (0.106) | (0.110) |
| Constant | 0.578*** | 1.700*** | 1.615*** | 1.947*** | 1.847*** |
| | (0.055) | (0.439) | (0.448) | (0.464) | (0.469) |
| **Panel B: Post-Estimation Tests** | | | | | |
| Impact of Female Judge on Loss Feedback | | | | 0.150* | 0.148* |
| [F-test p-value] | | | | [0.0541] | [0.0599] |
| Impact of Loss Feedback on Female Judge | | | | -0.0628 | - |
| [F-test p-value] | | | | [0.3734] | |
| R square | 0.027 | 0.127 | 0.132 | 0.128 | 0.134 |
| Controls | No | Yes | Yes | Yes | Yes |
| Sector FE | No | Yes | Yes | Yes | Yes |
| Judge FE | No | No | Yes | No | Yes |
| Observations | 346 | 346 | 346 | 346 | 346 |

Note: This table presents the results from least squares regressions of the entrepreneur's subsequent risk aversion (1= higher risk aversion). Controls include Big 5 Personality traits, Overall Assessment (Normalized), Pitch number of words, venture age, venture size, pre-pandemic venture performance (1-7), Post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, age square, education (1=college degree or higher), entrepreneurial experience in years, risk willingness (1-11), as well as the elicited belief about venture quality. Robust standard errors reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Examining the effect of the judges' gender on the entrepreneurs' subsequent risk aversion in competition (B), as reported in Table 4.4, we find a negative significant effect of female judges on male entrepreneurs but not on female entrepreneurs. Conditional on participating in competition (B), male entrepreneurs exhibit 10 percentage points lower risk aversion when assigned to a female judge compared to a male judge (column 2). In terms of economics magnitudes, entrepreneurs assigned to a female judge in the subsequent competition are 15% (=0.-096/0.66) more likely to seek a more risky prize. However, the subsequent risk aversion of female entrepreneurs assigned to a female judge is not statistically different from those who are assigned to a male judge (see Appendix C.4). Furthermore, column 5 shows that there is a statistically significant effect of loss feedback on entrepreneurs assigned to female judges. The marginal effect of loss feedback on female judges is positive and significant. Compared to the entrepreneurs who did not receive loss feedback and are assigned to a female judge, receiving loss feedback increase the subsequent aversion by 15 percentage points (column 5).[34] Controlling for judge fixed effect, the positive marginal effect of loss feedback on female judges is also similar in sign and magnitude. To summarize, conditional on participating in competition B, there are no significant gender differences in the subsequent risk aversion. Moreover, being assigned to a female judge significantly decreases male entrepreneurs' subsequent risk aversion.

### 4.4.3 Additional Analysis

Drawing on the debate in the entrepreneurial finance literature about the role of statistical discrimination in the gender gap in funding, we utilize our unique experimental setting and our gender-blind pitch assessment to examine the scores assigned by the judges. Our experiment is designed with an intention to control for the effect of the entrepreneur's gender on the venture's overall score during the assessment process. During both competitions, the judges are unaware of the entrepreneur's gender as they receive pitches that are completely gender-blind. Table 4.5 reports the ordinary least square (OLS) results of the effect of the entrepreneur's gender and judge's gender on the overall score assigned by the competition judges to the pitched ventures. Column 1 reports the results of the baseline model. Then we introduced controls for industry fixed effects, judge fixed effects, the number of words in the pitch for competition A, the entrepreneur's elicited belief about the quality of the venture, venture age, venture size, pre-pandemic venture performance (1-7), post-pandemic venture performance (1-7), Covid-19 performance impact (1-

[34] The estimates in Panel B of Table 4 confirm the positive and significant effect of loss feedback on the entrepreneurs' rate of participation in the subsequent round when assigned to a female judge (regression estimate F-tests, p=0.059).

7), entrepreneur's age, age square, having a college degree or higher, entrepreneurial experience in years, risk willingness (1-11), as well as the Big 5 Personality traits. All regression models are reported with robust standard errors.

**Table 4.5: Multiple Regression Analysis: The Effect of Entrepreneurs Gender and Judges Gender on Venture Overall Score**

| | Overall Assessment (norm.) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Female entrepreneur | -0.056 | -0.069* | -0.076* | -0.072* | -0.111* |
| | (0.040) | (0.041) | (0.039) | (0.039) | (0.063) |
| Female judge | 0.002 | 0.006 | -0.085** | | |
| | (0.039) | (0.039) | (0.040) | | |
| Female entrepreneur x Female judge | | | | | 0.079 |
| | | | | | (0.073) |
| Constant | 0.029 | 0.673 | 0.241 | 0.234 | 0.274 |
| | (0.043) | (0.493) | (0.533) | (0.494) | (0.412) |
| R square | 0.005 | 0.066 | 0.251 | 0.279 | 0.282 |
| Controls | No | No | Yes | Yes | Yes |
| Sector FE | No | Yes | Yes | Yes | Yes |
| Judge FE | No | No | No | Yes | Yes |
| Observations | 403 | 403 | 403 | 403 | 403 |

Note. This table presents the results from least squares regressions of the normalized venture overall assessment. Controls Big 5 Personality traits, pitch number of words, venture age, venture size, pre-pandemic venture performance (1-7), post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, education (1=college degree or higher), entrepreneurial experience in years, risk willingness (1-11) as well as the elicited belief about venture quality. Robust standard errors are reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Column 3 shows that, on average, female entrepreneurs receive significantly lower overall scores compared to their male peers. Moreover, on average, female judges assigned significantly lower overall scores by 0.09 units relative to male judges (column 3). In our competition, female judges were significantly harsher in their assessment compared to male judges. Controlling for judge fixed effects, we find a consistent effect whereby female entrepreneurs, on average, receive significantly lower overall scores by 0.11 units (column 5). Examining the effect of female judges on female entrepreneurs' overall scores, we do not find a significant effect at the 10% level. This means that female entrepreneurs receive significantly lower overall scores regardless of the judge's gender (column 5). Since the assessment is gender-blind, the findings indicate that the significant negative effect of being a female on the overall score is the outcome of statistical discrimination.

## 4.5 Discussion

Are male entrepreneurs more resilient than their female counterparts? Are female entrepreneurs less likely to pursue external capital after being rejected? Does the gender of the

investor influence entrepreneurs' resilience while seeking financial resources? And what role do resilience and investor-entrepreneur gender dynamics play in shaping the documented gender gap in funding? To test whether there is a gender difference in entrepreneurs' resilience while seeking to secure capital and whether entrepreneurs' resilience is influenced by the gender of the investor, this paper launched a two-stage venture competition. Through the venture competition, we experimentally examine the effect of losing in the first competition and the judge's gender on entrepreneurs' participation in the second competition.

We find no negative effect of losing on the entrepreneurs' resilience. All entrepreneurs in the second competition participate at a similar rate. We also find that female entrepreneurs participate in the second competition after losing at a similar rate compared to their male entrepreneurs, which suggests that there is no gender gap in resilience in venture competition participation. This evidence is inconsistent with theories from executive recruitment (Brands & Fernandez-Mateo, 2017), patenting (Aneja et al., 2020), reward-based crowdfunding (Greenberg et al., 2019), and experimental economics (Buser & Yuan, 2019). These studies suggest that women are less likely to persist after losing or being rejected. Thus, they conclude that women's low resilience to rejection contributes to their underrepresentation in each examined field. Nevertheless, our findings are consistent with theories from politics (Bernhard & De Benedictis-Kessner, 2020) and professional golf tournaments (Rosenqvist, 2019), which claim that women are no more sensitive to losing or more likely to quit compared to men.

Rather than invalidating the inconsistent evidence documented in the literature, we argue that our findings are potentially driven by the particularity of entrepreneurs and rejections in entrepreneurship due to several factors. First, in entrepreneurial finance, rejection rates are extremely high and driven by various reasons other than feasibility. For instance, some VC firms specialize in a particular growth stage, industry, or geographic location (Gompers et al., 2020). Moreover, investment opportunities are possibly rejected due to the firm's industry focus, stage focus, or fund unavailability (Gompers et al., 2020; Petty & Gruber, 2011). Thus, we argue that rejections in entrepreneurial finance are potentially less meaningful as feedback or signals of quality than other forms of rejection in other fields. Second, limited access to capital is one of the most significant obstacles to a venture's survival, success, and growth (Aldrich & Ruef, 2006; Shane & Stuart, 2002). Therefore, entrepreneurs' higher resilience relative to scientists and senior managers may be driven by the severity of the consequences of quitting. At the venture level, the inability to secure external capital threatens entrepreneurs' ability to sustain the venture's activity and ensure its survival. At the individual level, the failure of a venture would generate new

economic pressure to secure alternative income sources and social pressure resulting from stigmatization. Third, entrepreneurs as a population has been found to be more optimistic (Cooper, Woo, & Dunkelberg, 1988), which has been found to negatively correlate the likelihood of belief updating in response to negative feedback (Amore, Garofalo, & Martin-Sanchez, 2020). Moreover, entrepreneurs are claimed to be more overconfident (Forbes, 2005), which has been found to negatively influence the response to corrective feedback (G. Chen, Crossland, & Luo, 2015). The literature also suggests that entrepreneurs have distinct attitudes toward loss. According to Koudstaal, Sloof, and van Praag (2016), entrepreneurs have a lower degree of loss aversion compared to managers and employees. Lastly, compared to campaign failure in crowdfunding, failed attempts to secure capital are not as visible and accessible to the public. Therefore, the decision to relaunch a failed campaign may be strategic and the intention may be to protect product/service image among consumers and/or avoid low-quality signals to future investors/backers.

This paper also shows that an entrepreneur's resilience is moderated by the gender of the judge. Being assessed by a female judge only increases the rate of participation in the second competition for male entrepreneurs. Drawing on motivational theories of procedural justice (De Cremer & Tyler, 2005; Tyler & Blader, 2003), female entrepreneurs' impartial response toward the judge's gender may highlight their perception of fair treatment. Female entrepreneurs possibly believe that both male and female investors are not biased against and for them. On the other hand, drawing on evidence from the leadership literature which suggests that men undervalue women's leadership and are less likely to attribute managerial characteristics to women (Eagly, Makhijani, & Klonsky, 1992), the unforeseen positive effect of female judges on male entrepreneurs' participation might be explained by a similar perception of female judges. Male entrepreneurs are possibly assuming that female investors have lower competence in assessment skills or that they are softer judges. This finding raises concerns about the potential counter effect of increasing the proportion of female investors in the market. Having more female investors may only increase capital-seeking activities for male entrepreneurs, which may ultimately increase the gender gap in the entrepreneurial finance market.

