

Koziol, Kevin; Schmitz, Maja; Bort, Suleika

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Gender differences in entrepreneurial equity financing—a systematic literature review

Kevin Koziol · Maja Schmitz · Suleika Bort

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Abstract A growing body of literature explores whether and why female and male entrepreneurs differ in their access to equity financing. This trend has led to an increasing fragmentation of the research field, as many studies analyze various mechanisms and focus on a certain form of equity financing. To advance research on gender differences in equity financing, it is necessary to identify patterns and inconsistent findings in the literature related to these mechanisms. Therefore, we perform a systematic literature review to provide an overview of the current state of knowledge on gender differences in the key forms of entrepreneurial equity financing (venture capital, angel investment, and equity crowdfunding). Based on 75 studies from 2001 to mid-2024, our review indicates that male entrepreneurs have an advantage in raising capital from venture capitalists and business angels, whereas female entrepreneurs are more successful in equity crowdfunding. These gender differences stem from a complex combination of mechanisms, which we categorize into four thematic dimensions that capture entrepreneurs' characteristics, investors' characteristics, the ventures' characteristics and strategies, and contextual factors. We

propose specific future research directions for each dimension, and discuss theoretical and methodological research opportunities that are applicable across dimensions to improve our understanding of gender differences in equity financing.

Plain English Summary Gender differences in equity financing: Why the gender of the entrepreneur (still) matters. This systematic literature review examines the impact of the entrepreneur's gender on the funding outcome in equity financing. Our review shows that male entrepreneurs are more likely to obtain funding and raise higher amounts of capital from traditional equity investors (venture capitalists and business angels) than female entrepreneurs. The picture is slightly different for equity crowdfunding, where female entrepreneurs have an advantage compared to male entrepreneurs. We provide an overview of the mechanisms driving these gender differences in funding outcomes. Our review offers important implications for both researchers and practitioners. We encourage researchers to investigate further mechanisms related to contextual factors and to shift towards equity crowdfunding, as these fields have received less attention to date. We also provide advice to female entrepreneurs on strategically increasing their chances of success in raising capital, and we suggest how investors can fully exploit untapped investment opportunities.

Kevin Koziol and Maja Schmitz have contributed equally to this article.

K. Koziol (✉) · M. Schmitz · S. Bort
University of Passau, Dr.-Hans-Kapfner-Straße 14B,
94032 Passau, Germany
e-mail: kevin.koziol@uni-passau.de

Keywords Equity financing · Gender · Entrepreneurship · Systematic literature review

JEL Classification G23 · G29 · J16 · L26 · M13

1 Introduction

When evaluating early-stage ventures, which usually lack measurable performance indicators, investors attach considerable importance to the entrepreneur and the founding team (e.g., Gompers et al., 2020; Mason & Stark, 2004). One easily observable characteristic of an entrepreneur is gender (Mitteness et al., 2012). Research demonstrates that investors often rely on the gender of the entrepreneur to predict a venture's potential and to guide their investment decision (e.g., Johansson et al., 2021; Malmström et al., 2018; Tinkler et al., 2015). Two main sources explain why investors use the entrepreneur's gender as a shortcut in their investment decision. First, female and male entrepreneurs differ in certain characteristics, such as industry preference (e.g., Lins & Lutz, 2016), risk-taking behavior (e.g., Becker-Blease & Sohl, 2011), and leadership styles (e.g., Alonso-Almeida et al., 2017). Second, gender is associated with stereotypical assumptions that are firmly anchored in collective thinking (Heilman, 2001). Gender stereotypes reflect beliefs about the *typical* characteristics of men and women as well as expectations about how they should behave (e.g., men are perceived as assertive and women as affectionate; Bem, 1974; Hilton & von Hippel, 1996). These shortcuts may result in gender differences in funding outcomes that largely harm female entrepreneurs and benefit male entrepreneurs (e.g., Brush et al., 2018; Gicheva & Link, 2013; Guzman & Kacperczyk, 2019; Liao et al., 2023; Malmström et al., 2017; Poczter & Shapsis, 2018).

The literature on gender differences in equity financing increasingly focuses on the boundary conditions that explain how an entrepreneur's gender impact investors' investment decisions. These studies have deepened our knowledge, as they shed light on the reasons for differences in funding outcomes between female and male founders and often uncover such differences (e.g., Edelman et al., 2018; Khurana & Lee, 2023; Nguyen et al., 2023). Identifying boundary conditions may consequently provide effective suggestions for entrepreneurs and investors

to reduce gender differences in funding outcomes. However, these studies add complexity to the research field and partly lead to inconsistent findings related to some boundary conditions (e.g., the education of the entrepreneur; Brush & Elam, 2023; Lins & Lutz, 2016; Nigam et al., 2022). Therefore, the aim of our systematic literature review is to provide a comprehensive understanding of the boundary conditions (henceforth, “mechanisms”) of gender differences in entrepreneurial equity financing by mapping the research field, synthesizing existing knowledge, and developing an agenda for future research.¹

This distinguishes us from existing literature reviews that address the role of the entrepreneur's gender in entrepreneurial financing (e.g., Geiger, 2020; Serwaah, 2022; Serwaah & Shneor, 2021). Geiger's (2020) meta-analysis investigates the relationship between gender and funding success and has shown that the gender funding gap is due to supply-side (i.e. investor-side) and demand-side (i.e. entrepreneur-side) dynamics. Serwaah and Shneor (2021) developed conceptual frameworks that present the most commonly related independent variables that influence female entrepreneurs' access to financing and investment behavior. A more recent review by Serwaah (2022) examines the intersection of gender and crowdfunding and discusses whether crowdfunding can increase women's financial inclusion and participation. In contrast, our review focuses on the main forms of entrepreneurial equity financing, including venture capital, business angel investment, and equity crowdfunding, and it excludes debt financing and other types of crowdfunding. Research demonstrates that equity and debt financing attract distinct types of ventures (e.g., Drover et al., 2017; Hogan et al., 2017) and that equity investors differ significantly in their funding approaches from bankers (Mason & Stark, 2004) and other types of crowdfunders (e.g., reward-based, donation-based; e.g., Lukkarinen et al., 2016). Furthermore, we compare the gender differences and mechanisms between traditional equity financing and equity crowdfunding. In doing so, we follow Serwaah and Shneor's proposal (2021) to conduct

¹ Since the term “gender disparities” theoretically implies that different funding outcomes are merely due to inequality (cf. Harrison & Klein, 2007), in this study, we refer to gender differences, a phrase that further implies that actual differences between men and women may also explain funding success.

a comparative analysis of financing forms in order to consider the particularities of traditional equity financing and equity crowdfunding.

For our systematic literature review, we identified 75 relevant studies on gender differences in entrepreneurial equity financing published between 2001 and mid-2024. We provide a descriptive overview of the research field by analyzing the patterns of these studies according to publication year, journal outlet, country, and the theories and methodologies used. More than half of the included studies were published after 2020, which further emphasizes the need for a revised review. Most of the studies were published in journal outlets specializing in entrepreneurship and management and originate from the United States and Europe. The authors draw primarily on the gender role congruity theory, homophily theory, and signaling theory to explain gender differences in equity financing and, with a few exceptions, exclusively use quantitative methods. We also show which different units of analysis the studies use to define women- or men-led ventures (e.g., gender of the entrepreneur, founder, or CEO), as well as various approaches to operationalize the entrepreneur's gender (e.g., individual level, team level). The comparative analysis between the financing forms implies that gender differences in funding outcomes vary in traditional equity financing versus equity crowdfunding. While most studies show a clear advantage for men-led ventures in raising venture and angel capital, women-led ventures perform better in equity crowdfunding. The studies reveal multiple mechanisms for gender differences in funding outcomes, which we organize into clearly definable dimensions using a thematic approach. Our review synthesizes the findings along these dimensions, which consist of entrepreneurs' characteristics (e.g., social capital, communication, and language) investors' characteristics (e.g., gender, investment experience), ventures' characteristics and strategies (e.g., industry, media presence) and contextual factors (e.g., geographic and cultural context, economic context). These mechanisms are rooted in gender stereotypes, which cause investors to be biased mainly towards female entrepreneurs, and in entrepreneurs' decisions related to their ventures. We use these findings to derive strategic recommendations for investors and female entrepreneurs on mitigating gender differences in funding outcomes.

Our contribution to entrepreneurship research and specifically to entrepreneurial equity financing and gender is threefold. First, we summarize the current state of research and emphasize the mechanisms of gender differences in the predominant forms of equity financing (e.g., Geiger, 2020; Guzman & Kacperczyk, 2019). We give more nuanced insights into how these mechanisms interact and whether they benefit or harm female or male entrepreneurs in raising capital. Our review extends prior research by providing potential explanations for inconsistent findings related to mechanisms and by proposing future research directions to address these discrepancies. We also suggest examining further mechanisms that may reveal gender differences in equity financing. Second, we shed light on the extent to which gender differences are consistent in traditional equity financing and equity crowdfunding (e.g., Geiger, 2020). Our study thus also contributes to the call for research on whether equity crowdfunding can reduce the gender funding gap (Butticè & Vismara, 2022). Our review shows that, compared to traditional investors, crowd investors either have no gender preferences or are even more likely to invest in female entrepreneurs than in male entrepreneurs. Although this does not compensate for the disadvantage for female entrepreneurs in traditional equity financing, our review suggests that equity crowdfunding promotes the inclusion of female entrepreneurs in entrepreneurial equity financing.² Third, we provide a future research agenda that goes beyond the mechanisms and forms of equity financing. This agenda includes theoretical and methodological implications that can improve our fundamental understanding of gender differences in equity financing. More broadly, our review could also advance entrepreneurship research that examines not only the role of the entrepreneur's gender for investors, but also for other key resource providers, such as employees or customers, in the entrepreneurial ecosystem (cf. Brush et al., 2019; Tonoyan & Strohmeier, 2021).

² This is in contrast to Geiger's review (2020), which shows that female entrepreneurs have no advantage in raising capital through equity crowdfunding compared to traditional financing (including debt and equity).

2 Methodology

A systematic literature review is well suited to our study purpose as such reviews are useful for mapping a research area, synthesizing the current state of knowledge, and developing an agenda for future research (Petticrew & Robertson, 2006; Snyder, 2019). For our review, we adopted the five-step approach of Denyer and Tranfield (2009). These steps consist of scoping the review, developing a search strategy, selecting and evaluating studies, analyzing and synthesizing studies, and reporting the findings. We prepared a review protocol that describes each step to ensure a transparent and reproducible process (see Appendix 1).

The scope of our review captures the intersection of equity financing, entrepreneurship, and gender. To come familiar with and define these concepts, we identified existing literature reviews (see Appendix 2) and further key studies related to our research subject. The literature on entrepreneurial equity financing predominantly focuses on venture capital (including corporate and governmental venture capital), angel investment, equity crowdfunding, and equity accelerators (Colombo et al., 2016; Drover et al., 2017; Wallmeroth et al., 2018). Although these forms differ regarding certain funding characteristics, such as the amount of investment or strategic objectives, in all of them, investors provide capital in exchange for company shares (Drover et al., 2017; van Osnabrugge, 2000). In addition, they are the most important source of capital for young companies that drive innovation and development (Drover et al., 2017). Therefore, our review includes venture capital and business angel investments as traditional sources as well as equity crowdfunding and equity accelerators as alternative sources of entrepreneurial equity financing (cf. Geiger, 2020). As research on equity finance emphasizes growth-oriented and high-tech start-ups (e.g., Coleman et al., 2016; Hogan et al., 2017; van Osnabrugge, 2000), our understanding of entrepreneurship excludes microenterprises, necessity entrepreneurship, sole proprietorships, and similar concepts. Regarding an entrepreneur's gender, we use the common definition, which describes the biological sex of the person and refers to women (female) and men (male) entrepreneurs (Geiger, 2020;

Kanze et al., 2018).³ This led to the following search string: (“investment*” OR “invest” OR “investor*” OR “fund*” OR “equity financ*” OR “equity” OR “accelerator*” OR “angel*” OR “crowdfund*” OR “venture capital*”) AND (“entrepreneur*” OR “early stage business*” OR “early-stage business*” OR “small business*” OR “small and medium business*” OR “small and medium enterprise*” OR “startup*” OR “start-up*” OR “venture*”) AND (“gender*” OR “sex” OR “male*” OR “female*” OR “man” OR “men” OR “woman” OR “women”).