This paper contributes to the literature on entrepreneurship and gender. First, it extends the stream of research that analyzes the impact of challenges on entrepreneurial failure (e.g., war: Bullough et al., 2014) by investigating the impact of challenges encountered during the fundraising. The paper shows that funding rejections have no impact on entrepreneurs' responses and engagement in subsequent attempts to secure capital. Second, the paper contributes to the

body of work examining the underlying mechanisms behind the gender gap in funding (Coleman & Robb, 2009; Ewens & Townsend, 2019; Gompers & Wang, 2017; Guzman & Kacperczyk, 2019) by providing evidence of no gender differences in entrepreneurs' responses to rejections while seeking external capital. After receiving a rejection, male and female entrepreneurs bounce back and engage in a subsequent attempt to secure capital at a similar rate. Third, the paper contributes to the literature on the gender gap in funding by linking the two prominent bodies of work that investigate the gender gap in funding, i.e., the capital demand-side (entrepreneurs), on the one hand, by examining entrepreneurs' responses to funding rejections and the capital supply-side (investors), on the other, by examining the influence of judges' gender and funding rejections. Our findings suggest increasing the proportion of female investors with the intention of encouraging female entrepreneurs' participation in fundraising attempts may instead increase the gender gap in funding. This increase in the gap is driven by the female investors' lack of effect on female entrepreneurs and their unforeseen stimulating effect on male entrepreneurs. Fourth, the paper contributes to the literature on the gender gap in funding by proposing a potential capital demand-side explanation of statistical discrimination in explaining the gender gap in funding. This result is consistent with the literature suggesting that the gender gap in funding is entrepreneur-driven and is largely explained by statistical discrimination (e.g., Guzman & Kacperczyk, 2019).

More broadly, the paper contributes to the literature on the gender difference in preference for competition (e.g., Buser & Yuan, 2019; Croson & Gneezy, 2009; Niederle & Vesterlund, 2007, 2011). The paper presents evidence that male and female entrepreneurs who sorted into the competitive field of entrepreneurship persist in the competition at a similar rate. Thus, the paper suggests that the gender differences in self-selection into a highly competitive environment may not predict gender differences in persistence within these environments. Consequently, women's underrepresentation in competitive environments may not be explained by gender differences in persistence after a loss or failure.

We acknowledge that our study has several limitations. Our study investigates gender differences in terms of resilience within a venture competition. Therefore, the findings may not be generalized to formal sources of funding such as venture capital and bank loans. Moreover, the cost of participation after losing in the first competition is minimal as a result of our experimental approach. Besides the emotional cost of losing again, the decision to participate in the subsequent competition only costs time and effort compared to a visible loss in public competitions and months to close a funding round with a VC firm.

## 4.6 Conclusion

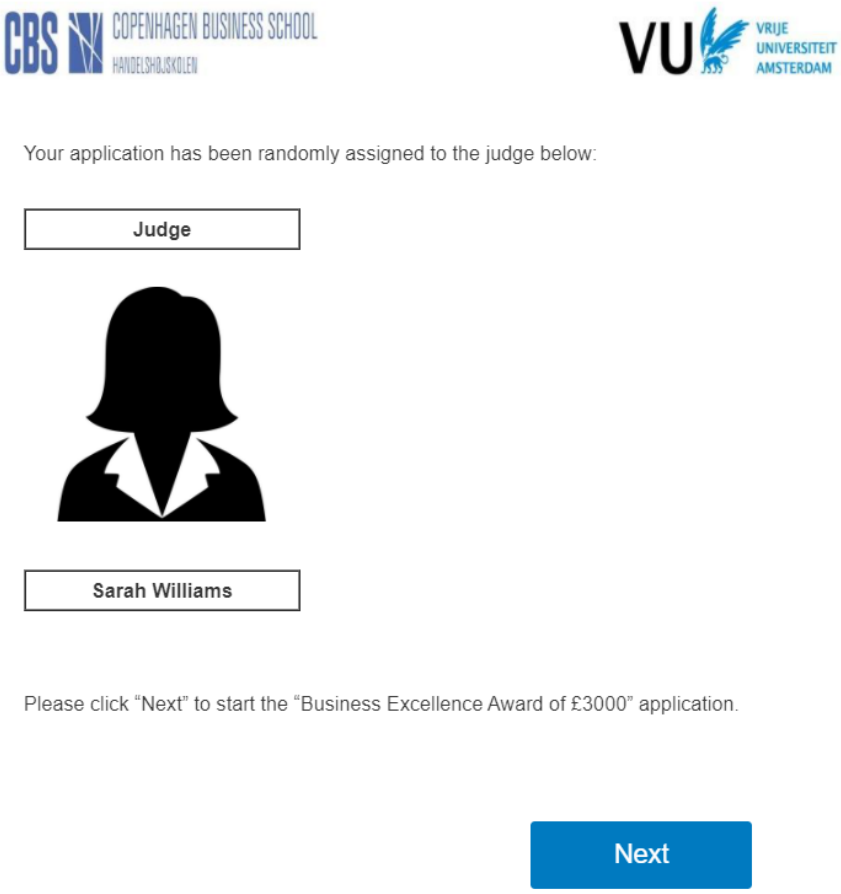
Rejection and failure are defining characteristics of the process of securing financial resources (Gompers et al., 2020). In this paper, we argue that considering both the role of resilience in fundraising and the gender dynamics between investors and entrepreneurs would enrich our understanding of the funding gender gap and its underlying mechanisms. Thus, we launched a venture competition to experimentally examine the gender difference in entrepreneurs' resilience and the role of the investors' gender in shaping their resilience during the fundraising process. Our experimental design allows us to control for all the differences associated with the decision-maker and setting, which as a result isolate the causal mechanisms for the exhibited attitude after experiencing loss or rejection. We find no gender gap in entrepreneurs' resilience while pursuing capital. Female and male entrepreneurs participate in a subsequent venture competition at a similar rate. We also observe that resilience is moderated by the gender of the judge. Male entrepreneurs are more likely to participate in a subsequent competition when assessed by a female judge while there is no change among female entrepreneurs. The significantly positive effect of female judges is found to be more pronounced in more ambiguous situations, i.e., when the outcome of the first competition is not known. In highly ambiguous situations, feedback serves as a signal that seems to reduce the observed gender gap in resilience. Finally, our analysis shows that in a gender-blind assessment process, both male and female judges assign significantly lower scores to ventures owned and pitched by female entrepreneurs, which may suggest that statistical discrimination is present in our sample. The paper concludes that gender differences in entrepreneurs' resilience while securing financial resources may not contribute to the documented gender gap in access to capital. Moreover, increasing the share of female investors may ultimately increase the gender gap in the entrepreneurial finance market due to the unforeseen effect of female judges in encouraging capital seeking activities by male but not female entrepreneurs.

**Notes:**

This study has been approved by The Research Ethics Review Board (RERB) at the School of Business and Economics (SBE) of Vrije Universiteit Amsterdam (Application number: 20200628.1).

# Appendix C

**Appendix C.1: Judge Summary Page**



## Appendix C.2: Descriptive Statistics by Treatment Group

| | Male ent. Male judge/ w/o loss feedback Baseline group | Male ent./ Male judge/ w/ loss feedback Group 1 | Female ent./ Male judge/ w/o loss feedback Group 2 | Female ent./ Male judge/ w/ loss feedback Group 3 | Male ent./ Female judge/ w/o loss feedback Group 4 | Male ent./ Female judge/ w/ loss feedback Group 5 | Female ent./ Female judge/ w/o loss feedback Group 6 | Female ent./ Female judge/ w/ loss feedback Group 7 | Total | p-value |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 44.05 | 37.47 | 40.09 | 39.83 | 42.17 | 42 | 39.45 | 41.87 | 40.65 | 0.1607 |
| | (13.06) | (11.34) | (10.85) | (9.334) | (13.54) | (11.86) | (11.52) | (12.49) | (11.76) | |
| College or higher | 0.538 | 0.633 | 0.755 | 0.741 | 0.571 | 0.511 | 0.623 | 0.673 | 0.638 | 0.1099 |
| | (0.505) | (0.486) | (0.434) | (0.442) | (0.501) | (0.505) | (0.489) | (0.474) | (0.481) | |
| Risk willingness | 8.538 | 8.583 | 7.811 | 7.463 | 8.500 | 8.362 | 7.509 | 7.673 | 8.027 | 0.0401 |
| | (2.222) | (2.513) | (2.237) | (2.212) | (2.491) | (2.317) | (2.833) | (2.091) | (2.402) | |
| Entrepreneurial experience | 11.13 | 8.750 | 8.472 | 9.407 | 9.310 | 11.36 | 7.698 | 9.545 | 9.365 | 0.4506 |
| | (10.95) | (8.510) | (7.725) | (7.730) | (7.491) | (9.790) | (7.384) | (10.26) | (8.760) | |
| Venture age | 8.256 | 6.133 | 5.396 | 8.111 | 6.786 | 8.043 | 6.604 | 7.145 | 6.998 | 0.5034 |
| | (9.388) | (8.068) | (5.766) | (7.126) | (6.824) | (8.837) | (6.594) | (8.456) | (7.663) | |
| Pre-pandemic performance | 4.440 | 4.464 | 4.496 | 4.487 | 4.432 | 4.295 | 4.482 | 4.670 | 4.476 | 0.7880 |
| | (0.840) | (1.160) | (0.901) | (0.811) | (1.079) | (1.042) | (1.097) | (0.836) | (0.979) | |
| Post-pandemic performance | 4.026 | 3.962 | 4.065 | 3.892 | 3.952 | 4.289 | 3.976 | 4.252 | 4.051 | 0.6608 |
| | (1.281) | (1.380) | (1.265) | (1.146) | (1.303) | (1.129) | (1.172) | (1.087) | (1.220) | |
| Covid-19 performance impact | 3.282 | 3.133 | 3.264 | 3.074 | 3.071 | 3.213 | 3.151 | 3.491 | 3.211 | 0.9200 |
| | (1.701) | (1.556) | (1.666) | (1.681) | (1.716) | (1.587) | (1.747) | (1.574) | (1.641) | |
| Entrepreneurial self-efficacy | 3.942 | 3.743 | 3.805 | 3.714 | 3.896 | 3.671 | 3.781 | 3.721 | 3.776 | 0.2446 |
| | (0.679) | (0.532) | (0.536) | (0.514) | (0.546) | (0.457) | (0.625) | (0.450) | (0.544) | |
| Venture overall score (normalized) | 0.0157 | 0.0770 | -0.0627 | -0.0354 | 0.0388 | -0.0260 | 0.0395 | -0.0455 | -4.89e-09 | 0.5577 |
| | (0.495) | (0.573) | (0.512) | (0.457) | (0.232) | (0.213) | (0.189) | (0.253) | (0.399) | |
| *N* | 403 | 39 | 60 | 53 | 54 | 42 | 47 | 53 | 55 | |

Note: This table presents the results from least squares regressions of the entrepreneur's subsequent risk aversion (1= higher risk aversion). The models are estimated in columns (1-3) on the overall sample, without loss feedback, as well as with loss feedback respectively. Next, in columns (4-5) the models are estimated on the overall sample, male judges, as well as female judges respectively. In columns (6-7) the models are estimated on the overall sample, male entrepreneurs, as well as female entrepreneurs respectively. Controls include Big 5 Personality traits, Overall Assessment (Normalized), Pitch number of words, venture age, venture size, pre-pandemic venture performance (1-7), Post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, age square, education (1=college degree or higher), entrepreneurial experience in years, risk willingness (1-11), as well as the elicited belief about venture quality. Robust standard errors reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix C.3: Multiple Regression Analysis: The Effect of Entrepreneurs Gender, Judges Gender, and loss feedback on Entrepreneurs Resilience**

| | Resilience | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) All | (2) w/o loss feedback | (3) w/ loss feedback | (4) All | (5) Male Judges | (6) Female Judges | (7) All | (8) Male Ent. | (9) Female Ent. |
| Loss feedback | 0.004 | | | -0.022 | -0.028 | -0.083 | 0.005 | 0.055 | -0.010 |
| | (0.039) | | | (0.056) | (0.092) | (0.076) | (0.059) | (0.101) | (0.086) |
| Female entrepreneur | 0.055 | 0.102 | 0.060 | -0.039 | 0.026 | -0.141* | -0.018 | | |
| | (0.058) | (0.101) | (0.086) | (0.057) | (0.088) | (0.074) | (0.039) | | |
| Female entrepreneur x Female judge | -0.148** | -0.213* | -0.138 | | | | | | |
| | (0.074) | (0.115) | (0.112) | | | | | | |
| Female entrepreneur x Loss feedback | | | | 0.038 | 0.039 | 0.146 | | | |
| | | | | (0.079) | (0.120) | (0.114) | | | |
| Female Judge x Loss Feedback | | | | | | | -0.011 | -0.122 | 0.027 |
| | | | | | | | (0.081) | (0.127) | (0.124) |
| Constant | 0.349 | 0.336 | 0.530 | 0.332 | -0.603 | 0.598 | 0.308 | 0.547 | 0.349 |
| | (0.329) | (0.530) | (0.484) | (0.342) | (0.578) | (0.443) | (0.329) | (0.481) | (0.555) |
| R square | 0.130 | 0.209 | 0.205 | 0.121 | 0.238 | 0.241 | 0.120 | 0.248 | 0.183 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Judge FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 403 | 187 | 216 | 403 | 206 | 197 | 403 | 188 | 215 |

Note: This table presents the results from least squares regressions of the entrepreneur's resilience (1= t decision to participate in subsequent competition B). The models are estimated in columns (1-3) on the overall sample, without loss feedback, as well as with loss feedback respectively. Next, in columns (4-5) the models are estimated on the overall sample, male judges, as well as female judges respectively. In columns (6-7) the models are estimated on the overall sample, male entrepreneurs, as well as female entrepreneurs respectively. Controls include Big 5 Personality traits, Overall Assessment (Normalized), Pitch number of words, venture age, venture size, pre-pandemic venture performance (1-7), Post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, age square, education (1=college degree or higher), entrepreneurial experience in years, risk willingness (1-11), as well as the elicited belief about venture quality. Robust standard errors reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix C.4: Multiple Regression Analysis: The Effect of Entrepreneurs Gender, Judges Gender, and loss feedback on Entrepreneurs Subsequent Risk Aversion**

| | Subsequent risk aversion | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) All | (2) w/o loss feedback | (3) w/ loss feedback | (4) All | (5) Male Judges | (6) Female Judges | (7) All | (8) Male Ent. | (9) Female Ent. |
| Loss feedback | 0.103* | | | 0.164** | 0.122 | 0.190 | 0.053 | 0.181 | -0.006 |
| | (0.057) | | | (0.083) | (0.128) | (0.123) | (0.079) | (0.134) | (0.109) |
| Female entrepreneur | 0.019 | 0.076 | -0.028 | 0.088 | 0.079 | 0.111 | 0.024 | | |
| | (0.079) | (0.148) | (0.110) | (0.086) | (0.132) | (0.120) | (0.057) | | |
| Female entrepreneur x Female judge | 0.016 | 0.025 | -0.051 | | | | | | |
| | (0.108) | (0.193) | (0.156) | | | | | | |
| Female entrepreneur x Loss feedback | | | | -0.113 | -0.107 | -0.132 | | | |
| | | | | (0.110) | (0.175) | (0.173) | | | |
| Female Judge x Loss Feedback | | | | | | | 0.095 | -0.027 | 0.062 |
| | | | | | | | (0.110) | (0.191) | (0.155) |
| Constant | 1.837*** | 1.835** | 1.690*** | 1.759*** | 0.801 | 2.613*** | 1.847*** | 1.662*** | 2.165*** |
| | (0.471) | (0.803) | (0.631) | (0.469) | (0.749) | (0.631) | (0.469) | (0.615) | (0.702) |
| R square | 0.132 | 0.242 | 0.178 | 0.135 | 0.236 | 0.257 | 0.134 | 0.273 | 0.292 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Judge FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 346 | 159 | 187 | 346 | 174 | 172 | 346 | 164 | 182 |

Note: This table presents the results from least squares regressions of the entrepreneur's subsequent risk aversion (1= higher risk aversion). The models are estimated in columns (1-3) on the overall sample, without loss feedback, as well as with loss feedback respectively. Next, in columns (4-5) the models are estimated on the overall sample, male judges, as well as female judges respectively. In columns (6-7) the models are estimated on the overall sample, male entrepreneurs, as well as female entrepreneurs respectively. Controls include Big 5 Personality traits, Overall Assessment (Normalized), Pitch number of words, venture age, venture size, pre-pandemic venture performance (1-7), Post-pandemic venture performance (1-7), Covid-19 performance impact (1-7), entrepreneur's age, age square, education (1=college degree or higher), entrepreneurial experience in years, risk willingness (1-11), as well as the elicited belief about venture quality. Robust standard errors reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix C.5: Samples of Venture Competition Pitches by Female Entrepreneurs**

| | | |
|---|---|---|
| **Female Entrepreneur** | **Won in Competition (A)** | My business supports fast-moving businesses needing senior finance leadership during transformational change - rapid growth, new ownership, or restructuring. My background as finance director in a large business enables me to find the solution to clients' problems in a professional, no-nonsesnse yet empathetic way.<br><br>My services include commercial business partnering; change management & process improvement; stakeholder management; financial control and cash management; corporate governance; system implementation; and interim finance director services.<br><br>I have a 3 tier revenue model - (1) fixed term work with larger corporates to work on specific projects, (2) ongoing support to a portfolio of interesting SMEs, and (3) ad hoc support to businesses of any size for one-off projects. |
| | **Lost in Competition (A)** | A web design and marketing agency with a focus on using the WordPress content management system to deliver highly tailored solutions for businesses, specialising in B2B publishing and the third (charity) sector.<br><br>With the fast pace of change in online marketing, and the shift from print to digital media, many publishing companies fear being left behind. e-Motive Media steps in to fill the gap, providing consultancy as well as development, and offering ongoing support.<br><br>As we also have a background in the charity sector, this too is an area of expertise for us, facilitating donations and event registrations.<br><br>The revenue model is split between contracted projects and ad hoc support, with each feeding into the other as we work with our clients over many years. |

**Appendix C.6: Samples of Venture Competition Pitches by Male Entrepreneurs**

| | | |
|---|---|---|
| **Male Entrepreneur** | **Won in Competition (A)** | We are a software company specialising in software design tools that was the process of visualising and designing algorithms and computer code. We use a simple and intuitive pseudocode and flowchart notation that makes it easy for both programmers and non-programmers to understand a computer process. By using pseudo ode and flowcharts to design your code upfront, you can ignore the language specific implementation details and concentrate on the big picture. Once happy with this, you can finalise the code in whichever language you choose. Similarly you can take existing code and reverse engineer the pseudocode and flowcharts from it to better understand its meaning. This can be very useful when deciding a problem, for example or introducing a new team member to your project. |
| | **Lost in Competition (A)** | Modern smartphones equip powerful processors capable of detailed and fast calculations. Within the research community a large body of AI research exists solving a huge variety of problems explored over the last 70 years. Our business bridges the gap between these two by specialising in the creation of apps that simplify mundane tasks through the use of AI with a heavy focus on offline calculations and privacy preservation. Based on the functionality of each app the revenue is obtained through an initial purchase fee (for minor but quality of life AI additions), a one-off unlock (for major on device AI additions), and subscriptions (both if paymium and freemium apps, for advanced AI functionality which may or may not include ongoing costs to provide these services). |

## Appendix C.7: Experiment Full Questionnaire

### *Stage 1: Venture Competition A*

**Using a five-point scale where 1= strongly disagree, 3=neutral, and 5= strongly agree, please rate how true the following twenty statements are about you.**

| | 1- Strongly disagree | 2- Disagree | 3- Neutral | 4-Agree | 5- Strongly agree |
|---|---|---|---|---|---|
| 1. I get stressed out easily. | ○ | ○ | ○ | ○ | ○ |
| 2. I don't talk a lot. | ○ | ○ | ○ | ○ | ○ |
| 3. I leave my belongings around. | ○ | ○ | ○ | ○ | ○ |
| 4. I am relaxed most of the time. | ○ | ○ | ○ | ○ | ○ |
| 5. I have difficulty understanding abstract ideas. | ○ | ○ | ○ | ○ | ○ |
| 6. I feel comfortable around people. | ○ | ○ | ○ | ○ | ○ |
| 7. I keep in the background. | ○ | ○ | ○ | ○ | ○ |
| 8. I sympathize with others' feelings. | ○ | ○ | ○ | ○ | ○ |
| 9. I seldom feel blue. | ○ | ○ | ○ | ○ | ○ |
| 10. I start conversations. | ○ | ○ | ○ | ○ | ○ |
| 11. I am not interested in other people's problems. | ○ | ○ | ○ | ○ | ○ |
| 12. I have excellent ideas. | ○ | ○ | ○ | ○ | ○ |
| 13. I often forget to put things back in their proper place. | ○ | ○ | ○ | ○ | ○ |
| 14. I do not have a good imagination. | ○ | ○ | ○ | ○ | ○ |
| 15. I am not really interested in others. | ○ | ○ | ○ | ○ | ○ |
| 16. I like order. | ○ | ○ | ○ | ○ | ○ |
| 17. I have frequent mood swings. | ○ | ○ | ○ | ○ | ○ |
| 18. I use difficult words. | ○ | ○ | ○ | ○ | ○ |
| 19. I follow a schedule. | ○ | ○ | ○ | ○ | ○ |
| 20. I make people feel at ease. | ○ | ○ | ○ | ○ | ○ |

**How do you see yourself: are you a person who is generally willing to take risks, or do you try to avoid taking risks?**

▼ 1 - Completely unwilling to take risks (1) ... 11 - Very willing to take risks (11)

Please click “Next” to continue the questionnaire.