We used the electronic databases EBSCO, Scopus, and Web of Science for our literature search (cf. Serwaah & Shneor, 2021; Villaseca et al., 2021). This search was limited to the research disciplines of management, finance, psychology, and information systems to ensure a focus on our research subject. Moreover, we only included English-language publications and, for quality reasons, peer-reviewed articles (i.e., books, book chapters, working papers, conference proceedings, dissertations, and news articles were not included). We considered all publication years of the studies since the search date of June 5, 2024. We identified 1,017 articles on EBSCO, 1,418 on Scopus, and 853 on Web of Science. After eliminating 1,006 duplicates, we considered a total of 2,288 unique articles for further screening (see Fig. 1).

All authors screened these articles separately and individually in a three-stage process using specific exclusion criteria to filter out irrelevant articles that did not correspond to our research topic. In the first stage, we screened each article based on its titles and keywords. We excluded 1,927 articles that clearly did not address gender and financing or focus on financing types such as debt (loan and credit), micro-finance, initial public offering, initial coin offering, bootstrapping, and internal equity.⁴ In the second stage, we read the abstracts of the 355 articles and excluded those that did not examine the impact of

³ We are aware that feminist theory distinguishes between gender and biological sex and defines gender as socially constructed sex, i.e., as “social practices and representations associated with femininity or masculinity” (Ahl, 2006, p. 596). However, both terms are widely used interchangeably in the entrepreneurship literature (Ahl, 2006; Balachandra et al., 2019).

⁴ Further information on initial coin offerings is provided in the section on limitations.

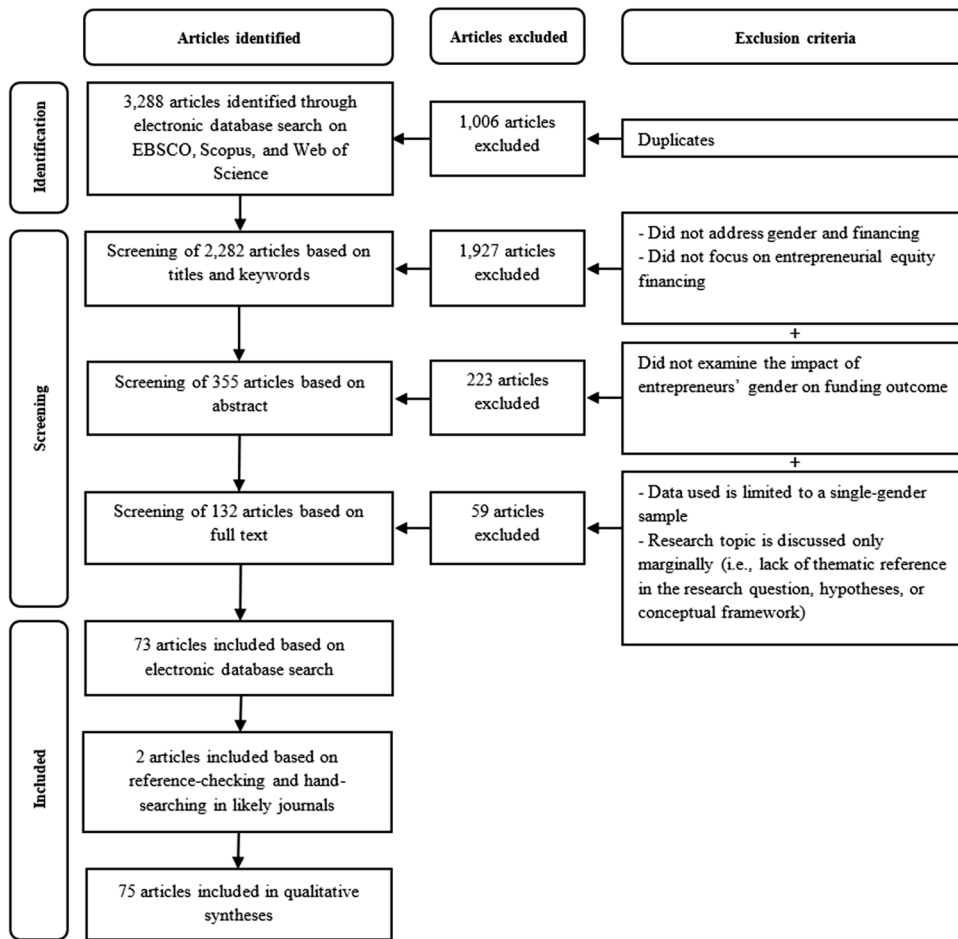


Fig. 1 PRISMA Flowchart (based on Moher et al., 2009). The flowchart describes our search and screening strategy, including the exclusion criteria for each screening stage (1. screening of titles and keywords; 2. screening of abstracts; 3. screening

of full text). We included 75 articles in our qualitative synthesis based on the electronic database search (73 articles) and based on reference-checking and hand-searching in relevant journals (two articles)

the entrepreneur's gender on the investment decision (e.g., willingness to invest, amount of funding provided, evaluation of the investment opportunity). In the final phase, we thoroughly read the full text of the remaining 132 articles to understand the research objectives, results, and theoretical and practical implications. We excluded articles that used a single-gender sample (i.e., consisting of either female or male entrepreneurs), as these did not allow rigorous conclusions to be drawn regarding gender differences. Furthermore, we did not consider articles that only marginally discussed our research topic (i.e., studies with a lack of thematic reference in the research question, hypotheses, or conceptual framework). The exclusion criteria defined in the first

and second stages were also used in the final stage, unless the article had already been filtered out. After each stage, we compared the excluded and included articles and reached a consensus in the case of divergent results. For example, Alsos et al. (2006) have examined gender differences in perceptions and behaviors in access to finance and their relationship to the actual funding received. Although the study refers to equity financing, a deeper reading revealed that we could not clearly distinguish between the results of debt and equity financing, as the authors chose a common dependent variable for both types of financing. Therefore, we decided to exclude this study. We identified 73 eligible articles based on our electronic database search.

Table 1 Distribution of studies across journals outlets

Journal	Num- ber of articles	Total (%)
<i>Small Business Economics</i>	7	9.33
<i>Entrepreneurship Theory and Practice</i>	6	8.01
<i>Journal of Business Venturing Insights</i>	6	8.01
<i>Journal of Business Venturing</i>	4	5.33
<i>Venture Capital</i>	4	5.33
<i>Academy of Management Journal</i>	3	4.01
<i>Journal of Small Business Management</i>	3	4.01
<i>Research Policy</i>	2	2.67
<i>Management Science</i>	2	2.67
<i>Journal of Social Entrepreneurship</i>	2	2.67
<i>Journal of Business Ethics</i>	2	2.67
<i>Entrepreneurship Research Journal</i>	2	2.67
<i>International Journal of Gender and Entrepreneurship</i>	2	2.67
Other*	30	40.00

*Includes all journals with only one article in our sample

We completed our literature search by reference-checking and hand-searching in relevant journal outlets to identify further articles (cf. Geiger, 2020; Serwaah, 2022). For the reference-checking, we reviewed the reference lists of the eligible articles retrieved from our electronic database search. To conduct the hand-searching, we focused on the top three journals that most frequently published relevant articles: *Small Business Economics*, *Entrepreneurship Theory and Practice*, and *Journal of Business Venturing Insights* (25% of our sample; see Table 1). We used the electronic databases of the three journal outlets and searched for articles using the terms “gender,” “equity,” and “financing”. We identified two eligible articles based on our additional literature search, resulting in a final sample of 75 articles for our qualitative synthesis.

All authors separately collected the bibliographic information (authors, year of publication, title, journal outlet), research question and aim, theoretical lens, investment type, methodology, country, data source and sample, and key findings of each study.⁵ To analyze and synthesize the findings, we adopted

a thematic approach (Braun & Clarke, 2006; Snyder, 2019) and aimed to identify patterns in the mechanisms of gender differences in equity financing. In the first step, we coded the mechanisms (i.e., boundary conditions) examined in each article. Second, we grouped them into categories based on thematic similarities and differences, and finally, we aggregated these categories into overarching thematic dimensions. Some articles examined different thematic mechanisms, which led us to map these articles into several categories and dimensions (e.g., Brush & Elam, 2023; Kleinert & Mochkabadi, 2022; Lins & Lutz, 2016). We reviewed each author’s coding and discussed cases of disagreement to clarify them.

In the following two chapters, we describe the findings of the reviewed studies. We provide a descriptive overview that illustrates the distribution of studies by year of publication, journal, country, theory applied, methodology, and the analysis technique used. We also outline how the authors conceptualized gender as a variable and provide a general overview of gender differences in equity financing. Thereafter, we present the mechanisms that lead to gender differences in entrepreneurial equity financing.

3 Descriptive overview of the research field

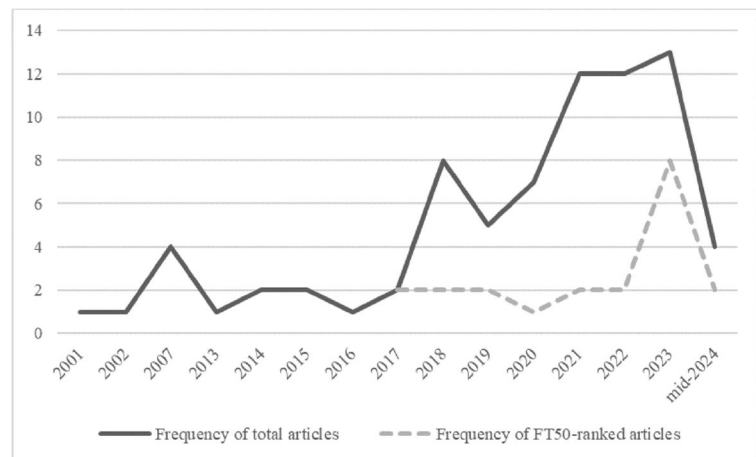
3.1 Distribution of articles across years, journal outlets, and continents

Our sample reflects the growing research interest in gender differences in equity financing between 2001 and mid-2024 (see Fig. 2). This trend is particularly evident from 2018 onwards, as the number of studies has increased considerably since then. Moreover, it is noteworthy that over half of all studies ($n=41$) were published between 2021 and mid-2024. A total of 23 articles was published in top-tier journal outlets listed in the *Financial Times Top 50* (FT 50) ranking.

The distribution of studies across journal outlets (Table 1) reveals that the research subject appears in a variety of journals that predominantly cover entrepreneurship (e.g., *Small Business Economics*, *Entrepreneurship Theory & Practice*, *Journal of Business Venturing*) and management (e.g., *Academy of Management Journal*, *Research Policy*, *Management Science*). Just over half (51%) of the studies come from the United States ($n=38$) and 27% from Europe,

⁵ The authors can provide the complete data extraction form upon request.

Fig. 2 Frequency of peer-reviewed publications over time (n = 75). Source: authors



specifically the United Kingdom (n=6), Sweden (n=4), Germany (n=3), Italy (n=2), Norway (n=2), France (n=1), and more than one European country (n=2). In contrast, studies from Asia, including China (n=2) and India (n=1), as well as South America (n=3) are less represented.⁶ Ten studies used data from countries located on different continents, such as the United States and Germany (Liao et al., 2023) or Indonesia and Denmark (Lueg & Ni, 2020).

3.2 Theories and research methods

Table 2 shows that research draws on a variety of theories to explain gender differences in equity financing. Most studies apply the gender role congruity theory (n=15), homophily theory (n=13), or signaling theory (n=8). Further prominent theories are related to socialization, social categorization, social role, and social identity (n=5), as well as discrimination theories (n=4) and stereotype theory (n=3). Fourteen studies apply multiple theories, and of those, nine use a combination with either gender role congruity theory or homophily theory. Except for the studies by Becker-Blease and Sohl (2007) and Vogel et al. (2014), these were published within the last six years, indicating that more recent research is interested in

how the (in-)congruent behavior of entrepreneurs and investor–entrepreneur similarity patterns influence funding outcomes. Twenty-two studies did not cite a specific theory (e.g., Gicheva & Link, 2015; Pistilli et al., 2023).

As outlined in Table 3, most studies used quantitative methods (83%), followed by mixed methods (13%) and qualitative methods (4%). Research predominantly draws on observational data, which includes reports on venture deals (e.g., PitchBook, Crunchbase), campaigns from equity crowdfunding platforms (e.g., Crowdcube, WiSeed), pitch videos (e.g., from pitch competitions or television shows such as *Shark Tank*), and observations of investor discussions when evaluating investment opportunities. Some studies collected data through experiments and surveys aimed at entrepreneurs, individual investors and investor groups (e.g., angel syndicates), and potential crowd investors. The authors mainly used descriptive statistics and mean differences (e.g., ANOVA, Chi-square, t-test) and regression (e.g., logistic, negative binomial, OLS, Poisson, Tobit, two-stage least squares) as analysis techniques. In comparison, other studies used less frequent (semi-structured) interviews and corresponding analysis techniques such as content, discourse, or repertoire analysis (e.g., Karlstrøm et al., 2023).

⁶ The three studies from South America use data from more than one country, including Brazil, Chile, and Mexico.

Table 2 Theories

Theory	Number of articles	Total (%)
Studies without a cited theory	22	29.33
Studies with a cited theory	53	70.67
Gender role congruity theory	15	28.30
Homophily theory	13	24.53
Signaling theory	8	15.09
Socialization/social categorization/social role/ social identity theory	5	9.43
Discrimination theory (statistical/taste-based discrimination, discrimination hypothesis)	4	7.55
Stereotype theory/stereotype content model	3	5.66
Feminist theory	2	3.77
Lack-of-fit theory	2	3.77
Regulatory focus theory	2	3.77
Warm glow theory	2	3.77
Ambivalent sexism theory	1	1.89
Construal level theory	1	1.89
Discounting theory	1	1.89
Discourse theory	1	1.89
Human capital theory	1	1.89
Information processing theory	1	1.89
Legitimacy theory	1	1.89
Organizational sponsorship theory	1	1.89
Personal construct theory	1	1.89
Structuralist constructivist perspective	1	1.89
Structuration theory	1	1.89
Upper echelons theory	1	1.89

Note. Multiple counting possible. The percentages for each theory refer to the total number of studies that cited a theory (n=53)

3.3 Conceptualization and operationalization of entrepreneurs' gender

Our sample reveals that the authors define women- or men-led ventures using different units of analysis. Most studies used the gender of the “entrepreneur(s)” or “founder(s)” to classify a company as a women- or men-led venture (n=47; e.g., Brooks et al., 2014). Some studies concentrate on the gender of “(founding) CEO(s)” (n=18; e.g., Ewens & Townsend, 2020), “owner(s)” (n=9; e.g., Gicheva & Link, 2015), “manager(s),” “director(s),” or “board member(s)” (n=6; e.g., Andrieu et al., 2021), or a combination of several units of analysis.⁷ Furthermore, the

studies operationalized the gender variable on different levels. We identified three groups: (1) *gender on the individual level*, where only individual entrepreneurs and no teams were included in the sample (n=43; e.g., Johnson et al., 2018); (2) *gender on the team level (including gender-mixed teams)*, where the sample consists of individual entrepreneurs and teams but does not differentiate between all-female teams, and teams with at least one female member (n=23; e.g., Nigam et al., 2022). These studies used a binary measure to operationalize the team's gender, with value one indicating teams with at least one female team member and zero for all-male teams. The last group is (3) *gender on the team level (excluding or separating mixed-gender teams)*, where the sample included individual entrepreneurs and teams, but the sample either excluded mixed-gender teams or differentiated all-female (male) teams from gender-mixed teams (n=22; e.g., Prokop & Wang, 2022). In the

⁷ As we did not find any major differences between these units of analysis in the results, and for the sake of simplicity in the synthesis, we refer mainly to women (men)-led ventures or female (male) entrepreneurs in our literature review.

Table 3 Research methods

Methodology	Number of articles	Total (%)
Research design		
Quantitative	62	82.67
Qualitative	3	4.00
Mixed methods	10	13.33
Data collection method*		
Quantitative		
Observation	61	81.33
Experiment	13	17.33
Survey	8	10.67
Qualitative		
(Semi-structured) interviews	7	9.33
Observation	6	8.00
Survey	1	1.33
Analysis technique*		
Quantitative		
Regression	58	77.33
Descriptive statistics and mean differences	15	20.00
Structural equations	3	4.00
Path analysis	1	1.33
Principal component analysis	1	1.33
Cluster analysis	1	1.33
Qualitative		
Content/discourse analysis	10	13.33
Cognitive mapping/repertory grid analysis	3	4.00
Case study	1	1.33
Fuzzy-set QCA	1	1.33

*Multiple counting possible because mixed-methods studies are included

latter case, these studies used continuous variables that indicated the number of female team members or a percentage rate. Studies could be double counted, as some used at least two of these operationalization categories ($n = 11$).

3.4 General overview of gender differences in equity financing

Of the studies considered, 76% examine gender differences in traditional equity financing, with 27 focusing on venture capital (including four concerning governmental venture capital), 11 on business angel investment, and 19 on more than one traditional

equity financing form or equity financing in general. Most of these studies demonstrate that traditional equity investors have a lower evaluation of the investment potential of women-led ventures (e.g., Alsos & Ljunggren, 2017; Johansson et al., 2021; Malmström et al., 2017; Voitekane et al., 2019) and are less willing to provide capital compared to men-led ventures (e.g., Boulton et al., 2019; Brush et al., 2002; Huang et al., 2021; Liao et al., 2023). Based on one of the first large representative samples of venture capital-backed companies, Brush et al. (2018) found that all-male teams are four times more likely to receive financing than companies with even one woman on the team. If women-led ventures raise funds, the investment amount is below that of men-led ventures (e.g., Hao et al., 2024; Kanze et al., 2020; Schillo & Ebrahimi, 2022; Zhao et al., 2021a).

Almost a quarter of all studies ($n = 18$) examine gender differences in equity crowdfunding, and most conclude that female founders enjoy advantages compared to their male counterparts. Teams with women increase the interests of crowd investors in campaigns (e.g., Bapna & Ganco, 2021; Johnson et al., 2018), raise higher amounts of capital, and attract more funders (e.g., Barbi & Mattioli, 2019; Battaglia et al., 2021; Zhao et al., 2021b). De Crescenzo et al. (2020) have observed that campaigns that are not led by women fail disproportionately often (i.e., are less successful in reaching the target amount). However, two studies indicate that equity crowdfunding does not have the widely touted potential to close the gender funding gap for female entrepreneurs, as male entrepreneurs continue to receive more capital (Andrieu et al., 2021; Geiger & Oranburg, 2018).

Further, some authors demonstrate that traditional investors and crowd investors are more likely to support gender-diverse teams than all-female or all-male teams (Cicchello et al., 2021, 2022; Soleimani & Stauffer, 2022; Vogel et al., 2014). Only a few studies provide evidence that an entrepreneur's gender does not directly affect the investment decision, both for traditional equity financing (Balachandra et al., 2019, 2021; Brush & Elam, 2023; Harrison & Mason, 2007) and equity crowdfunding (Cumming et al., 2021; Giudici et al., 2020; Malaga et al., 2018).

Our sample does not include any studies related to corporate venture capital and equity accelerators. While some studies have examined gender differences in accelerator acceptance rates, their data does

not separate equity and non-equity accelerators (e.g., Ermilina et al., 2022; Yang et al., 2020).

4 Mechanisms of gender differences in entrepreneurial equity financing

We organized the mechanisms explaining gender differences in equity financing into four thematic dimensions (consisting of 17 categories): (1) entrepreneurs' characteristics, (2) investors' characteristics, (3) the ventures' characteristics and strategies, and (4) contextual factors. These mechanisms influence the relationship between the gender of the entrepreneur and the investment decisions, creating advantages or disadvantages for female or male entrepreneurs. To reflect the particularities and differences between traditional equity financing and equity crowdfunding, we present the thematic dimensions separately for both financing types. We conclude each dimension with a brief summary and recommendations for future research. Finally, we develop a methodological and theoretical future research agenda across dimensions and financing forms. Appendix 3 provides an overview of the studies reviewed and includes information on the research question and aim, research design, data and sample, funding outcome measure, and mechanisms analyzed. The overview consists of four tables that refer to studies on venture capital (Table 5), business angel investment (Table 6), more than one form of traditional equity financing or equity financing in general (Table 7), and equity crowdfunding (Table 8).

4.1 Entrepreneurs' characteristics

The first dimension describes how entrepreneurs' individual characteristics affect investors' investment decisions for women- and men-led ventures. We identified 16 studies, including one in equity crowdfunding, that examine various forms of *experience*, the level and type of *education* and *social capital*, the *communication and language* (e.g., abstract vs. concrete language), and the *physical appearance*

and *behavior* (e.g., physical attractiveness) of the entrepreneur.⁸

4.1.1 Traditional equity financing

Experience of the entrepreneur In one of the first studies in this field, Alsos and Ljunggren (2017) show that investors tend to evaluate female and male entrepreneurs based on characteristics that are more common in men, which leads to similar human and social capital characteristics being interpreted differently. In a case study, they found that venture capitalists valued a man's experience in the male-dominated petroleum industry more than a woman's experience in the female-dominated spa and fitness industry, even though both entrepreneurs pursued a business idea for a fitness and wellness center. Furthermore, Pistilli et al. (2023) have demonstrated that investors are less likely to fund female entrepreneurs who have failed at least once in their entrepreneurial careers. Investors appear to be more forgiving of poor business performance (Malmström et al., 2018) and tend to focus on future business potential when evaluating male entrepreneurs, while relying heavily on company history when evaluating female entrepreneurs (Johansson et al., 2021). In this regard, Johansson et al. (2021) have provided an explanation of the underlying logic of the gender role congruity theory in entrepreneurship, arguing that the evaluation of female entrepreneurs leads to a cognitive challenge for investors because they deviate from the stereotypical (male) entrepreneur.⁹

In contrast, research shows that the entrepreneurial experience (nascent vs. serial founder) does not have a different impact for female and male entrepreneurs when raising capital (Gicheva & Link, 2015; Nigam et al., 2022; Pistilli et al., 2023). This also holds true for the technological experience of the entrepreneur, as in cases concerning experience as a technical

⁸ *Experience* and *communication and language* appear twice in our categorization, one referring to those of the entrepreneur and the other to those of the investor (see chapter 4.2).

⁹ The gender role congruity theory is an extension of the gender role theory, which proposes that society holds socially consensual expectations about the typical attributes of women and men. Women are ascribed more communal characteristics (e.g., affectionate, helpful, and kind), while men are ascribed more agentic characteristics (e.g., assertive, aggressive, and ambitious; Eagly & Karau, 2002).

(software) engineer (Nigam et al., 2022) and technological capabilities in terms of patents (Lauto et al., 2022). However, Tinkler et al. (2015) have found that a technical background may ameliorate female entrepreneurs' perceived lack of aptitude, while such a background is not necessary for male entrepreneurs and even disadvantages them in terms of perceived leadership ability. We suggest that this divergent finding is due to the studies' different contexts. Tinkler et al. (2015) have focused exclusively on high-growth and high-tech entrepreneurship, where female entrepreneurs are even more underrepresented and where technical skills are critical to the viability of the venture.

Education of the entrepreneur Lins and Lutz (2016) have shown that female entrepreneurs with a university degree are at an even greater disadvantage in raising venture capital. They argue that women focus mainly on their degree, whereas men “might invest more time in extracurricular activities that help them build skills and networks useful for their entrepreneurial career” (p. 360). In contrast, Nigam et al. (2022) and Brush and Elam (2023) have demonstrated that a degree from a reputable educational institution can offset gender discounts for women-led ventures. In a similar context, studies confirm that female entrepreneurs benefit from participating in entrepreneurial education programs (Brush & Elam, 2023; Clayton, 2023; Dams et al., 2022). Dams et al. (2022) found that women-led ventures who have participated in an accelerator program increased their chances of equity financing by 14% to 30% compared to men-led ventures. Explanations for this positive relationship might be that women respond more strongly to “individual role modeling and coaching” (Clayton, 2023) and that investors value participation in such programs as a signal of venture quality (Brush & Elam, 2023).

Social capital of the entrepreneur Research shows that entrepreneurs' social relationships lead to a higher perceived legitimacy and funding success. Specifically, women-led ventures seem to benefit from close social ties to investors (Tinkler et al., 2015), expert capital (i.e., social capital from expert mentors; Murphy et al., 2007), and social capital from additional team members (Hohl et al., 2021).