**Using a five-point scale where 1-very little and 5-very much, please answer the twenty questions below.**

| | 1- Very little | 2 | 3 | 4 | 5- Very much |
|---|---|---|---|---|---|
| 1. How much confidence do you have in your ability to brainstorm (come up with) a new idea for a product or service? | ○ | ○ | ○ | ○ | ○ |
| 2. How much confidence do you have in your ability to identify the need for a new product or service? | ○ | ○ | ○ | ○ | ○ |
| 3. How much confidence do you have in your ability to design a product or service that will satisfy customer needs? | ○ | ○ | ○ | ○ | ○ |
| 4. How much confidence do you have in your ability to estimate customer demand for a new product or service? | ○ | ○ | ○ | ○ | ○ |
| 5. How much confidence do you have in your ability to determine a competitive price for a new product or service? | ○ | ○ | ○ | ○ | ○ |
| 6. How much confidence do you have in your ability to estimate the amount of start-up funds and working capital necessary to start my business? | ○ | ○ | ○ | ○ | ○ |
| 7. How much confidence do you have in your ability to design an effective marketing/advertising campaign for a new product or service? | ○ | ○ | ○ | ○ | ○ |
| 8. How much confidence do you have in your ability to get others to identify with and believe in my vision and plans for a new business? | ○ | ○ | ○ | ○ | ○ |
| 9. How much confidence do you have in your ability to network—i.e., make contact with and exchange information with others? | ○ | ○ | ○ | ○ | ○ |
| 10. How much confidence do you have in your ability to clearly and concisely explain verbally/in writing my business idea in everyday terms? | ○ | ○ | ○ | ○ | ○ |
| 11. How much confidence do you have in your ability to, please select “1-Very little” for this item? | ○ | ○ | ○ | ○ | ○ |
| 12. How much confidence do you have in your ability to supervise employees? | ○ | ○ | ○ | ○ | ○ |
| 13. How much confidence do you have in your ability to recruit and hire employees? | ○ | ○ | ○ | ○ | ○ |
| 14. How much confidence do you have in your ability to delegate tasks and responsibilities to employees in my business? | ○ | ○ | ○ | ○ | ○ |
| 15. How much confidence do you have in your ability to deal effectively with day-to-day problems and crises? | ○ | ○ | ○ | ○ | ○ |

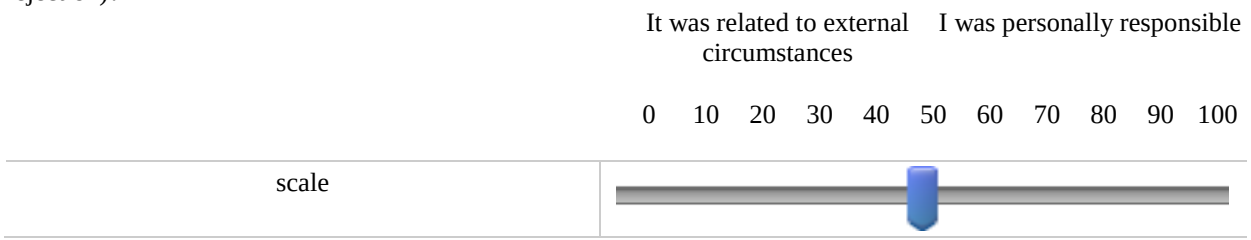
| | | | | | |
|---|---|---|---|---|---|
| 16. How much confidence do you have in your ability to inspire, encourage, and motivate my employees? | ○ | ○ | ○ | ○ | ○ |
| 17. How much confidence do you have in your ability to train employees? | ○ | ○ | ○ | ○ | ○ |
| 18. How much confidence do you have in your ability to organize and maintain the financial records of my business? | ○ | ○ | ○ | ○ | ○ |
| 19. How much confidence do you have in your ability to manage the financial assets of my business? | ○ | ○ | ○ | ○ | ○ |
| 20. How much confidence do you have in your ability to read and interpret financial statements? | ○ | ○ | ○ | ○ | ○ |

Please click “Next” to finish the questionnaire.

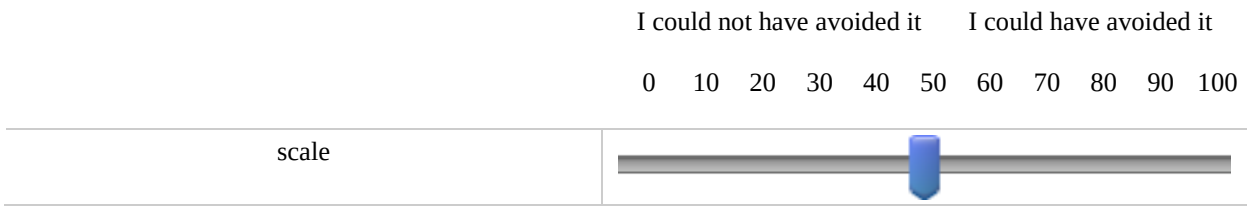
***Stage 2: Venture Competition B***

**Below are some questions about your first award application of the "Business Excellence Award of £3000".**

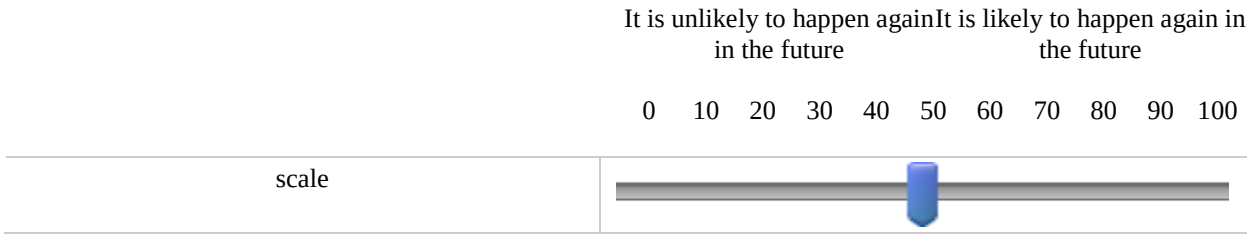
On a scale from 0% to 100%, how much do you think you were personally responsible (vs. it was related to external circumstances) for the outcome of your "Business Excellence Award of £3000" application (acceptance or rejection)**?**




On a scale from 0% to 100%, how much do you think you could have avoided (vs. you could not have avoided) the outcome of your "Business Excellence Award of £3000" application (acceptance or rejection)?




On a scale from 0% to 100%, how much do you think the outcome of your "Business Excellence Award of £3000" application (acceptance or rejection) is likely to happen again in the future (vs. it is unlikely to happen again in the future)?



On a scale from 1-strongly disagree to 7-strongly agree, how much do you agree with the following statements.

My "Business Excellence Award of £3000" application was rejected due to:

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| My low effort in describing my business | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Task difficulty | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My low-quality business | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Bad luck | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Low-quality judge | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Biased judge against your sex | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Click "Next" to continue the questionnaire.

**Below are some questions about your experience in the entrepreneurial community.**

Using a scale from 1-strongly disagree to 7-strongly agree, please read each statement carefully, and indicate the number that reflects your degree of agreement.

When I am in an entrepreneurial setting,

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| I feel that I belong to the entrepreneurial community. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I consider myself a member of the entrepreneurial executive world. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel like I am part of the entrepreneurial community. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel a connection with the entrepreneurial community. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel like I fit in. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel like an outsider. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel respected. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel valued. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel accepted. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel appreciated. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Using a scale from 1-strongly disagree to 7-strongly agree, please read each statement carefully, and indicate the number that reflects your degree of agreement.

When I am in an entrepreneurial setting,

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| I feel disregarded. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel neglected. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel excluded. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel insignificant. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel at ease. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel comfortable. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel content. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel calm. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel anxious. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel tense. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel nervous. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel inadequate. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Using a scale from 1-strongly disagree to 7-strongly agree, please read each statement carefully, and indicate the number that reflects your degree of agreement.

When I am in an entrepreneurial setting,

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| I enjoy being an active participant. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I wish I were invisible. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I wish I could fade into the background and not be noticed. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I wish I could please select disagree for this sentence | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I try to say as little as possible. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I trust the screening and selection procedures of funding proposals to be unbiased. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I have trust that I do not have to constantly prove myself. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I trust my mentors to be committed to helping me develop. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Even when I do poorly, I trust my mentors to have faith in my potential. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Click “Next” to continue the questionnaire.

**Below are some questions about your experience as an entrepreneur.**

Using a scale from 1-strongly disagree to 5-strongly agree, please choose the response that best represents your opinion for each statement.

| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|
| I sometimes feel like other entrepreneurs have skills that I don't have. | ○ | ○ | ○ | ○ | ○ |
| I am not sure that I am cut out for entrepreneurship. | ○ | ○ | ○ | ○ | ○ |
| I feel similar to the kinds of people who have what it takes to succeed in entrepreneurship. | ○ | ○ | ○ | ○ | ○ |
| I am not certain I fit in intellectually in entrepreneurship. | ○ | ○ | ○ | ○ | ○ |

Using a scale from 1-strongly disagree to 4-strongly agree, please choose the response that best represents your opinion for each statement.

| | Strongly disagree | Disagree | Agree | Strongly agree |
|---|---|---|---|---|
| I am afraid of failing in somewhat difficult situations, when a lot depends on me. | ○ | ○ | ○ | ○ |
| I feel uneasy to do something if I am not sure of succeeding. | ○ | ○ | ○ | ○ |
| Even if nobody would notice my failure, I am afraid of tasks, which I'm not able to solve. | ○ | ○ | ○ | ○ |
| Even if nobody is watching, I feel quite anxious in new situations | ○ | ○ | ○ | ○ |
| If I do not understand a problem immediately I start feeling anxious. | ○ | ○ | ○ | ○ |

Click "Next" to continue the questionnaire.

**Below are some questions about the business that you are currently running.**

When was your business/venture founded? (In case of multiple businesses please answer for the one with the highest revenue)

▼ 2020 (4) ... 1900 (126)

In which sector does your business/venture operate? (In case of multiple businesses please answer for the one with the highest revenue)

▼ A - Agriculture, forestry and fishing (1) ... U - Activities of extraterritorial organizations and bodies (62)

In which sub-sector does your business/venture operate? (In case of multiple businesses please answer for the one with the highest revenue)

▼ sectors

What is the number of full-time individuals employed by the venture? (In case of multiple businesses please answer for the one with the highest revenue)

▼ 0 (1) ... Above 250 (254)

What is the business legal structure of the business you are currently running?

- ○ Sole trader (you run your own business as an individual and are self-employed)
- ○ Partnership (you and your partner (or partners) personally share responsibility for your business)
- ○ Limited liability partnership (LLP)
- ○ Limited company
- ○ Other, please specify _____

What is the number of ventures that you had previously founded or co-founded?

▼ 0 (1) ... Above 100 (255)

What are your total years of entrepreneurial experience (founder or co-founder)?

▼ 0 (1) ... 100 (103)

Have you participated in any of the following six behaviors currently or in the past?

| | Yes | No |
|---|---|---|
| Attending a “start your own business planning” seminar or conference | ○ | ○ |
| Writing a business plan or participating in seminars that focus on writing a business plan | ○ | ○ |
| Putting together a start-up team | ○ | ○ |
| Looking for a building or equipment for the business | ○ | ○ |
| Saving money to invest in the business | ○ | ○ |
| Developing a product or service | ○ | ○ |

Click “Next” to continue the questionnaire.

**Below are some questions about the performance of the business that you are currently running.**

Please rate your business recent (BEFORE Covid-19) performance compared to your competitors on the following dimensions

| | 1-Much worse than competitors | 2 | 3 | 4 | 5 | 6 | 7-Much better than competitors |
|---|---|---|---|---|---|---|---|
| Growth in sales | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Growth in profitability | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Debt position | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Return on assets | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Gross profit margin | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Net profit margin | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Ability to fund growth from profit. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Please assess the impact of the recent pandemic of Covid-19 on your business performance

- ○ 1- Very negatively impacted
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7 - Very positively impacted

Please rate your business recent (taking into account Covid-19) performance compared to your competitors on the following dimensions

| | 1-Much worse than competitors | 2 | 3 | 4 | 5 | 6 | 7-Much better than competitors |
|---|---|---|---|---|---|---|---|
| Growth in sales | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Growth in profitability | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Debt position | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Return on assets | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Gross profit margin | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Net profit margin | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Ability to fund growth from profit. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Click “Next” to continue the questionnaire.

**Below are some questions about your socio-demographic information. Please remember that your data will be treated confidentially.**

What is your year of birth?

▼ 2003 (1) ... 1900 (106)

What is the highest level of school you have completed or the highest degree you have received?

▼ Less than a high school degree (1) ... Professional degree (JD, MD) (10)

What is the field of your education?

▼ Natural Sciences (Mathematics, Biology, physics…) (1) ... Not applicable (9)

What is your current employment status?

▼ Full-Time Employee (1) ... Unable to work (11)

What is the number of your total years of work experience as a full-time employee?

▼ 0 (1) … 100 (103)

Click “Next” to continue the questionnaire.

**Below are some questions about the award applications that you encountered in this study.**

What is the biological sex of the judge/judges assigned to evaluate your award/awards applications?

- ○ Male Judge/Judges
- ○ Female Judge/Judges

In addition to the business idea description, the award applications asked about the following information:

- ○ Country of residence only
- ○ Country of residence, age group, and biological sex.

My "Business Excellence Award of £3000" application that was submitted in phase (1) is:

- ○ Accepted
- ○ Rejected

Click “Next” to finish the questionnaire.

# Bibliography


Alan, S., Baydar, N., Boneva, T., Crossley, T. F., & Ertac, S. (2017). Transmission of risk preferences from mothers to daughters. *Journal of Economic Behavior and Organization*, *134*, 60–77. https://doi.org/10.1016/j.jebo.2016.12.014

Alan, S., Boneva, T., & Ertac, S. (2019). Ever Failed, Try Again, Succeed Better: Results from a Randomized Educational Intervention on Grit. *The Quarterly Journal of Economics*, *134*(3), 1121–1162. https://doi.org/10.1093/QJE

Alan, S., & Ertac, S. (2018). Fostering Patience in the Classroom: Results From Randomized Educational Intervention. *Journal of Political Economy*, *126*(5), 1865–1911. https://doi.org/10.1086/699007

Alan, S., & Ertac, S. (2019). Mitigating the Gender Gap in the Willingness to Compete: Evidence from a Randomized Field Experiment. *Journal of the European Economic Association*, *17*(4), 1147–1185. https://doi.org/10.1093/jeea/jvy036

Aldrich, H., Reese, P. R., & Dubini, P. (1989). Women on the verge of a breakthrough: Networking among entrepreneurs in the United States and Italy. *Entrepreneurship and Regional Development*, *1*(4), 339–356. https://doi.org/10.1080/08985628900000029

Aldrich, H., & Ruef, M. (2006). *Organizations Evolving, 2nd edition*. Sage Publications Ltd.

Almås, I., Cappelen, A. W., Salvanes, K. G., Sørensen, E., & Tungodden, B. (2016). Willingness to compete: Family matters. *Management Science*, *62*(8), 2149–2162. https://doi.org/10.1287/mnsc.2015.2244

Alnamlah, M. (2020). Is the Gender Gap in Venture Funding Driven by Biased Investors? *Academy of Management Proceedings*, *2020*(1), 20763. https://doi.org/10.5465/ambpp.2020.20763abstract

Alnamlah, M., & Gravert, C. (2020). She Could Not Agree More: The Role of Failure Attribution in Shaping the Gender Gap in Competition Persistence. *Working Paper CEBI, Working Paper Series 25/20, Copenhagen Business School, Frederiksberg*, (25/20). Retrieved from www.cebi.ku.dk

Amore, M. D., Garofalo, O., & Martin-Sanchez, V. (2020). Failing to Learn from Failure: How Optimism Impedes Entrepreneurial Innovation. *Organization Science*, orsc.2020.1359. https://doi.org/10.1287/orsc.2020.1359

Andersen, S., Ertac, S., Gneezy, U., List, J. A., & Maximiano, S. (2013). Gender, Competitiveness, and Socialization at a Young Age: Evidence from a Matrilineal and a Patriarchal Society. *Review of Economics and Statistics*, *95*(4), 1438–1443. https://doi.org/10.1162/REST_a_00312

Aneja, A., Reshef, O., & Subramani, G. (2020). Persistence and the Gender Innovation Gap : Evidence from the U.S. Patent and Trademark Office. *Working Paper, University of California, Berkeley, CA*.

Armin, F., Becker, A., Dohmen, T. J., Huffman, D., & Sunde, U. (2016). The Preference Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preferences. *Working Paper DP 01/2016-003, University of Bonn, Bonn*. https://doi.org/10.2139/ssrn.2725874

Arrow, K. (1973). *The Theory of Discrimination*. Working paper 403, Princeton University, Department of Economics, Industrial Relations Section. Retrieved from

https://ideas.repec.org/p/pri/indrel/30a.html

Azoulay, P., Jones, B. F., Kim, J. D., & Miranda, J. (2020). Age and High-Growth Entrepreneurship. *American Economic Review: Insights*, *2*(1), 65–82. https://doi.org/10.1257/aeri.20180582

Balachandra, L., Briggs, T., Eddleston, K., & Brush, C. (2019). Don't Pitch Like a Girl!: How Gender Stereotypes Influence Investor Decisions. *Entrepreneurship: Theory and Practice*, *43*(1), 116–137. https://doi.org/10.1177/1042258717728028

Bar-Tal, D. (1978). Attributional Analysis of Achievement-Related Behavior. *Review of Educational Research*, *48*(2), 259. https://doi.org/10.2307/1170084

Baron, R. A., Mueller, B. A., & Wolfe, M. T. (2016). Self-efficacy and entrepreneurs' adoption of unattainable goals: The restraining effects of self-control. *Journal of Business Venturing*, *31*(1), 55–71. https://doi.org/10.1016/j.jbusvent.2015.08.002

Barron, K. mname, & Gravert, C. mname. (2021). Confidence and Career Choices: An Experiment. *Working Paper, Wissenschaftszentrum Berlin Für Sozialforschung Discussion Paper SP II 2018–301,*. https://doi.org/10.2139/ssrn.3099491

Becker-Blease, J. R., & Sohl, J. E. (2007). Do women-owned businesses have equal access to angel capital? *Journal of Business Venturing*, *22*(4), 503–521. https://doi.org/10.1016/j.jbusvent.2006.06.003

Becker-Blease, J. R., & Sohl, J. E. (2011). The Effect of Gender Diversity on Angel Group Investment. *Entrepreneurship Theory and Practice*, *35*(4), 709–733. https://doi.org/10.1111/j.1540-6520.2010.00391.x

Becker, G. S. (1957). *The Economics of Discrimination*. Chicago IL: University of Chicago Press.

Berlin, N., & Dargnies, M. P. (2016). Gender differences in reactions to feedback and willingness to compete. *Journal of Economic Behavior and Organization*, *130*, 320–336. https://doi.org/10.1016/j.jebo.2016.08.002

Bernhard, R., & De Benedictis-Kessner, J. (2020). The Boys-and Girls-Are Back in Town: Male and Female Candidates Are Similarly Dissuaded by Losing Elections. *Working Paper, University of California Davis*.

Bernstein, S., Korteweg, A., & Laws, K. (2017). Attracting Early-Stage Investors: Evidence from a Randomized Field Experiment. *Journal of Finance*, *72*(2), 509–538. https://doi.org/10.1111/jofi.12470

Bertrand, M. (2011). *New perspectives on gender*. *Handbook of Labor Economics* (Vol. 4). Elsevier. https://doi.org/10.1016/S0169-7218(11)02415-4

Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. *American Economic Review*, *94*(4), 991–1013. https://doi.org/10.1257/0002828042002561

Bigelow, L., Lundmark, L., McLean Parks, J., & Wuebker, R. (2014). Skirting the Issues: Experimental Evidence of Gender Bias in IPO Prospectus Evaluations. *Journal of Management*, *40*(6), 1732–1759. https://doi.org/10.1177/0149206312441624

Block, J. H., & Block, J. (1980). *The Role of Ego-Control and Ego-Resiliency in the Organization of Behavior*. (A. W. Collins, Ed.), *Minnesota Symposium on Child Psychology* (Vol. 13). Hilsdale, NJ: Minnesota symposia on child psychology.

Block, J., & Kremen, A. (1996). IQ and Ego-Resiliency: Conceptual and Empirical Connections and Separateness. *Journal of Personality and Social Psychology*, *70*(2), 349–361. https://doi.org/10.1037/0022-3514.70.2.349

Boden, R. J., & Nucci, A. R. (2000). On the survival prospects of men's and women's new business ventures. *Journal of Business Venturing*, *15*(4), 347–362. https://doi.org/10.1016/S0883-9026(98)00004-4

Bohren, J. A., Haggag, K., Imas, A., & Pope, D. G. (2019). Inaccurate Statistical Discrimination: An Identification Problem. *NBER Working Paper 25935, National Bureau of Economic Research, Cambridge, MA*. Retrieved from http://www.nber.org/data-appendix/w25935

Bönte, W., & Piegeler, M. (2013). Gender gap in latent and nascent entrepreneurship: driven by competitiveness. *Small Business Economics*, *41*(4), 961–987. https://doi.org/10.1007/s11187-012-9459-3

Bordalo, P., Coffman, K., Gennaioli, N., & Shleifer, A. (2016). Stereotypes. *The Quarterly Journal of Economics*, *131*(4), 1753–1794. https://doi.org/10.1093/qje/qjw029

Bordalo, P., Coffman, K., Gennaioli, N., & Shleifer, A. (2019). Beliefs about Gender. *American Economic Review*, *109*(3), 739–773. https://doi.org/10.1257/aer.20170007

Brands, R. A., & Fernandez-Mateo, I. (2017). Leaning Out: How Negative Recruitment Experiences Shape Women's Decisions to Compete for Executive Roles. *Administrative Science Quarterly*, *62*(3), 405–442. https://doi.org/10.1177/0001839216682728

Brandts, J., Groenert, V., & Rott, C. (2015). The impact of advice on women's and men's selection into competition. *Management Science*, *61*(5), 1018–1035. https://doi.org/10.1287/mnsc.2013.1877

Brashears, M. E. (2008). Gender and homophily: Differences in male and female association in Blau space. *Social Science Research*, *37*(2), 400–415. https://doi.org/10.1016/j.ssresearch.2007.08.004

Brooks, A. W., Huang, L., Kearney, S. W., & Murray, F. E. (2014). Investors prefer entrepreneurial ventures pitched by attractive men. *Proceedings of the National Academy of Sciences of the United States of America*, *111*(12), 4427–4431. https://doi.org/10.1073/pnas.1321202111

Brush, C., Carter, N., Gatewood, E., Greene, P., & Hart, M. (2004). *Gatekeepers of Venture Growth: A Diana Project Report on the Role and Participation of Women in the Venture Capital Industry*. Retrieved from SSRN 1260385

Brush, C., Greene, P. G., Balachandra, L., & Davis, A. E. (2014). Women Entrepreneurs 2014: Bridging the Gender Gap in Venture Capital. *Arthur M. Blank Center for Entrepreneurship Babson College.*, 28.