In comparison, investors do not seem to apply double standards in terms of the number of connections on social media (Nigam et al., 2022) and social relationships with “other people” (Murphy et al., 2007, p. 133). Furthermore, Howell and Nanda (2023) have used data from a startup pitch competition to show that incidental exposure to venture capitalists in the panel does not influence the likelihood of female entrepreneurs (compared to male) founding a venture capital-backed start-up. The authors assume that female entrepreneurs are less proactive in networking with venture capitalists than male entrepreneurs. Based on these findings, we conclude that female entrepreneurs benefit from their social capital only if they have established close relationships with individuals who play a critical role in the success of the venture and provide legitimacy.

Communication and language of the entrepreneur Huang et al. (2021) have found that female entrepreneurs tend to use more concrete language when describing their business idea compared to their male peers. Investors use communicative abstraction as an indicator of the long-term growth and scalability of an entrepreneurial opportunity and are more willing to invest in business ideas that are abstract rather than concretely framed. Nevertheless, the results also indicate that the entrepreneur's gender has a different impact on investor perceptions and penalizes women more than men. First, how male entrepreneurs communicate their business ideas (i.e., the degree of abstractness) does not seem to matter significantly for investors' perceptions of long-term growth. Second, male entrepreneurs are rewarded more for the perception of long-term growth, as it has a stronger influence on investment likelihood. In contrast, Balachandra et al. (2021) have shown that entrepreneurs do not adapt their language style in line with their gender, as women and men employed feminine and masculine linguistic styles to the same extent. Venture capitalists did not prefer entrepreneurs who consistently used a masculine linguistic style or penalize entrepreneurs who used a feminine linguistic style. As opposed to the role congruity theory, entrepreneurs' use of language that contradicted their gender did not affect investors' evaluations, either. Overall, the results suggest that venture capitalists are less biased toward gender-specific language and even prefer gender-neutral language with an inspirational focus.

Physical appearance and displayed behavior of the entrepreneur Brooks et al. (2014) have demonstrated that investors prefer pitches from male entrepreneurs, particularly from physically attractive ones. Physical attractiveness strengthens the persuasiveness of men, whereas it does not matter for women. Balachandra et al. (2019) have found that venture capitalists are not biased against biological sex, but rather against gender-stereotyped behaviors. Investors evaluated pitches from both women and men less favorably when they displayed female-stereotyped behaviors (e.g., warmth, sensitiveness). They negatively associated such behaviors with competence due to incongruence between female-stereotyped behaviors and the male environment in entrepreneurship.

4.1.2 Equity crowdfunding

Experience of the entrepreneur Kleinert and Mochkabadi (2022) have examined how signaling the entrepreneurs' management experience influences funding success for technology projects on the UK platform Crowdcube. Management experience increased the number of investors and the funding amount, while female entrepreneurs received less funding compared to those who did not signal management experience. These findings are consistent with research on gender stereotypes that rank management as a male-dominated profession and that consider related leadership abilities to be typically masculine traits (Bem, 1974).

4.1.3 Summary and future research

The literature in this dimension suggests that certain human and social capital characteristics of entrepreneurs have a different importance for women and men and can either reinforce or mitigate gender differences in funding outcomes. On the one hand, we can observe that female entrepreneurs can benefit (even more than their male counterparts) from participation in entrepreneurial education programs, attending an elite university, and close social relationships with resource providers, as investors perceive these characteristics as a signal of legitimacy. On the other hand, the studies also indicate that female entrepreneurs can only compete on an equal playing field with male entrepreneurs through these additional endeavors.

Research in similar fields shows that human and social capital characteristics are not always associated with legitimacy and capability and can also have a negative effect on success. For example, Galperin et al. (2019) have found that hiring managers disadvantage applicants with high capabilities because they do not trust them to be fully committed to the company, as their skills offer them a variety of opportunities for self-realization outside the company. As achieving legitimacy signals (e.g., leadership experience, PhD degrees) is time consuming and costly, future research should investigate which human and social characteristics can help female entrepreneurs reduce barriers in access to equity financing.

The literature also suggests that the relevance of human capital characteristics appears to be contextual (e.g., a technical background in a high-tech vs. non-high-tech entrepreneurship). It seems that women operating ventures in a male-dominated environment need to demonstrate more context relevant education and experience than men to reduce a perceived mismatch between their gender and the context (cf. Tinkler et al., 2015). The qualitative case study by Alsos and Ljunggren (2017) hints that this is not necessarily the case for men who start businesses in a female-dominated environment. We recommend a quantitative study investigating whether context-relevant education and experience can positively impact investment decisions for entrepreneurs who operate in gender incongruent environments.

We suggest that research would benefit from studies that examine whether the identified mechanisms in traditional equity financing can also explain gender differences in equity crowdfunding. The crowdfunding literature highlights that social networks, communities, and third parties are important investment decision-making factors and are even used as a proxy for perceived quality and financial risks (Hoegen et al., 2017). Future studies could examine whether female and male entrepreneurs benefit equally from social capital (e.g., social ties to lead investors, expert capital) or whether it can even provide an additional advantage for women. Furthermore, research shows that the communication strategy of campaigns impacts the crowdfunding performance (Anglin et al., 2018a; Tafesse, 2021). Future studies could examine whether female and male entrepreneurs also use different communication and language styles (e.g., concrete vs. abstract language) in

their campaigns and whether these have an influence on the funding success.

4.2 Investors' characteristics

The second dimension describes how investors' individual characteristics affect their investment decisions for women- and men-led ventures. We identified 24 studies, five of which concern equity crowdfunding, that investigate the influence of the investor's *gender*, *investment experience*, *attitudes and beliefs* (e.g., political ideology), and *communication and language* (e.g., type of questions asked).

4.2.1 Traditional equity financing

Gender of the investor Most studies in this category demonstrate that both female (male) business angels and venture capitalists prefer to invest in women- (men-)led ventures (e.g., Butticiè et al., 2023; Chen et al., 2023; Ewens & Townsend, 2020; Hohl et al., 2021; Karlstrøm et al., 2023). Using a large sample with 17,780 startups, Ewens and Townsend (2020) observed that male investors are more likely to support male entrepreneurs than comparable female entrepreneurs. The results do not appear to be driven by gender differences in startup quality, industry focus, communication costs, or risk. The same female entrepreneurs were more successful in attracting female investors, although the evidence of gender bias was generally weaker.¹⁰ Similarly, Butticiè et al. (2023) have shown that venture capitalists have homophilic preferences, especially women, as the likelihood of investing is higher when both venture capital managers and entrepreneurs are female. Most authors draw on the homophily theory, which states that social ties are more likely to occur when individuals share certain characteristics, as this facilitates coordination, reduces misunderstandings, and creates more trust between individuals (Ertug et al., 2022; Lazarsfeld & Merton, 1954; McPherson et al., 2001).

Some studies have already proven moderating effects of gender homophily. Male investors are even

more attracted to men-led ventures if they are affiliated with an incubator, have achieved a certain level of traction regarding users or revenue, or seek high amounts of capital. In comparison, male investors are less likely to disadvantage women-owned ventures that seek lower amounts of capital or operate in female-centric industries (Ewens & Townsend, 2020). Female investors are likewise more attracted to women-led ventures if they operate in sectors where women are overrepresented, such as beauty, health, children, or fashion (Jetter & Stockley, 2023).

Scholars have proposed different explanations for why female investors prefer to invest in female entrepreneurs. Beyond the desire to generate financial returns, female investors are motivated to support female entrepreneurs in growing their businesses (Sohl & Hill, 2007). This phenomenon is also evident on the demand side, as female entrepreneurs tend to more seek capital and accept investment offers from female investors (Becker-Blease & Sohl, 2011; Boulton, et al., 2019). Moreover, female investors' preference for female entrepreneurs could be viewed as an attempt to offset the potential gender bias of male investors (Butticiè et al., 2023; Ewens & Townsend, 2020; Karlstrøm et al., 2023).

In contrast, some studies provide limited or no evidence for the effect of gender homophily (e.g., Hao et al., 2024; Sohl & Hill, 2007). Becker-Blease and Sohl (2007) have shown that business angel groups with a high proportion of female (male) investors were more likely to invest in female (male) entrepreneurs in only three of the five years analyzed. Although Bellucci et al. (2024) also found no significant effect, they observed that male business angels are 20% less willing to allocate larger investments (a larger-than-median amount of financing) to women-led ventures and that this bias does not hold for female business angels towards men-led ventures. Two studies have even shown that female venture capitalists are less inclined to support female entrepreneurs. Using a panel dataset of U.S.-based venture capital investments from 2008 to 2016, Xu et al. (2024) have demonstrated that a higher proportion of female senior venture capitalists in venture capital firms' decision-making groups is negatively associated with the funding of women-led companies. The authors argue that when women are in the majority in the decision-making group, they may become concerned about the legitimacy of the firm in the investor

¹⁰ Ewens and Townsend (2020) have argued that this result lacks significance because there are fewer female investors in the sample than male investors.

community and, as a response, adapt to the norms and practices that men prefer. However, they also point out that this unfavorable effect can be mitigated by a larger number of experienced venture capitalists with a politically neutral identity and members with more shared prior employment affiliations in the decision-making group. Voitkane et al. (2019) have likewise noted that female venture capitalists evaluate female entrepreneurs more critically (i.e., rate them with a lower investment potential). They suggest that, in a male-dominated environment, women can become “queen bees” (p. 6) who perceive women’s businesses as less competent than those of men.

Experience of the investor Studies provide evidence that a gender bias may diminish when investors have greater investment experience (Chen et al., 2023; Ewens & Townsend, 2020; Kanze et al., 2020). Consistent with theories of statistical discrimination, these investors rely less on gender stereotypes when evaluating ventures (Guzman & Kacperczyk, 2019).¹¹

Attitude and beliefs of the investor Using data from the Center for Responsive Politics, Chen et al. (2023) have demonstrated that politically conservative business angels have a lower proportion of investments in women-led ventures in their portfolios than politically liberal business angels. When they invest in women-led ventures, they prefer ventures with a higher proportion of male co-founders operating in female-dominated industries. Contrary to expectations, Nguyen et al. (2023) have found that benevolent sexism (i.e., subtle prejudices towards women and men) does not have a significant negative impact

on the valuation of women-led ventures.¹² In fact, the study found that both female and male proponents of benevolent sexism attribute higher venture viability and allocate more funding to men-led ventures. The authors argue that the additional benefit for male entrepreneurs indirectly puts female entrepreneurs at a disadvantage.

Communication and language of the investor

Malmström et al. (2017) have shown that investors use gender stereotypical narratives when evaluating entrepreneurs’ investment opportunities. Venture capitalists predominantly used communal attributes for women and agentic attributes for men, which led to underestimating the entrepreneurial potential of women and emphasizing that of men (cf. Karlström et al., 2023). Furthermore, Kanze et al. (2018) have observed that venture capitalists tend to ask women prevention-oriented questions and men promotion-oriented questions during question-and-answer sessions, and entrepreneurs respond with a corresponding regulatory focus. This difference in regulatory focus led to variations in funding amounts, as entrepreneurs who were asked mostly promotion-oriented questions raised over seven times more funding. Malmström et al. (2020) have extended these findings and suggested that it is not only the entrepreneur’s gender, but also their gender’s interaction with the entrepreneurial attitude (e.g., innovation, autonomy, risk-taking) that influences the type of questions. The results reveal that investors tend to ask men who signal an entrepreneurial attitude more promotion-oriented questions. In contrast, both female entrepreneurs with an entrepreneurial attitude and male entrepreneurs with a low entrepreneurial attitude are asked more prevention-oriented questions. These findings illustrate that female and male entrepreneurs may experience discrimination due to gender role incongruity. Based on 9,594 Chinese entrepreneur-investor interactions, Hao et al. (2024) also found that male venture capitalists ask female entrepreneurs more prevention-oriented questions and longer questions in pitches, which has a negative impact on the funding success.

Two further studies that draw on data from pitch narratives demonstrate that business angels do not respond to female teams with more negative comments (Edelman et al., 2018; Khurana & Lee, 2023).

¹¹ The theory of statistical discrimination states that, in the absence of information about an individual, decision-makers rely on statistical information from the respective group of individuals (i.e., group averages) to attribute, for example, skills or performance.

¹² Benevolent sexism, in comparison to hostile sexism, refers to evaluations of gender that seem subjectively positive but in reality can also lead to gender inequality (e.g., through the idea that women are delicate by nature and men should protect them; Glick & Fiske, 1996; Nguyen et al., 2023).

Khurana and Lee (2023) have observed that male (not female) investors react significantly more positively to teams with female entrepreneurs compared to teams with male entrepreneurs. Despite this result, male investors are less likely to invest in female teams, whereas female investors are more likely to provide capital to female teams. The authors suggest a psycholinguistic reason for the gap between reaction and investment likelihood.