Bullough, A., Renko, M., & Myatt, T. (2014a). Danger Zone Entrepreneurs: The Importance of Resilience and Self-Efficacy for Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, *38*(3), 473–499. https://doi.org/10.1111/etap.12006

Bullough, A., Renko, M., & Myatt, T. (2014b). Danger Zone Entrepreneurs: The Importance of Resilience and Self-Efficacy for Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, *38*(3), 473–499. https://doi.org/10.1111/etap.12006

Buser, T. (2016). The impact of losing in a competition on the willingness to seek further challenges. *Management Science*, *62*(12), 3439–3449. https://doi.org/10.1287/mnsc.2015.2321

Buser, T., Gerhards, L., & van der Weele, J. (2018). Responsiveness to feedback as a personal trait.

*Journal of Risk and Uncertainty*, *56*(2), 165–192. https://doi.org/10.1007/s11166-018-9277-3

Buser, T., Niederle, M., & Oosterbeek, H. (2014). Gender, Competitevness and Career Choices. *The Quarterly Journal of Economics*, *129*(3), 1409–1447.

Buser, T., & Yuan, H. (2019). Do women give up competing more easily? Evidence from the lab and the Dutch Math olympiad. *American Economic Journal: Applied Economics*, *11*(3), 225–252. https://doi.org/10.1257/app.20170160

Buttner, E. H., & Rosen, B. (1989). Funding new business ventures: Are decision makers biased against women entrepreneurs? *Journal of Business Venturing*, *4*(4), 249–261. https://doi.org/10.1016/0883-9026(89)90015-3

Byrne, D. E. (1971). *The attraction paradigm*. New York: Acadamic press.

Carré, J. M., Putnam, S. K., & McCormick, C. M. (2009). Testosterone responses to competition predict future aggressive behaviour at a cost to reward in men. *Psychoneuroendocrinology*, *34*(4), 561–570. https://doi.org/10.1016/j.psyneuen.2008.10.018

Carver, C. S. (2010). Resilience and Thriving: Issues, Models, and Linkages. *Journal of Social Issues*, *54*(2), 245–266. https://doi.org/10.1111/j.1540-4560.1998.tb01217.x

Cason, T. N., Masters, W. A., & Sheremeta, R. M. (2010). Entry into winner-take-all and proportional-prize contests: An experimental study. *Journal of Public Economics*, *94*(9–10), 604–611. https://doi.org/10.1016/j.jpubeco.2010.05.006

Chan, C. S. R., & Park, H. D. (2015). How images and color in business plans influence venture investment screening decisions. *Journal of Business Venturing*, *30*(5), 732–748. https://doi.org/10.1016/j.jbusvent.2014.12.002

Chen, D. L. (2019). Markets and Morality: Do Free Markets Corrode Moral Values? *Working Paper No. 16-692, Toulouse School of Economics, Toulouse*.

Chen, G., Crossland, C., & Luo, S. (2015). Making the same mistake all over again: CEO overconfidence and corporate resistance to corrective feedback. *Strategic Management Journal*, *36*(10), 1513–1535. https://doi.org/10.1002/smj.2291

Cleveland, J. N., Lim, A. S., & Murphy, K. R. (2007). Feedback phobia? Why employees do not want to give or receive performance feedback. In *Research Companion to the Dysfunctional Workplace: Management Challenges and Symptoms* (pp. 168–186). Edward Elgar Publishing Ltd. https://doi.org/10.4337/9781847207081.00018

Clingingsmith, D., & Shane, S. (2018). Training Aspiring Entrepreneurs to Pitch Experienced Investors: Evidence from a Field Experiment in the United States. *Management Science*, *64*(11), 5164–5179. https://doi.org/10.1287/mnsc.2017.2882

Cochrane, J. H. (2005). The risk and return of venture capital. *Journal of Financial Economics*, *75*(1), 3–52. https://doi.org/10.1016/j.jfineco.2004.03.006

Coffman, K. B. (2014). Evidence on Self-Stereotyping and the Contribution of Ideas *. *The Quarterly Journal of Economics*, *129*(4), 1625–1660. https://doi.org/10.1093/qje/qju023

Coffman, K., Collis, M., & Kulkarni, L. (2019). *Stereotypes and Belief Updating*. *Harvard Business School Working Paper 19-068*.

Coleman, S., & Robb, A. (2009). A comparison of new firm financing by gender: evidence from the

Kauffman Firm Survey data. *Small Business Economics*, *33*(4), 397–411. https://doi.org/10.1007/s11187-009-9205-7

Cooper, A. C., Woo, C. Y., & Dunkelberg, W. C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, *3*(2), 97–108. https://doi.org/10.1016/0883-9026(88)90020-1

Cope, J. (2011). Entrepreneurial learning from failure: An interpretative phenomenological analysis. *Journal of Business Venturing*, *26*(6), 604–623. https://doi.org/10.1016/j.jbusvent.2010.06.002

Costa-Gomes, M. A., & Weizsäcker, G. (2008). Stated Beliefs and Play in Normal-Form Games. *Review of Economic Studies*, *75*(3), 729–762. https://doi.org/10.1111/j.1467-937X.2008.00498.x

Cowling, M., Marlow, S., & Liu, W. (2020). Gender and bank lending after the global financial crisis: are women entrepreneurs safer bets? *Small Business Economics*, *55*(4), 853–880. https://doi.org/10.1007/s11187-019-00168-3

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, *47*(2), 448–474. https://doi.org/10.1257/jel.47.2.448

Dahl, M. S., & Sorenson, O. (2012). Home sweet home: Entrepreneurs' location choices and the performance of their ventures. *Management Science*, *58*(6), 1059–1071. https://doi.org/10.1287/mnsc.1110.1476

de Andrés, P., Gimeno, R., & de Cabo, R. M. (2020). The Gender Gap in Bank Credit Access. *Journal of Corporate Finance*, 101782. https://doi.org/10.1016/j.jcorpfin.2020.101782

De Cremer, D., & Tyler, T. R. (2005). Managing Group Behavior: The Interplay Between Procedural Justice, Sense of Self, and Cooperation. *Advances in Experimental Social Psychology*, *37*, 151–218. https://doi.org/10.1016/S0065-2601(05)37003-1

DeTienne, D. R., & Chandler, G. N. (2007). The Role of Gender in Opportunity Identification. *Entrepreneurship Theory and Practice*, *31*(3), 365–386. https://doi.org/10.1111/j.1540-6520.2007.00178.x

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual Risk Attitudes: Measurement, Determinants, and Behavioral Consequences. *Journal of the European Economic Association*, *9*(3), 522–550. https://doi.org/10.1111/j.1542-4774.2011.01015.x

Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., & Dushnitsky, G. (2017). A Review and Road Map of Entrepreneurial Equity Financing Research: Venture Capital, Corporate Venture Capital, Angel Investment, Crowdfunding, and Accelerators. *Journal of Management*, *43*(6), 1820–1853. https://doi.org/10.1177/0149206317690584

Duffy, J., & Tavits, M. (2008). Beliefs and voting decisions: A test of the pivotal voter model. *American Journal of Political Science*, *52*(3), 603–618. https://doi.org/10.1111/j.1540-5907.2008.00332.x

Dutt, N., & Kaplan, S. (2020). Composition of Selection Committees and Outcomes for Women-led Ventures: Evidence from Social Enterprise Accelerators. *Working Paper*.

Dweck, C. S., Davidson, W., Nelson, S., & Enna, B. (1978). Sex differences in learned helplessness: II. The contingencies of evaluative feedback in the classroom and III. An experimental analysis. *Developmental Psychology*, *14*(3), 268–276. https://doi.org/10.1037/0012-1649.14.3.268

Eagly, A. H., Makhijani, M. G., & Klonsky, B. G. (1992). Gender and the Evaluation of Leaders: A Meta-Analysis. *Psychological Bulletin*. https://doi.org/10.1037/0033-2909.111.1.3

Eckhardt, J. T., Shane, S., & Delmar, F. (2006). Multistage Selection and the Financing of New Ventures. *Management Science*, *52*(2), 220–232. https://doi.org/10.1287/mnsc.1050.0478

Ertac, S., & Szentes, B. (2011). The effect of information on gender differences in competitiveness: experimental evidence. *Working Paper, No. 1104, Koç University-TÜSİAD Economic Research Forum (ERF), Istanbul*.

Ewens, M., & Townsend, R. R. (2019). Are early stage investors biased against women? *Journal of Financial Economics*. https://doi.org/10.1016/J.JFINECO.2019.07.002

Fackelmann, S., & De Concini, A. (2020). *Funding women entrepreneurs How to empower growth Prepared for: The European Commission*. https://doi.org/10.2867/56430

Fernandez-Mateo, I., & Fernandez, R. M. (2016). Bending the pipeline? Executive search and gender inequality in hiring for top management jobs. *Management Science*, *62*(12), 3636–3655. https://doi.org/10.1287/mnsc.2015.2315

Fernandez-mateo, I., & Rubineau, B. (2019). *Expanding pools or expanding tools ? Rejection response dynamics and the gender segregation of talent pipelines*.

Fischbacher, U. (2007). Z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics*, *10*(2), 171–178. https://doi.org/10.1007/s10683-006-9159-4

Fisher, R., Maritz, A., & Lobo, A. (2016). Does individual resilience influence entrepreneurial success Pro-environmental behaviour in emerging markets: a study of Vietnamese consumer purchase of energy efficient appliances View project. *Academy of Entrepreneurship Journal*, *22*(2), 39–53.

Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, *82*(6), 878–902. https://doi.org/10.1037/0022-3514.82.6.878

Flory, J. A., Leibbrandt, A., & List, J. A. (2015). Do Competitive Workplaces Deter Female Workers? A Large-Scale Natural Field Experiment on Job Entry Decisions. *The Review of Economic Studies*, *82*(1), 122–155. https://doi.org/10.1093/restud/rdu030

Folmer, A. S., Cole, D. A., Sigal, A. B., Benbow, L. D., Satterwhite, L. F., Swygert, K. E., & Ciesla, J. A. (2008). Age-related changes in children's understanding of effort and ability: Implications for attribution theory and motivation. *Journal of Experimental Child Psychology*, *99*(2), 114–134. https://doi.org/10.1016/j.jecp.2007.09.003

Forbes, D. P. (2005). Are some entrepreneurs more overconfident than others? *Journal of Business Venturing*, *20*(5), 623–640. https://doi.org/10.1016/j.jbusvent.2004.05.001

Franke, N., Gruber, M., Harhoff, D., & Henkel, J. (2006). What you are is what you like-similarity biases in venture capitalists' evaluations of start-up teams. *Journal of Business Venturing*, *21*(6), 802–826. https://doi.org/10.1016/j.jbusvent.2005.07.001

Fried, V., & Hisrich, R. (1994). Toward a Model of Venture Capital Investment Decision Making. *Financial Management*, *23*(3), 28–37. https://doi.org/10.2307/3665619

Frieze, I. H. (1975). Women's expectations for and causal attributions of success and failure. *Women and Achievement*, 158–171.

Gafni, H., Marom, D., Robb, A., & Sade, O. (2020). Gender Dynamics in Crowdfunding (Kickstarter): Evidence on Entrepreneurs, Backers, and Taste-Based Discrimination*. *Review of Finance, 2021*, 1–40. https://doi.org/10.1093/rof/rfaa041

Geroski, P. A., & Gregg, P. (1996). What makes firms vulnerable to recessionary pressures? *European Economic Review*, *40*(3–5), 551–557. https://doi.org/10.1016/0014-2921(95)00067-4

Gill, D., & Prowse, V. (2014). Gender differences and dynamics in competition: The role of luck. *Quantitative Economics*, *5*(2), 351–376. https://doi.org/10.3982/QE309

Gillham, J. E., Shatté, A. J., Reivich, K. J., & Seligman, M. E. P. (2001). Optimism, pessimism, and explanatory style. In *Optimism & pessimism: Implications for theory, research, and practice.* (pp. 53–75). American Psychological Association. https://doi.org/10.1037/10385-003

Gneezy, U., & Imas, A. (2017). Lab in the Field: Measuring Preferences in the Wild. In *Handbook of economic field experiments.* (Vol. 1, pp. 439–464). North-Holland. https://doi.org/10.1016/bs.hefe.2016.08.003

Goldberg, L. R. (1992). The Development of Markers for the Big-Five Factor Structure. *Psychological Assessment*, *4*(1), 26–42. https://doi.org/10.1037/1040-3590.4.1.26

Gompers, P., Gornall, W., Kaplan, S. N., & Strebulaev, I. A. (2020). How do venture capitalists make decisions? *Journal of Financial Economics*, *135*(1), 169–190. https://doi.org/10.1016/j.jfineco.2019.06.011

Gompers, P., & Lerner, J. (2001). The Venture Capital Revolution. *Journal of Economic Perspectives*. American Economic Association. https://doi.org/10.1257/jep.15.2.145

Gompers, P., Mukharlyamov, V., Weisburst, E., & Xuan, Y. (2021). Gender Gaps in Venture Capital Performance. *Journal of Financial and Quantitative Analysis*, 1–58. https://doi.org/10.1017/s0022109020000988

Gompers, P., & Wang, S. (2017). *Diversity in Innovation*. *NBER Working Paper Series 23082, National Bureau of Economic Research, Cambridge, MA.* https://doi.org/10.3386/w23082

Gornall, W., & Strebulaev, I. A. (2019). *Gender, Race, and Entrepreneurship: A Randomized Field Experiment on Venture Capitalists and Angels*. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3301982

Gornall, W., & Strebulaev, I. A. (2020). Gender, Race, and Entrepreneurship: A Randomized Field Experiment on Venture Capitalists and Angels. *Working Paper*.

Greenberg, J., Kuppuswamy, V., & Mollick, E. (2019). Hubris and Humility: Gender and the Interpretation of Signals in Crowdfunding. *Working Paper*.

Greenberg, J., & Mollick, E. (2017). Activist Choice Homophily and the Crowdfunding of Female Founders*. *Administrative Science Quarterly*, *62*(2), 341–374. https://doi.org/10.1177/0001839216678847

Grosse, N. D., & Riener, G. (2010). *Explaining Gender Dierences in Competitiveness: Gender-Task Stereotypes*.

Guzman, J., & Kacperczyk, A. O. (2019). Gender gap in entrepreneurship. *Research Policy*, *48*(7), 1666–1680. https://doi.org/10.1016/J.RESPOL.2019.03.012

Hall, J., & Hofer, C. W. (1993). Venture capitalists' decision criteria in new venture evaluation. *Journal of Business Venturing*, *8*(1), 25–42. https://doi.org/10.1016/0883-9026(93)90009-T

Hebert, C. (2020). Gender Stereotypes and Entrepreneur Financing. *Working Paper*. https://doi.org/10.2139/ssrn.3318245

Hicks, R., & Tingley, D. (2011). Causal mediation analysis. *Stata Journal*, *11*(4), 605–619. https://doi.org/10.1177/1536867x1201100407

Hinchliffe, E. (2020, May 18). Fortune 500 CEOs who are women hits record high. *Fortune*. Retrieved from https://fortune.com/2020/05/18/women-ceos-fortune-500-2020/

Holt, C. A., & Laury, S. K. (2002). *American Economic Association Risk Aversion and Incentive Effects*. *The American Economic Review* (Vol. 92). Retrieved from https://www.jstor.org/stable/pdf/3083270.pdf?refreqid=excelsior%3Abe61fe38ca0b0ded142e78d9c6a6906d

Hong, Y. Y., Dweck, C. S., Chiu, C. Y., Lin, D. M. S., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology*, *77*(3), 588–599. https://doi.org/10.1037/0022-3514.77.3.588

Hoogendoorn, S., Oosterbeek, H., & Van Praag, M. (2013). The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment. *Source: Management Science*, *59*(7), 1514–1528. https://doi.org/10.1287/mnsc.1120.1674

Howell, S. (2020). Reducing information frictions in venture capital: The role of new venture competitions. *Journal of Financial Economics*, *136*(3), 676–694. https://doi.org/10.1016/j.jfineco.2019.10.009

Howell, S., & Nanda, R. (2019). Networking Frictions in Venture Capital, and the Gender Gap in Entrepreneurship. *Working Paper, 26449*. https://doi.org/10.2139/ssrn.3376211

Hu, A., & Ma, S. (2020). Persuading Investors: A Video-Based Study. *Working Paper*.

Huang, L., Joshi, P., Wakslak, C., & Wu, A. (2020). Sizing Up Entrepreneurial Potential: Gender Differences in Communication and Investor Perceptions of Long-Term Growth and Scalability. *Academy of Management Journal*. https://doi.org/10.5465/amj.2018.1417

Ibarra, H. (1992). Homophily and Differential Returns: Sex Differences in Network Structure and Access in an Advertising Firm. *Administrative Science Quarterly*, *37*(3), 422. https://doi.org/10.2307/2393451

Jensen, K., Kovács, B., & Sorenson, O. (2018). Gender differences in obtaining and maintaining patent rights. *Nature Biotechnology*, *36*(4), 307–309. https://doi.org/10.1038/nbt.4120

Kaden, R. (2019, October). How VC Can Help More Women Get Ahead. *Harvard Business Review*. Retrieved from https://hbr.org/2019/10/how-vc-can-help-more-women-get-ahead

Kahn, S., & Ginther, D. (2017). Women and STEM. *Working Paper 23525, National Bureau of Economic Research, Cambridge, MA.*

Kanze, D., Conley, M. A., Okimoto, T. G., Phillips, D. J., & Merluzzi, J. (2020). Evidence that investors penalize female founders for lack of industry fit. *Science Advances*, *6*(48), eabd7664. https://doi.org/10.1126/sciadv.abd7664

Kanze, D., Huang, L., Conley, M. A., & Tory Higgins, E. (2018). We ask men to win and women not to lose: Closing the gender gap in startup funding. *Academy of Management Journal*, *61*(2), 586–614. https://doi.org/10.5465/amj.2016.1215

Kautonen, T., Down, S., & Minniti, M. (2014). Ageing and entrepreneurial preferences. *Small Business Economics*, *42*(3), 579–594. https://doi.org/10.1007/s11187-013-9489-5

Kautz, T., Heckman, J., Diris, R., ter Weel, B., & Borghans, L. (2014). Fostering and Measuring Skills: Improving Cognitive and Non-Cognitive Skills to Promote Lifetime Success. *Working Paper 20749, National Bureau of Economic Research, Cambridge, MA.* https://doi.org/10.3386/w20749

Kerr, S. P., Kerr, W. R., & Xu, T. (2018). Personality Traits of Entrepreneurs: A Review of Recent Literature. *Working Paper 24097, National Bureau of Economic Research, Cambridge, MA.*, *14*(3), 279–356. https://doi.org/10.1561/0300000080

Kerr, W., Nanda, R., & Rhodes-Kropf, M. (2014). Entrepreneurship as Experimentation. *Journal of Economic Perspectives*, *28*(3), 25–48. https://doi.org/10.1257/jep.28.3.25

Korteweg, A., & Sorensen, M. (2010). Risk and Return Characteristics of Venture Capital-Backed Entrepreneurial Companies. *Review of Financial Studies*, *23*(10), 3738–3772. https://doi.org/10.1093/rfs/hhq050

Kosse, F., Deckers, T., Pinger, P., Schildberg-Hörisch, H., & Falk, A. (2020). The Formation of Prosociality: Causal Evidence on the Role of Social Environment. *Journal of Political Economy*, *128*(2), 434–467. https://doi.org/10.1086/704386

Koudstaal, M., Sloof, R., & van Praag, M. (2016). Risk, Uncertainty, and Entrepreneurship: Evidence from a Lab-in-the-Field Experiment. *Management Science*, *62*(10), 2897–2915. https://doi.org/10.1287/mnsc.2015.2249

Lai, Y., Saridakis, G., Blackburn, R., & Johnstone, S. (2016). Are the HR responses of small firms different from large firms in times of recession? *Journal of Business Venturing*, *31*(1), 113–131. https://doi.org/10.1016/j.jbusvent.2015.04.005

Latham, S. (2009). Contrasting Strategic Response to Economic Recession in Start-Up versus Established Software Firms*. *Journal of Small Business Management*, *47*(2), 180–201. https://doi.org/10.1111/j.1540-627X.2009.00267.x

Lazarus, R. S. (1993). From Psychological Stress to the Emotions: A History of Changing Outlooks. *Annual Review of Psychology*, *44*(1), 1–22. https://doi.org/10.1146/annurev.ps.44.020193.000245

Lee, M., & Huang, L. (2018). Gender Bias, Social Impact Framing, and Evaluation of Entrepreneurial Ventures. *Organization Science*, *29*(1), 1–16. https://doi.org/10.1287/orsc.2017.1172

Li, Y. (2008). Duration analysis of venture capital staging: A real options perspective. *Journal of Business Venturing*, *23*(5), 497–512. https://doi.org/10.1016/j.jbusvent.2007.10.004

Lyngsie, J., & Foss, N. J. (2017). The more, the merrier? Women in top-management teams and entrepreneurship in established firms. *Strategic Management Journal*, *38*(3), 487–505. https://doi.org/10.1002/smj.2510

McMahan, I. D. (1973). Relationships Between Causal Attributions and Expectancy of Success. *Journal of Personality and Social Psychology*, *28*(1), 108–114. https://doi.org/10.1037/h0035474

Mcpherson, M., Lynn, S.-L., & Cook, J. M. (2001). Birds of a Feather: Homophily in Social Networks. *Annual Review of Sociology*, *27*, 415–444.

Mehta, P. H., & Josephs, R. A. (2006). Testosterone change after losing predicts the decision to compete again. *Hormones and Behavior*, *50*(5), 684–692. https://doi.org/10.1016/j.yhbeh.2006.07.001

Mobius, M. M., Niederle, M., Niehaus, P., & Rosenblat, T. S. (2014). Managing Self-Confidence. *Working Paper, Stanford University, Stanford, CA.*

Moro, A., Wisniewski, T. P., & Mantovani, G. M. (2017). Does a manager's gender matter when accessing credit? Evidence from European data. *Journal of Banking and Finance*, *80*, 119–134. https://doi.org/10.1016/j.jbankfin.2017.04.009

Mueller, B. A., Wolfe, M. T., & Syed, I. (2017). Passion and grit: An exploration of the pathways leading to venture success. *Journal of Business Venturing*, *32*(3), 260–279. https://doi.org/10.1016/j.jbusvent.2017.02.001

Murnieks, C. Y., Haynie, J. M., Wiltbank, R. E., & Harting, T. (2011). 'I Like How You Think': Similarity as an Interaction Bias in the Investor-Entrepreneur Dyad. *Journal of Management Studies*, *48*(7), 1533–1561. https://doi.org/10.1111/j.1467-6486.2010.00992.x

Niederle, M., & Vesterlund, L. (2007). Do Women Shy Away from Competition? Do Men Compete Too Much? *The Quarterly Journal of Economics*, *122*(3), 1067–1101.