4.2.2 Equity crowdfunding

Gender of the investor As with traditional equity financing, studies have examined the interaction between crowd investors' and entrepreneurs' gender on funding success (Bapna & Ganco, 2021; Cicchiello & Kazemikhasragh, 2022; Giudici et al., 2020; Venturelli et al., 2020). Cicchiello and Kazemikhasragh (2022) have investigated campaigns from Latin American crowdfunding platforms and showed that crowd investors are more likely to fund entrepreneurs who match their own gender. Despite this preference, male crowd investors seem to prefer mixed-gender teams rather than all-male teams. Studies with data from Anglo-American platforms also suggest that female crowd investors have homophilic preferences (Bapna & Ganco, 2021; Venturelli et al., 2020). However, Venturelli et al. (2020) have demonstrated that female crowd investors only prefer to invest in women-led ventures if they both belong to the same ethnic minority group (i.e., in this case, Asian, African, Latin American, and Arabic). Neglecting this boundary condition, female crowd investors prefer to support men-led ventures. A corresponding effect was not observed for male crowd investors. In contrast, Giudici et al. (2020) have found no evidence of a preference for one's own gender among more than 4,500 investor-entrepreneur dyads in the Italian market.

Experience of the investor Although Bapna and Ganco (2021) have found that female investors are inclined to support female entrepreneurs, this effect does not apply to female investors who have already funded crowdfunding projects in the past (i.e., who have investment experience). They attribute this

result to activist choice homophily (cf. Greenberg & Mollick, 2016), where inexperienced female investors are primarily motivated to support female entrepreneurs to help them overcome disadvantages and discrimination in the financial sector. This effect was not observed for male investors.

Attitude and beliefs of the investor Johnson et al. (2018) found that crowd investors perceive female entrepreneurs as more trustworthy than their male counterparts.¹³ This perception has a positive effect on willingness to fund women-led ventures, especially when investors are subject to strong implicit gender bias. This result reflects the social role theory, which states that men are ascribed more agency and women are attributed more communal traits (Eagly & Karau, 2002).

4.2.3 Summary and future research

The literature shows that certain investor characteristics, such as the use of different linguistic styles, can both amplify and mitigate gender differences in funding outcomes. Most studies demonstrate that both venture capitalists and business angels tend to favor entrepreneurs of their own gender. However, this effect seems to be less pronounced for decision-making groups and is even reversed. This may give rise to further investigation into why in particular female investors in decision-making groups are less willing to fund women-led ventures. Harrison et al. (2020) analyzed angel investment networks in the UK and concluded that female investors in mixed-gender networks rely less on the advice and guidance of other members than male investors. They showed the reverse for female investors in female-only networks that ask more questions, which leads to a lively exchange of ideas. Taken together, these findings challenge the argument that female investors in mixed-gender teams adapt to the norms and practices that men prefer (cf. Xu et al., 2024). Qualitative studies that shed light on the rationale and mechanisms behind the financing behavior of investment groups could provide deeper insights into this issue.

Furthermore, gender homophily seems to play a greater role in traditional equity financing than in equity crowdfunding. This could be related to the fact that business angels or venture capitalists enter

¹³ We only used the results from the authors' second follow-up study (an experiment that simulated an equity crowdfunding platform).

into a closer relationship with the entrepreneur than crowd investors. Research shows that communication and coordination between investors and entrepreneurs of the same gender can be facilitated and monitoring costs reduced (e.g., Hegde & Tumlinson, 2014). To isolate the effect of gender homophily, it would be worthwhile to investigate other similarity patterns besides gender or to focus on their interplay (cf. Ertug et al., 2018). These studies could provide a differentiated picture of the effect size of gender homophily (Venturelli et al., 2020). Especially deep similarities (=value homophily), such as gender-typed behavior, that go beyond purely demographic characteristics (=status homophily) would be interesting to investigate, as they elicit a stronger perception of relatedness (cf. Phillips et al., 2006).

Moreover, future research could investigate other investor characteristics that alleviate gender differences in funding outcomes, such as investors' social capital. Calder-Wang and Gompers (2021) have found that venture capitalists with daughters are more likely to hire female partners. This study indicates that the social environment of the investor could also have an influence on funding decisions. As this important factor is under-researched in our sample, we call for future studies to examine whether business angels and venture capitalists who have stronger social ties to women (e.g., through previous investments in women-led firms) are more likely to support female entrepreneurs.

The results also seem to indicate that crowd investors' stereotypical notions tend to provide an advantage for female entrepreneurs, while they provide a disadvantage for them in raising venture or angel capital (cf. Johnson et al., 2018 and Nguyen et al., 2023). Future research could shed further light on this contradiction. Since crowdfunding is characterized by high information asymmetries, and crowd investors tend to be less sophisticated than traditional investors, they may seek entrepreneurs who are supposedly more trustworthy. Future research could complement the work of Johnson et al. (2018) and analyze whether other stereotypically female traits that counteract the uncertainties related to crowdfunding (e.g., risk-aversion, sensitivity for the needs of others; cf. Bem, 1974) mediate the relationship between an entrepreneur's gender and the investment decision.

4.3 Ventures' characteristics and strategy

The third dimension describes how the characteristics and strategies of women- and men-led ventures affect investors' investment decisions. This dimension refers to the venture's *industry, orientation, negotiation strategy, prior funding and shareholders*, and *media presence*. This dimension seems to be of great interest to scholars, as it was the subject of the highest number of articles, 24, including five on equity crowdfunding.

4.3.1 Traditional equity financing

Industry of the venture One stream of research suggests that the industry choice of female entrepreneurs does not match the industry preference of capital providers (Greene et al., 2001; Lins & Lutz, 2016; Poczter & Shapsis, 2018). Lins and Lutz's (2016) analysis of the German market indicates that female entrepreneurs are inclined to start businesses out of necessity and may require less capital, as they found ventures primarily in the service sector with lower innovation and growth potential. Further, they observe that men found ventures mostly in high-tech industries, which require high investments in R&D but yield promising revenues. Poczter and Shapsis (2018) have also found that investors are equally likely to fund women- and men-led ventures, except when controlling for the moderating role of industry. A more recent comparative study of Schillo and Ebrahimi (2022) demonstrates that female participation in the *digital, biotechnology, and hardware* sectors is still low. Compared to teams in other sectors, teams with more women in digital startups are at a greater disadvantage when it comes to obtaining large amounts of venture capital funding.

Another stream of studies observes that investors base their investment decisions on the congruence between the entrepreneur's gender and the industry in which their venture operates (Kanze et al., 2020; Liao et al., 2023; Macchione et al., 2022). Kanze et al. (2020) attribute the gender funding gap to a lack-of-fit effect, where investors penalize female entrepreneurs operating in male-dominated industries with less capital at lower valuations because women are supposedly better suited to serve female-dominated industries. They underpin the signal effect of congruence for women, as investors reward women-led ventures

that act in female-dominated industries with significantly higher funding amounts, outperforming even male entrepreneurs. For men-led ventures, investors provide similar amounts of capital at similar valuations regardless of industry. Along the same lines, in experiments, Macchione et al. (2022) have proved that participants were more interested in investing in science, technology, engineering, and mathematics (STEM) than in non-STEM companies if the CEO was a man, and they were less interested in doing so when the CEO was a woman. Similarly, male CEOs experienced more disadvantages for their incongruence than female CEOs.

Orientation of the venture Based on the gender role congruity theory, two studies show that women who signal strong social value orientation (i.e., communal signal) to investors reduce the gender funding gap (Compion et al., 2022; Zhao et al., 2021a). Compion et al. (2022) have observed that women receive more funding for starting hybrid social ventures compared to for-profit ventures, while the opposite is true for men. Zhao et al. (2021a) conclude that the funding gap narrowed only because men receive less capital if they signal a strong social value orientation (the sample was restricted to social entrepreneurs only). In addition, women receive less funding with invention-based tech startups (Compion et al., 2022) and high R&D activity (Lins & Lutz, 2016). Lins and Lutz (2016) explain this finding in terms of structural inequalities, as women-led ventures generally have lower R&D activity compared to men-led ventures, which may lead investors to hold onto their conviction that women are not as capable of exploiting innovative potential. Their idea also corresponds to the findings of Compion et al. (2022), who have shown that female entrepreneurs can mitigate funding differences by having male co-founders.

Following the thesis that women start businesses in industries that investors perceive as less promising, Guzman and Kacperczyk (2019) have found that 65% of the gender funding gap is a result of women starting businesses that signal less growth orientation, while the remaining 35% is due to investors' gender preferences. Malmström et al. (2018) have found that investors are subject to the gendered notion that women are less likely to exploit business opportunities due to their risk aversion, whereas men are

perceived as more ambitious regarding growth. When female entrepreneurs signal their ventures' growth potential to investors and thus decrease perceptions of investment uncertainty, they can significantly reduce the gender funding gap (Guzman & Kacperczyk, 2019). Liao et al. (2023) have demonstrated that gender differences in equity financing may stem from investors not only considering their own funding preferences, but also the expected preferences of other investors (third-party bias), which is particularly pronounced when women-led ventures are novelty oriented. When women pitched novel ventures, investors deemed it a violation of venture norms, leading to unfavorable social approval forecasting and less financial support. This effect was even stronger for novel ventures in male-dominated sectors.

Negotiation strategy The literature identifies a clear pattern that female entrepreneurs tend to ask for less money from traditional capital providers (Becker-Blease & Sohl, 2007; Boulton et al., 2019; Hohl et al., 2021; Khurana & Lee, 2023; Lins & Lutz, 2016; Pocster & Shapsis, 2018). While this observation has remained constant over the past three decades, some results also indicate that female entrepreneurs do not have to give up more equity in return for capital than male entrepreneurs, controlling for the level, stage, and industry of the investment (Becker-Blease & Sohl, 2007). Furthermore, it seems that investors do not penalize women for higher company valuations (Pocster & Shapsis, 2018).

Prior funding and shareholders of the venture Under certain conditions, successful previous funding rounds, monetary awards, and existing shareholders serve as legitimizing factors that level out gender differences in equity financing. Gicheva and Link (2013) have focused on entrepreneurs who received research awards from the U.S. Small Business Innovation Research (SBIR) program and found that women were 16% points less likely to attract follow-on investments from private investors. This funding gap was reduced when female entrepreneurs received larger awards. Furthermore, funding seems to depend not only on whether other shareholders are involved in the company, but also on who they are. Lauto et al. (2020) have identified prior funding from parent universities and shareholders with high academic rank (full professors) as strong legitimacy

markers that improve financial resource acquisition for women-led academic spin-offs. Whereas experienced, non-academic shareholders had no influence, inexperienced non-academic shareholders actually widened gender differences in funding outcomes. Likewise, female CEOs who raised funds from high-status investors (i.e., venture capitalists ranked among the Top 100) boosted their funding success in subsequent funding rounds (Brush & Elam, 2023). In contrast, Snellman and Solal (2023) have emphasized that women have more challenges in raising additional capital from prospective investors when they are backed by female investors. They argue that potential investors implicitly believe that the relationship between female investors and entrepreneurs is not based on performance, but on gender preferences alone, leading to a stigma of incompetence.

Media presence of the venture A recent study analyzing Twitter and Crunchbase data (2007–2016) found that using and engaging with social media can mitigate gender differences in venture capital funding (Wang et al., 2023). The study provided evidence that women-led ventures benefit more than men-led ventures when using Twitter, especially if they are not part of the investor network. The authors argue that this finding is mainly caused by reduced information asymmetries about the product and the start-up's service quality.

4.3.2 Equity crowdfunding

Industry of the venture Malaga et al. (2018) have descriptively shown that female entrepreneurs are as successful as men or more successful in most industries (app software, digital media/new media, enterprise software and services). Exceptions include the real estate and gaming industries, where men raise more capital on average than women.

Negotiation strategy Particular attention has been paid to the funding target, which founders specify in their crowdfunding profiles. Malaga et al. (2018) have found that, on average, female entrepreneurs generally set lower funding targets (\$2.59 mn) than male entrepreneurs (\$4.49 mn). Of the campaigns that received funding, women-led ventures received 13% of their minimum goal, compared to 31% for

men-led ventures. Geiger and Oranburg (2018) have concluded that campaigns with a female signatory raise less funding as the target amount increases. Prokop and Wang (2022) have found no difference in the funding success of ventures with more female directors in initial campaigns. However, they revealed that ventures with female CEOs were less successful than their male counterparts in raising funds with seasoned equity crowdfunding offerings. If female entrepreneurs are promotion-focused and set higher funding targets, they can reduce this funding gap.

Prior funding and shareholders of the venture Using data from Chinese crowdfunding campaigns, Zhao et al. (2021b) have found that women are more likely to receive funding because they evoke the warm-glow effect among investors (the joy of helping other disadvantaged groups to achieve their goals). In particular, the presence of lead investors and their related credibility increases women's funding performance, although this effect is weaker for companies at a later stage of development, which the authors explain is the result of fewer information asymmetries.

Media presence of the venture Kleinert and Mochkabadi (2022) have shown that media coverage can considerably improve female entrepreneurs' funding success for their technology ventures. Indicating that the media has featured a venture in campaign profiles seems to increase investors' perceptions of trust and legitimacy. For male entrepreneurs, this effect applies only marginally. The authors explain their results by arguing that media coverage and the accompanying trust-building are a female-congruent signal.

4.3.3 Summary and future research

The literature in this dimension indicates that gender differences in equity financing are due to a combination of self-imposed barriers (i.e., women demanding lower funding amounts) and mismatched preferences for venture industry and orientation between investors and entrepreneurs. This creates a perpetual cycle—one that is particularly to the detriment of female entrepreneurs—as investors' industry preferences seem mutually exclusive with their desire for entrepreneurs to act in congruence with their gender

roles. Strong legitimacy signals, such as existing shareholders with rank and status, successful prior funding rounds, and media presence, have the potential to level out lower funding amounts for women in traditional investment settings.

A promising research avenue could be assessing whether gender-role congruity in several other attributes can offset incongruity related to venture characteristics in traditional investment settings. In this context, Bear and Babcock (2016, p. 2) have argued that “[t]here are two ways that congruity can be increased—by changing the perception of oneself or changing the perception of the situation.” Merluzzi and Phillips (2022) conducted a study related to early-career leadership advancement and found that analytically talented single women received worse evaluations for leadership promotions compared to married ones. This example demonstrates that a combination of *congruent attribute—incongruent attribute* (i.e., married—analytically talented) leads to a more beneficial result than the combination *incongruent attribute—incongruent attribute* (i.e., single—analytically talented), even for outcomes that may be perceived as incongruent (i.e., women with leadership promotions). Similarly, future research could investigate whether female entrepreneurs are more successful in receiving angel or venture capital for ventures operating in typically male industries (incongruent attribute) when they display more communal (i.e., congruent attribute) as opposed to agentic traits (incongruent attribute).

Furthermore, the literature indicates that female entrepreneurs are less successful in raising funds for invention-oriented and novel ventures than for social ventures. It would be worthwhile to conduct an experimental study to examine whether traditional investors are equally biased towards women running a commercial, high-growth, or social venture (cf. Gupta et al., 2018). We recommend using a conjoint analysis in which investors evaluate six different investment opportunities consisting of a woman- and a man-led commercial, growth-oriented, and social venture. The results would provide insights into the importance investors attach to each attribute (an entrepreneur’s gender and venture orientation) and the interaction of both attributes when making investment decisions (cf. Warnick et al., 2018).

We also encourage future research to analyze the value that crowd investors place on gender-role

congruence in relation to venture industry and orientation, as this remains largely unexplored. Research suggests that industry incongruence may be less relevant to crowd investors, as they have less relevant industry expertise than traditional investors and place a greater emphasis on criteria such as product features and team characteristics (Shafi, 2021).

Finally, we call for future research to analyze the underlying rationale for why female entrepreneurs set lower funding goals in both traditional financing and crowdfunding. Harrison et al. (2020) highlight the tendency of research to explain challenging access to finance through the ‘gender as a variable’ approach. This approach overlooks the role of wider social structures that give rise to specific behaviors, such as women seeking lower funding amounts. Stereotype threat theory (cf. Steele & Aronson, 1995), which posits that the negative stereotype activation of a minority group might lead to suboptimal outcomes in domains where the stereotype is relevant (Cadinu et al., 2005), could provide a possible structural explanation for this phenomenon.

Since entrepreneurship is perceived as a masculine domain (Ahl, 2006; Balachandra et al., 2019), female entrepreneurs may be sensitive to cues that indicate that their group is devalued in the investment context (cf. Harrison et al., 2020). For example, they may be influenced by press articles that emphasize that women are a numerical minority in entrepreneurship. Experimental studies in decision-making have demonstrated that stereotype threat activation results in decreased performance for women (Carr & Steele, 2010). Therefore, we propose that experimental studies in which female entrepreneurs are required to offer shares for equity investments (e.g., with a treatment group that is provided with an article stating that entrepreneurship is a male domain) could highlight whether stereotype threat activation leads to lower funding targets.

4.4 Contextual factors

The last dimension describes how contextual factors affect investors’ investment decisions for women- and men-led ventures. This dimension encompasses the *geographic and cultural context*, the *economic context*, and specific investment settings, such as *crowdfunding platform characteristics*. With six studies, two of which concerned equity crowdfunding,

this dimension has received the least attention from scholars.

4.4.1 *Traditional equity financing*

Geographic and cultural context Research provides preliminary evidence that region-specific factors shape investment decision-making. The comparative study of Lueg and Ni (2020) indicates that female entrepreneurs from Denmark are not disadvantaged in access to venture capital and business angel investments compared to male entrepreneurs, whereas female entrepreneurs from Indonesia are less likely to receive angel capital. Further, Astebro et al. (2022) have concluded that the negative impact of women-led ventures on receiving venture capital is mitigated when the sector and country in which the venture operates in is less male dominated. Moreover, Gicheva and Link (2015) have observed region-specific differences in funding success in the United States, as female entrepreneurs are especially disadvantaged in the West and Northeast. Taken together, the results point to a regional phenomenon in the form of differences in national and entrepreneurial culture that lead to gender differences in funding outcomes.

Economic context Yu et al. (2024) have found that investors were more willing to invest in female entrepreneurs after the global financial crisis, while they had a lower willingness to invest in female entrepreneurs after the COVID-19 crisis. Compared to the COVID-19 crisis, the global financial crisis has increased investors' risk aversion and their commitment to weakening masculine norms, which has reduced the perceived incongruence between the stereotypically female gender role and the stereotypically male entrepreneur role. The authors argue that the global financial crisis has led investors to favour risk-averse entrepreneurs—a characteristic that is more associated with the female gender stereotype—rather than entrepreneurs with the behaviours that are responsible for this crisis.

4.4.2 *Equity crowdfunding*

Geographic and cultural context In a cross-national study, Battaglia et al. (2021) have shown that female entrepreneurs attract more crowd investors

and achieve their funding target more easily than men. This effect is even stronger in countries with higher levels of masculinity, that is, those with low female labour force participation and greater gender inequality, which the authors explain with the warm glow effect.

Platform characteristics Rossi et al. (2021) have demonstrated that female entrepreneurs raise less capital than male entrepreneurs on the UK investor-led crowdfunding platform SyndicateRoom. In comparison, they found no gender differences in funding outcomes on the entrepreneur-led platforms Crowdcube and Seedrs. The authors conclude that these findings are due to the different investment models of the crowdfunding platforms. On investor-led platforms, as opposed to those that are entrepreneur led, fund-seekers must negotiate the investment terms with a lead investor (business angel or venture capitalist) before being listed online. The authors suggest that female entrepreneurs are less successful in these negotiations than male entrepreneurs, resulting in a lower target amount.

4.4.3 *Summary and future research*

Studies in this dimension indicate a paradox, in that gender inequality has a different influence on traditional investors' and crowd investors' funding decisions. Whereas traditional investors are more likely to support female entrepreneurs in countries with high gender equality, the opposite is true for crowd investors. However, further research is needed, as our review includes studies from countries with high gender equality, such as Norway and Sweden, which provide evidence of gender differences in traditional equity financing (e.g., Alsos & Ljunggren, 2017; Johansson et al., 2021; Malmström et al., 2017, 2018). We recommend conducting a cross-national study in the traditional investment context that examines the impact of a country's gender egalitarianism (e.g., McDaniel, 2008) or cultural masculinity (e.g., Hofstede, 2011) to deepen our knowledge on the role of gender equality.

In addition, scholarship has yet to explore how crowdfunding platforms, with their individual functionalities and listing policies, influence investors' funding decisions. The literature suggests

that a platform's features have a direct impact on how investors perceive a campaign (Hoegen et al., 2017). But we still lack a comprehensive understanding of the gatekeeper function of entrepreneur-led and investor-led platforms. The acceptance rate of equity crowdfunding platforms to list campaigns is relatively low and ranges between 1 and 10% (cf. Angerer et al., 2017; Kleinert et al., 2022). Since investor-led platforms have stricter approval policies, it would be crucial to investigate whether both platform types equally democratize the funding landscape.

4.5 Discussion across dimensions and financing forms

4.5.1 Future research agenda from a theoretical perspective

Our literature review suggests that the results in traditional equity financing and equity crowdfunding differ across various dimensions. While most studies show a clear advantage for men-led ventures in raising venture and angel capital, women-led ventures perform better in equity crowdfunding. However, there also seem to be differences within traditional forms of equity financing, as business angels tend to evaluate in a more gender-neutral manner compared to venture capitalists (e.g., Becker-Blease & Sohl, 2007; Bellucci et al., 2024; Boulton et al., 2019; Edelman et al., 2018; Harrison & Mason, 2007; Hohl et al., 2021). This assumption should be considered in relation to the number of business angel studies, as these are underrepresented compared to venture capital studies. We know from the literature, however, that the decision-making process and the importance of investment criteria of business angels and venture capitalists differ to some extent (e.g., business angels focus more on the entrepreneur and the "investor fit"), which could drive this result (Mason & Stark, 2004, p. 227; van Osnabrugge, 2000). For this reason, we propose a comparative study that investigates the role of an entrepreneur's gender in the investment decisions of business angels, venture capitalists, and equity crowd investors. This study could also include corporate venture capitalists and investors in equity accelerators, as we did not find any studies related to these financing forms. Following Mason and

Stark (2004), a verbal protocol analysis (real-time methodology) could be used to analyse whether these investor types evaluate investment opportunities of women and men differently. These findings could be used to provide recommendations to entrepreneurs, especially female entrepreneurs, concerning the type of equity financing they should prioritise when raising capital to increase their likelihood of funding.

Furthermore, the literature suggests that the role and impact of the entrepreneur's gender varies across investment decision-making phases (cf. Geiger, 2020). The investment decision is a multi-stage process that begins with the initial evaluation of the investment potential and ends with the funding allocation (cf. Mason & Stark, 2004; Maxwell et al., 2011). Several studies in the field of traditional equity financing have shown that investors pay less attention to the gender of the entrepreneur when assessing a company's potential or their willingness to invest (e.g., Balachandra et al., 2019, 2021; Boulton et al., 2019; Edelman et al., 2018; Hohl et al., 2021; Snellman & Solal, 2023; Tinkler et al., 2015). Some studies have even noted that, contrary to the general tenor that women are disadvantaged in traditional equity financing, male investors evaluate women-led ventures more positively (Hao et al., 2024; Howell & Nanda, 2023; Khurana & Lee, 2023; Voitkane et al., 2019). In comparison, studies that focus on funding allocation clearly show that men-led ventures enjoy advantages (e.g., Gicheva & Link, 2013; Hao et al., 2024; Lauto et al., 2020; Schillo & Ebrahimi, 2022). Since only two studies have examined the initial reaction or willingness to invest in equity crowdfunding (Bapna & Ganco, 2021; Johnson et al., 2018), we cannot draw any conclusions about the varying effect of the entrepreneur's gender. But Bapna and Ganco (2021) have also observed that male crowd investors signal interest in a company regardless of the entrepreneur's gender. Hao et al. (2024) have argued that investors may hide their gender preferences for low-stakes decisions but reveal their true preferences for high-stakes decisions that involve higher risk. This explanation marks an important first step in understanding different outcomes at different stages of the funding process, and we encourage scholars to further investigate the gap between the evaluation of the investment opportunity, the willingness to invest, and the funding allocation for female and male entrepreneurs.

Lastly, several studies have identified implicit gender bias rather than explicit discrimination against female entrepreneurs (e.g., Kanze et al., 2018; Khurana & Lee, 2023; Malmström et al., 2020). While it remains important to raise awareness about this issue, future research should refocus on how to overcome this bias among both investors and entrepreneurs through effective interventions (e.g., Brush & Elam, 2023; Kanze et al., 2018; Lauto et al., 2022).