Niederle, M., & Vesterlund, L. (2011). Gender and Competition. *Annual Review of Economics*, *3*(1), 601–630. https://doi.org/10.1146/annurev-economics-111809-125122

Palan, S., & Schitter, C. (2018). Prolific.ac—A subject pool for online experiments. *Journal of Behavioral and Experimental Finance*, *17*, 22–27. https://doi.org/10.1016/j.jbef.2017.12.004

Parsons, J. E., Adler, T., & Meece, J. (1984). Sex Differences in Achievement: A Test of Alternate Theories. *Journal of Personality and Social Psychology*, *46*(1), 26–43. https://doi.org/10.1037/0022-3514.46.1.26

Parsons, J. E., Meece, J. L., Adler, T. F., & Kaczala, C. M. (1982). Sex Differences in Attributions and Learned Helplessness. *Sex Roles*, *8*(4), 421–432. https://doi.org/10.1007/BF00287281

Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology*, *70*, 153–163. https://doi.org/10.1016/J.JESP.2017.01.006

Petty, J. S., & Gruber, M. (2011). "In pursuit of the real deal" A longitudinal study of VC decision making. *Journal of Business Venturing*, *26*(2), 172–188. https://doi.org/10.1016/j.jbusvent.2009.07.002

Phelps, E. S. (1972). The Statistical theory of Racism and Sexism. *American Economic Review*, *62*(4), 659–661. https://doi.org/10.2307/1806107

PitchBook. (2019). The VC Female Founders Dashboard. Retrieved from https://pitchbook.com/news/articles/the-vc-female-founders-dashboard

Politis, D. (2005). The Process of Entrepreneurial Learning: A Conceptual Framework. *Entrepreneurship Theory and Practice*, *29*(4), 399–424. https://doi.org/10.1111/j.1540-6520.2005.00091.x

Rabin, M., & Schrag, J. L. (1999). First Impressions Matter: A Model of Confirmatory Bias. *The Quarterly Journal of Economics*, *114*(1), 37–82. https://doi.org/10.1162/003355399555945

Raina, S. (2019). VCs, Founders, and the Performance Gender Gap. *Working Paper*.

Reuben, E., Wiswall, M., & Zafar, B. (2017). Preferences and Biases in Educational Choices and Labour Market Expectations: Shrinking the Black Box of Gender. *The Economic Journal*, *127*(604), 2153–2186. https://doi.org/10.1111/ecoj.12350

Roberts, T. A., & Nolen-Hoeksema, S. (1989). Sex Differences in Reactions to Evaluative Feedback. *Sex Roles*, *21*(11–12), 725–747. https://doi.org/10.1007/BF00289805

Rocha, V., & van Praag, M. (2020). Mind the gap: The role of gender in entrepreneurial career choice and social influence by founders. *Strategic Management Journal*, *41*(5), 841–866. https://doi.org/10.1002/smj.3135

Rosenqvist, O. (2019). Are the Most Competitive Men More Resilient to Failures than the Most Competitive Women? Evidence from Professional Golf Tournaments*. *Social Science Quarterly*, *100*(3), 578–591. https://doi.org/10.1111/ssqu.12606

Ryckman, D. B., & Peckham, P. (1987). Gender Differences in Attributions for Success and Failure Situations across Subject Areas on JSTOR. *The Journal of Educational Research*, 120–125. Retrieved from https://www.jstor.org/stable/27540291?seq=1#metadata_info_tab_contents

Schuster, B., Forsterlung, F., & Weiner, B. (1989). Perceiving the Causes of Success and Failure. *Journal of Cross-Cultural Psychology*, *20*(2), 191–213. https://doi.org/10.1177/0022022189202005

Settele, S. (2020). How Do Beliefs about the Gender Wage Gap Affect the Demand for Public Policy? *Working Paper, University of Copenhagen, Copenhagen, Denmark*.

Shafi, K., Mohammadi, A., & Johan, S. A. (2020). Investment Ties Gone awry. *Academy of Management Journal*, *63*(1), 295–327. https://doi.org/10.5465/amj.2017.0103

Shane, S., & Stuart, T. (2002). Organizational Endowments and the Performance of University Start-ups. *Management Science*, *48*(1), 154–170. https://doi.org/10.1287/mnsc.48.1.154.14280

Shastry, G. K., Shurchkov, O., & Xia, L. L. (2020). Luck or skill: How women and men react to noisy feedback. *Journal of Behavioral and Experimental Economics*, *88*, 101592. https://doi.org/10.1016/j.socec.2020.101592

Shepherd, D. A. (2003). Learning from business failure: Propositions of grief recovery for the self-employed. *Academy of Management Review*, *28*(2), 318–328. https://doi.org/10.5465/AMR.2003.9416377

Shepherd, D. A., Douglas, E. J., & Shanley, M. (2000). New venture survival: Ignorance, external shocks, and risk reduction strategies. *Journal of Business Venturing*, *15*(5), 393–410. https://doi.org/10.1016/S0883-9026(98)00032-9

Simmons, S. A., Wiklund, J., Levie, J., Bradley, S. W., & Sunny, S. A. (2019). Gender gaps and reentry into entrepreneurial ecosystems after business failure. *Small Business Economics*, *53*(2), 517–531. https://doi.org/10.1007/s11187-018-9998-3

Snellman, K., & Solal, I. (2020). *Does Investor Gender Matter for the Success of Female Entrepreneurs? Gender Homophily and the Stigma of Incompetence in Entrepreneurial Finance*. *Working paper*. Elsevier BV. https://doi.org/10.2139/ssrn.3720647

Solal, I., & Snellman, K. (2019). Women Don't Mean Business? Gender Penalty in Board Composition. *Organization Science*, *30*(6), 1270. https://doi.org/10.1287/orsc.2019.1301

Stuart, T. E., Hoang, H., & Hybels, R. C. (1999). Interorganizational Endorsements and the Performance of Entrepreneurial Ventures. *Administrative Science Quarterly*, *44*(2), 315–349. https://doi.org/10.2307/2666998

Sutter, M., & Glätzle-Rützler, D. (2015). Gender differences in the willingness to compete emerge early in life and persist. *Management Science*, *61*(10), 2339–2354. https://doi.org/10.1287/mnsc.2014.1981

Tyler, T. R., & Blader, S. L. (2003). The Group Engagement Model: Procedural Justice, Social Identity,

and Cooperative Behavior. *Personality and Social Psychology Review*, *7*(4), 349–361. https://doi.org/10.1207/S15327957PSPR0704_07

Ucbasaran, D., Shepherd, D. A., Lockett, A., & Lyon, S. J. (2013). Life After Business Failure: The Process and Consequences of Business Failure for Entrepreneurs. *Journal of Management*, *39*(1), 163–202. https://doi.org/10.1177/0149206312457823

Vecchio, R. P., & Anderson, R. J. (2009). Agreement in Self-Other Ratings of Leader Effectiveness: The role of demographics and personality. *International Journal of Selection and Assessment*, *17*(2), 165–179. https://doi.org/10.1111/j.1468-2389.2009.00460.x

Weik, U., Maroof, P., Zöller, C., & Deinzer, R. (2010). Pre-experience of social exclusion suppresses cortisol response to psychosocial stress in women but not in men. *Hormones and Behavior*, *58*(5), 891–897. https://doi.org/10.1016/j.yhbeh.2010.08.018

Weiner, B. (1985). An Attributional Theory of Achievement Motivation and Emotion. *Psychological Review*, *92*(4), 548–573. https://doi.org/10.1037/0033-295X.92.4.548

Weiner, B. (2000). Intrapersonal and Interpersonal Theories of Motivation from an Attributional Perspective. *Educational Psychology Review*. Kluwer Academic/Plenum Publishers. https://doi.org/10.1023/A:1009017532121

Weiner, B., Frieze, I., Kukla, A., Reed, L., Rest, S., & Rosenbaum, R. M. (1987). Perceiving the Causes of Success and Failure. *Perceiving the Causes of Success and Failure. In Preparation of This Paper Grew out of a Workshop on Attribution Theory Held at University of California, Los Angeles, Aug 1969.. Lawrence Erlbaum Associates, Inc.*

Weisberg, Y. J., DeYoung, C. G., & Hirsh, J. B. (2011). Gender Differences in Personality across the Ten Aspects of the Big Five. *Frontiers in Psychology*, *2*(AUG), 178. https://doi.org/10.3389/fpsyg.2011.00178

Wiklund, J., Baker, T., & Shepherd, D. (2010). The age-effect of financial indicators as buffers against the liability of newness. *Journal of Business Venturing*, *25*(4), 423–437. https://doi.org/10.1016/j.jbusvent.2008.10.011

Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the internet. *Journal of Personality and Social Psychology*, *79*(5), 748–762. https://doi.org/10.1037/0022-3514.79.5.748

Wolleat, P. L., Pedro, J. D., Becker, A. D., & Fennema, E. (1980). Sex Differences in High School Students' Causal Attributions of Performance in Mathematics. *Journal for Research in Mathematics Education*, *11*(5), 356. https://doi.org/10.2307/748626

Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, *24*(3), 335–350. https://doi.org/10.1007/s11187-005-2000-1

Wootton, B. H. (1997). Gender differences in occupational employment. *Monthly Labor Review*, *120*(4), 15–24. Retrieved from https://stats.bls.gov/mlr/1997/04/art2full.pdf

Wozniak, D., Harbaugh, W. T., & Mayr, U. (2014). The menstrual cycle and performance feedback alter gender differences in competitive choices. *Journal of Labor Economics*, *32*(1), 161–198. https://doi.org/10.1086/673324

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*Panopticism and the Post-Washington Consensus*

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*Exploring the internal dynamics of software development teams during user analysis*
*A tension enabled Institutionalization Model; "Where process becomes the objective"*

4. Norsk ph.d.
Ej til salg gennem Samfundslitteratur

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*EXPLORING HETEROGENEITY IN ORGANIZATIONAL ACTIONS AND OUTCOMES*
*A Behavioural Perspective*

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*Inter-organizational Performance Measurement and Management in Action*
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*Den globale soldat*
*Identitetsdannelse og identitetsledelse i multinationale militære organisationer*

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*Retorisk toposlære – fra statisk 'sted' til persuasiv aktivitet*

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*Concept Relations for Terminological Process Analysis*

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*Det danske telefonvæsen under den tyske besættelse 1940-45*

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*De institutionelle mulighedsbetingelser bag den individuelle udforskning i professionelt og frivilligt arbejde*

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*An Intrinsic Case Study of the Adult Fans of LEGO Community*

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*Labor Related Corporate Social Performance in Denmark*
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*De uvidende og de udviklingsparate*
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*Narrative Construction of Leader Identity in a Leader Development Program Context*

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*"Living the brand" som en brandorienteret dialogisk praxis:*
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*Supply Chain (logistics) Environmental Complexity*

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