4.5.2 Future research agenda from a methodological perspective

The vast majority of studies in our sample used a quantitative research design to analyse gender differences in funding outcomes. On the one hand, this provides an opportunity to conduct a revised meta-analysis (cf. Geiger, 2020) to empirically validate the assumptions on whether the presence of gender differences in funding outcomes varies across the different equity financing forms and contexts (i.e., investment decision-making phases). On the other hand, we encourage future research to conduct more qualitative or mixed-methods studies. For example, future studies could examine how investors' first-order and second-order beliefs (i.e., their personal beliefs vs. their beliefs about others' beliefs about female and male entrepreneurs) lead to gender differences in funding outcomes (cf. Tonoyan & Strohmeier, 2021). A study by Dustan et al. (2022) showed no different first-order beliefs related to whether men outscore women in a math task. Their analysis of second-order beliefs, however, revealed that 71% of study participants thought that men believe that men outperform women, and 34% thought that women believe that men outperform women. A similar case could address entrepreneurial equity financing when it comes to investors' first- and second-order beliefs. Although formerly persistent first-order beliefs about the performance of women- and men-led ventures (e.g., the female underperformance hypothesis; Brush & Elam, 2023) are changing, different second-order beliefs may still influence investment decisions, leading to different funding outcomes for men and women. To test this, future studies could use Dustan et al.'s (2022) incentive-compatible experimental framework to elicit investors' first- and second-order beliefs and use observational data from an investor

group (cf. Malmström et al., 2017, 2020) to analyse how first- and second-order beliefs manifest in those discussions and ultimately influence funding decisions.

We would also welcome more experimental (field) studies (cf. Bapna & Ganco, 2021; Snellman & Solal, 2023), as the results would improve our understanding of the mechanisms of gender differences in funding outcomes. For example, we know from the literature that women are perceived as less legitimate than men in leading new ventures (e.g., Alsos & Ljunggren, 2017; Edelman et al., 2018). We do not yet know whether different perceptions of legitimacy related to female and male entrepreneurs lead to different funding outcomes. Therefore, it would be worthwhile to explore whether investors' perceived legitimacy mediates the relationship between an entrepreneur's gender and the investment decision. Likewise, perceived ability to lead a venture could serve as another mediating variable, as we know from the literature on stereotypes that men are perceived as more competent than women (Eagly & Karau, 2002). Johnson et al. (2018) could not prove that crowd investors perceive men as more competent than women, which they attribute to the androgyny of the entrepreneurs presented in their experiment, which resulted from controlled gender manipulation that eliminated relevant stereotypically female and male characteristics.¹⁴ Research could take this learning into account in future experiments.

Moreover, the literature demonstrates that the gender bias manifests in different, subtle investor behaviors. Analysis of informal data, such as investors' notes during discussions with the entrepreneur, records of board meetings, and email correspondence between the investor and entrepreneur (cf. Alsos & Ljunggren, 2017), could help capture these subtle and not-directly-observable factors. It would be also promising to examine whether investors' cognitive processing and reactions differ when evaluating proposals or campaigns from women-led and men-led ventures (e.g., screening duration, focus on specific venture and entrepreneur characteristics). The use of eye-tracking techniques could

¹⁴ Androgyny refers to the possession or display of both feminine and masculine characteristics (Bem, 1974).

be helpful here; in crowdfunding research, they have already proven that generally unobservable constructs can be reliably measured (e.g., Butticiè et al., 2021).

Our review implies that gender differences in equity financing result from a combination of investors' gendered beliefs and entrepreneurs' decisions related to their ventures. Future studies should therefore consider variables that are associated with actual gender differences to better isolate gender bias and discrimination towards female entrepreneurs. We recommend including variables that control for the venture's industry, as it serves as a proxy for growth orientation, and the entrepreneur's funding target, as the literature reveals that differences in funding outcomes are partly driven by female entrepreneurs asking for less capital (e.g., Lins & Lutz, 2016; Malaga et al., 2018; Poczter & Shapsis, 2018).

Our study can also guide future research in how an entrepreneur's gender could be operationalized in quantitative studies. Twenty-three studies have defined an entrepreneurial team as female if at least one team member was a woman. Interestingly, three of seven studies that found that the gender of the entrepreneur did not affect funding outcomes operationalized gender at the team level, with mixed-gender teams being considered female (Cumming et al., 2021; Giudici et al., 2020; Malaga et al., 2018).¹⁵ We suggest viewing these results with caution, as these studies do not isolate the effect of all-male, all-female, and mixed-gender teams on funding outcomes. For example, most studies that analyze the role of gender homophily in investment decisions have found differences in funding outcomes to some extent. However, two equity crowdfunding studies that did not differentiate between female and mixed-gender teams and that focused exclusively on these measures had mixed conclusions: Giudici et al. (2020) have found that gender does not play a role in funding decisions, while Venturelli et al. (2020) have claimed that it does.

Lastly, we encourage scholars to go beyond the binary view of gender and place greater emphasis

on social gender (cf., Ahl, 2006). Most studies in our sample use the entrepreneur's biological sex to analyse gender differences in funding outcomes. To date, only Balachandra et al. (2019) have included entrepreneurs' stereotypically feminine and masculine behaviours that individuals exhibit to a certain degree regardless of their biological sex (Bem, 1974). Their study shows an entrepreneur's biological sex has no significant influence on the investment decision, but the gender-stereotypical behaviours do. We therefore call for the inclusion of further gender-related constructs, such as sexual orientation (e.g., Anglin et al., 2018b), as different funding outcomes are not necessarily attributable to an entrepreneur's biological sex. Table 4 provides a summary of our future research agenda.

4.5.3 Limitations of study

Our study has some limitations to which we would like to draw the reader's attention. First, despite the careful selection of our search terms, we cannot definitively conclude that we have identified all articles on gender differences in entrepreneurial equity financing. Some potentially eligible articles may not contain these terms in their title, abstract, or keywords and are therefore not listed in the results of electronic database searches. But we can assume that our search strategy was effective, as we found few additional articles through reference-checking and hand-searching relevant journals. Second, we only included articles published in peer-reviewed journals. Although this ensures a high-quality sample, it may increase the possibility that our review is subject to selection bias due to publication bias (Drucker et al., 2016). Publication bias exists in the entrepreneurship literature such that studies that align with the prevailing views of the academic community are overrepresented in our sample (O'Boyle et al., 2014). Third, our study does not provide a conclusive overview of the gender funding gap. We focus primarily on the supply side (i.e., the investor side) of this gap, as we are interested in why female and male entrepreneurs seeking equity capital have different probabilities of attracting investors. We do not examine the structural barriers or motivations of women and men in founding, but these also affect the gender funding gap (e.g., Guzman & Kacperczyk, 2019).

¹⁵ The other half operationalized gender on the individual level (Balachandra et al., 2019; 2021; Brush & Elam, 2023; Harrison & Mason, 2007).

Table 4 Future research agenda within and across dimensions

Dimension	Future research (questions)
Entrepreneurs' characteristics	<ul style="list-style-type: none"> • TF: Which legitimacy signals related to human and social capital can be beneficial for female entrepreneurs for funding success, and which are more likely to be a barrier? • TF: How do context-relevant human capital characteristics influence funding outcomes for female and male entrepreneurs who operate in gender-incongruent environments? • ECF: Which social capital characteristics that are relevant for traditional equity financing (e.g., lead investor, expert capital) can also explain gender differences in equity crowd-funding? • ECF: Do female and male entrepreneurs use different communication and language styles (e.g., concrete vs. abstract language) in their campaigns, and do these lead to divergent funding outcomes?
Investors' characteristics	<ul style="list-style-type: none"> • TF: Why are female investors in decision-making groups (vs. single female investors) less willing to fund women-led ventures? • TF: Are investors who have stronger social ties to women (e.g., through previous investments in women-led ventures) more willing to support female entrepreneurs? • TF and ECF: Do other similarity patterns between investors and entrepreneurs or their interaction with gender homophily have a stronger influence on investment decisions than when gender homophily is considered in isolation? • TF and ECF: Does stereotypical notions differently affect the investment decisions of traditional investors and crowd investors?
Ventures' characteristics and strategy	<ul style="list-style-type: none"> • TF: Could gender-role congruity in several other attributes offset the negative consequences of incongruity related to the venture's industry? • TF: Are investors equally biased towards female entrepreneurs running commercial, high-growth, or social enterprises (comparative study)? • ECF: Does the perpetual cycle related to traditional investors' preference for high-growth ventures and entrepreneurs that operate in industries that are congruent to their gender persist in equity crowdfunding? • TF and ECF: What is the underlying rationale for female entrepreneurs setting lower funding goals?
Contextual factors	<ul style="list-style-type: none"> • TF: Does a country's gender egalitarianism or cultural masculinity impact gender differences in funding outcomes (cross-national study)? • ECF: How do platforms' business characteristics (e.g., investor- and entrepreneur-led, functionalities, design, features, listing policies) differently impact the success of women- and men-led campaigns?
Across dimensions and financing types	<p><u>Theoretical perspectives:</u></p> <ul style="list-style-type: none"> • Comparative study with traditional investors (i.e., business angels and venture capitalists) and crowd investors • Examining gender differences in funding outcomes related to corporate venture capital or equity accelerators financing • Investigating how the entrepreneur's gender influences the funding outcome at different stages of the investment decision • Refocusing on how to overcome gender differences in funding outcomes among both investors and entrepreneurs through effective interventions

Table 4 (continued)

Dimension	Future research (questions)
Across dimensions and financing types	<p><u>Methodological perspectives</u></p> <ul style="list-style-type: none"> • Conducting a meta-analysis (including the variables <i>financing type</i> and <i>investment-decision phase</i>) • Conducting more qualitative or mixed-methods studies that focus on the processes that lead to gender differences in funding outcomes (e.g., analyzing first- and second-order beliefs of investors) • Using more field and experimental studies to examine the mechanisms and causal relationships between the entrepreneur's gender and funding outcomes (e.g., via perceived legitimacy) • Using informal data (e.g., investors' notes during discussions, records of board meetings) and eye-tracking techniques to examine investors' cognitive processing and reactions related to evaluation proposals or campaign profiles • Control for actual gender differences related to the entrepreneurs' choices regarding industry, growth orientation, and funding target • Examine gender differences in funding outcomes beyond the binary view of biological sex by incorporating social gender or sexual orientation

Note. TF=traditional financing; ECF=equity crowdfunding

Finally, our study examines the predominant forms of equity financing in entrepreneurship to date. However, the landscape of equity financing is constantly evolving due to digitalization (e.g., Buttice & Vismara, 2022). For example, initial coin offerings are an emerging form of financing in which new ventures sell tokens to investors (Fisch, 2019). Investors can use these tokens to gain access to the company's products or services (utility tokens) or to participate in future company profits (equity tokens; Gan et al., 2021).¹⁶ The few researchers who have studied gender differences in initial coin offerings (and who have not focused exclusively on equity tokens) reached mixed conclusions about whether teams with female entrepreneurs are disadvantaged when raising funds (Fisch et al., 2020; Guzmán et al., 2021).

5 Practical implications for entrepreneurs and investors

In the following, we draw on our literature sample to offer advice to female entrepreneurs on how to strategically increase their chances of success in attracting

capital and how investors can take full advantage of these untapped investment opportunities.¹⁷

As the chances of success are generally higher than in the venture capital or angel context, a promising funding strategy for early-stage female entrepreneurs is to raise capital through equity crowdfunding before approaching traditional equity investors. A successful crowdfunding campaign could serve as a valuable third-party endorsement and increase the chances of further successful investment rounds with venture capitalists and business angels. In addition, it is also advisable to share past achievements, such as participation in accelerator or mentorship programs, with potential investors. Since female crowd investors are inclined to support female entrepreneurs under certain conditions (e.g., Bapna & Ganco, 2021), and gender homophily guides male crowd investors to a lesser extent (e.g., Giudici et al., 2020), it might be advantageous for female entrepreneurs to highlight

¹⁶ Utility tokens are the most common type of token (Fisch, 2019).

¹⁷ Our recommendations are aimed at female entrepreneurs, even if they are more successful in raising capital through equity crowdfunding than male entrepreneurs. This is because the transaction volume of the crowd investing market, at USD 1.59 billion (Statista Market Insights, 2024a), is extremely low compared to the venture capital market, at USD 453.7 billion, (Statista Market Insights, 2024b) and cannot offset the disadvantage for female entrepreneurs in traditional equity financing.

that their company is “female founded” in their campaign profiles.

Moreover, women should communicate in more promotion-oriented ways and use abstract language to convey their company’s growth aspirations to investors. For example, they could emphasize product or service improvements (promotion focus), especially when investors direct pitch discussions to pain points such as product or service safety that may lead to venture failure (prevention focus), to improve funding outcomes (Kanze et al., 2018). Using more abstract language in funding applications and pitches conveys the impression of being a visionary who focuses on scalability, which signals a promising investment opportunity (Huang et al., 2021). By combining these two communication strategies, both female and male entrepreneurs can take their pitch to the next level, as they would clearly and more effectively communicate the startup’s already existing strengths and long-term growth aspirations. The literature suggests that this change in communication and negotiation, in tandem with setting bolder but realistic company valuations and increasing the predetermined funding threshold, increases funding success, particularly for female entrepreneurs.

We also encourage investors to review their previous investments to analyze whether they observe a pattern of unconscious gender-related preferences in their portfolio (e.g., preference for gender-industry congruence). If they recognize such patterns,

overcoming these unconscious preferences holds great investment potential, considering that women-led ventures do not underperform compared to men-led ones (e.g., Brush & Elam, 2023). Relatedly, the research suggests appointing independent, third-party investors to provide perspectives on company valuations (Mohammadi & Shafi, 2018) or removing gendered labels from entrepreneurial candidates in traditional investment settings (Zhao et al., 2021a).

As this literature review shows that both entrepreneurs’ decisions and investors’ preferences contribute to gender differences in funding outcomes, we would like to draw particular attention to the valuable opportunity for dialog and exchange. For example, our review highlights that experienced investors seem to be more number-focused and place less emphasis on the entrepreneur’s gender. We therefore recommend that investors who have recently started to fund newly founded ventures exchange views with other investors and entrepreneurs at networking events. This way, gender-related preferences could develop less unconsciously, and the investment opportunity would be the central focus. Female entrepreneurs could also direct their efforts on networking with local investors to strengthen their social capital. Access to a more centralized network position in the entrepreneur-investor landscape could give them more visibility among potential investors with rank and status and thus increasing the chance of receiving traditional equity investments.

Appendix 1 Review protocol (based on Booth et al., 2016)

Review protocol

1. Research question (RQ) and objectives (RO)

RQ: How does the entrepreneur's gender influence investors' investment decisions in equity financing?

RO 1: Providing an overview of the mechanisms that lead to gender differences in equity financing.

RO 2: Demonstrating the extent to which gender differences are consistent in traditional equity financing and equity crowdfunding.

RO3: Developing a future research agenda that may lead to a deeper understanding of gender differences in equity financing.

2. Criteria for including and excluding studies

Types of studies: Theoretical, conceptual, qualitative, and quantitative studies

Types of population: Entrepreneurs and investors

Types of interventions or exposure: Mechanisms of gender differences in equity financing

Types of outcome measures: Investment decision (i.e., evaluation of the investment opportunity, willingness to invest and funding allocation)

3. Search strategy for identifying studies

Review methodology: We adopt the five-step approach of Denyer and Tranfield (2009).

Review scope: Intersection of equity financing, entrepreneurship, and gender.

Definitions of our concepts:

- The literature on entrepreneurial equity financing predominantly focuses on venture capital (including corporate and governmental venture capital), angel investment, equity crowdfunding, and equity accelerators (Colombo et al., 2016; Drover et al., 2017; Wallmeroth et al., 2018).
- As research on equity finance emphasizes growth-oriented and high-tech start-ups (e.g., Coleman et al., 2016; Hogan et al., 2017; Van Osnabrugge, 2000), our understanding of entrepreneurship excludes microenterprises, necessity entrepreneurship, sole proprietorships, and similar concepts.
- We use the common definition of an entrepreneur's gender, which describes the biological sex of the person and refers to men (male) and women (female) entrepreneurs (Geiger, 2020; Kanze et al., 2018).

Search string: ("investment*" OR "invest" OR "investor*" OR "fund*" OR "equity financ*" OR "equity" OR "accelerator*" OR "angel*" OR "crowdfund*" OR "venture capital*") AND ("entrepreneur*" OR "early stage business*" OR "early-stage business*" OR "small business*" OR "small and medium business*" OR "small and medium enterprise*" OR "startup*" OR "start-up*" OR "venture*") AND ("gender*" OR "sex" OR "male" OR "female" OR "man" OR "men" OR "woman" OR "women")

Literature search: We conduct an (1) electronic database search and a (2) manual search.

(1) Electronic database search

- We use the electronic databases EBSCO, Scopus, and Web of Science.
- The literature search is limited to selected research disciplines to ensure a focus on our research subject (see "configuration for each database").
- We only include English-language publications and, for quality reasons, peer-reviewed articles (i.e., books, book chapters, working papers, conference proceedings, dissertations, and news are not included).
- We do not exclude any specific publication years prior to our search date of June 5, 2024.

Configuration of each electronic database search

Scopus

- *Searching in:* Title, Keywords, and Abstract
- *Document type:* Article, Review
- *Language:* English
- *Subject area:* Business, Management and Accounting, Social Sciences, Economics, Econometrics and Finance, Psychology, Computer Science, Decision Sciences, Multidisciplinary, Undefined

EBSCO (Business Source Premier)

- *Searching in:* Title, Keywords, and Abstract
- *Document type:* Academic Journal
- *Language:* English
- *Limit to:* Peer-reviewed

Web of Science

- *Searching in:* Title, Keywords, and Abstract
- *Document type:* Article, Review
- *Language:* English
- *Subject area:* Business, Management, Business Finance, Women's Studies, Social Science Interdisciplinary, Multidisciplinary Sciences, Psychology Multidisciplinary, Computer Science Information Systems, Behavioral Science, Psychology Social

(2) Manual search

- We expand our literature search by reference-checking and hand-searching in likely journals to identify further relevant articles. For the reference-checking, we review the reference lists of the eligible studies retrieved from our electronic database search (cf. Serwaah, 2022). To conduct the hand-searching, we focus on the top three journals with the most articles included. We use the electronic databases of the three journals and search for articles using the terms "gender," "equity," and "financing" (cf. Geiger, 2020).

4. Study selection/method of review

All authors screen the articles separately and individually in a three-stage process using certain exclusion criteria to filter out irrelevant articles that do not correspond to our research topic. After each stage, the authors compare the excluded and included articles and reach a consensus in cases with divergent results.

Three-stage process for study selection

- (1) We screen each article based on its titles and keywords. We exclude articles that clearly do not address gender and financing or focus on financing types such as debt (loan and credit), microfinance, initial public offering, initial coin offering, bootstrapping, and internal equity.
 - (2) We read the abstracts of the remaining articles and exclude those that do not examine the impact of the entrepreneur's gender on the investment decision (e.g., willingness to invest, amount of funding provided, and evaluation of the investment opportunity).
 - (3) We thoroughly read the full text of the remaining articles to understand the research objectives, results, and theoretical and practical implications. We exclude articles that use a single-gender sample (i.e., consisting of either female or male entrepreneurs) and articles that only marginally discuss our research topic (i.e., studies with a lack of thematic reference in the research question, hypotheses, or conceptual framework).
- We also use the exclusion criteria defined in the first and second phases in the final phase, unless the article has already been filtered out.
 - To increase transparency and traceability, we use the PRISMA flowchart, which illustrates the selection process and the number of studies included (cf. Moher et al., 2009).

5. Data extraction

- All authors code the following information for the relevant studies: author, year, title; name of the journal; research question and aim; theoretical lens; investment type; research methods; data and sample; country; operationalization of entrepreneur's gender; funding outcome measure; mechanism of gender differences in funding outcome; key findings
- We review each author's coding and discuss cases of disagreement to clarify them.

6. Data synthesis and analysis

- For our content analysis, we adopt a thematic approach (Braun & Clarke, 2006; Snyder, 2019) to identify patterns in the mechanisms of gender differences in equity financing.
- We use tables and graphs to describe the literature and to identify patterns, i.e., distribution of studies across years, journal outlets, theories, and research methods, and a tabular overview of each included study with information on authors, research question and aim, research design, data and sample, funding outcome measure, and mechanisms of gender differences in equity financing.

Appendix 2 Previous literature reviews

Author(s)	Objectives	Analytical tool	Period	Scope	Main difference to our study
Geiger (2020)	Examines the causes of gender differences in funding outcomes in traditional (debt/equity) and non-traditional (crowdfunding) funding sources	Meta-analysis	Until 2020	125 studies	<ul style="list-style-type: none"> – Quantitative studies only – Incorporation of debt and equity financing (= traditional financing) – Analyzed mechanism of gender difference in funding outcome is limited to "funding needed" by the entrepreneur
Serwaah (2022)	Analyzes the intersection of crowdfunding and gender, as well as the extent to which crowdfunding promotes women's financial inclusion and participation	Systematic literature review	2011–2021	47 studies	<ul style="list-style-type: none"> – Includes crowdfunding studies only (incorporation of lending, reward, and equity crowdfunding) – Does not focus on analyzing the mechanisms of gender differences in funding outcomes
Serwaah and Shneor (2021)	Investigates what impacts women's access to finance and their investment behavior	Systematic literature review	1989–2019	113 studies	<ul style="list-style-type: none"> – Perspective on women only – Does not focus on analyzing the mechanisms of gender differences in funding outcomes, but on identifying influencing independent variables – No comparison between traditional equity financing and equity crowdfunding related to gender

Author(s)	Objectives	Analytical tool	Period	Scope	Main difference to our study
Villaseca et al. (2021)	Analyzes (1) the types of barriers women face in financing on the supply and demand side and (2) the impact of the COVID-19 crisis on financing	Systematic literature review	1995–2019	829*	<ul style="list-style-type: none"> – Investigation of women's access to capital through a COVID-19 crisis lens – Does not focus on analyzing the mechanisms of gender differences in funding outcomes – No comparison between traditional equity financing and equity crowdfunding related to gender

*Authors do not specify the final sample

Appendix 3 Overview of studies included in the literature review

Table 5 Overview of studies on venture capital (VC)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Alsos and Ljunggren (2017)	How is gender embedded in how (1) entrepreneurs signal the quality of their ventures to investors and (2) investors perceive signals, and how does this influence investment decisions?	Qualitative	Decision documents from investment fund on four venture applications	Investors' perception of signals	(Industry) experience	Experience	Entrepreneurs' characteristics
Balachandra et al. (2019)	How do entrepreneurs' displayed gender-stereotypical behaviors of masculinity and femininity in pitches influence investors' decisions?	Quantitative	185 pitch videos from a university pitch competition, data from post-hoc experiment	Evaluation of the pitch/finalist selection (binary)	Gender-stereotypical behaviors (masculinity and femininity)	Physical appearance and behavior	Entrepreneurs' characteristics
Balachandra et al. (2021)	How does the use of gender-similar language by female entrepreneurs in pitches influence investors' decisions?	Quantitative	185 pitch video transcripts from a university pitch competition	Evaluation of the pitch/finalist selection (binary)	Gender-typed linguistic style (feminine and masculine)	Communication and language	Entrepreneurs' characteristics

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Brush and Elam (2023)	The study revisits the female underperformance hypothesis by investigating the influence of CEO gender on key performance factors for VC-funded firms and explores the role of legitimacy markers on follow-up funding rounds	Quantitative	278 VC-funded companies (PitchBook)	Total VC raised over the 2011–2016 period; total number of investment rounds over the 2011–2016 period	Attending elite institutions Accelerator participation High-status investor Female lead investor Prior funding	Education Prior funding and shareholders	Entrepreneurs' characteristics Ventures' characteristics and strategy
Brush et al. (2002)	The study examines whether women are excluded from the wealth-creation process (on both the supply and demand side)	Quantitative	8,311 funded firms with institutional VC (Kauffman Center for Entrepreneurial Leadership); applicant pool to Springboard 2000 Venture Forum; supply-side data (Pratt's Guide to Venture Capital)	Number of investments in women-/men-led ventures; proportion of funding	n.a	n.a	n.a
Brush et al. (2018)	The study updates earlier work by Brush et al. (2002) with data from 2011–2013	Quantitative	6,793 VC-funded companies (PitchBook)	Average funding amount; proportion of funding	n.a	n.a	n.a

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms			Dimension
					Boundary condition	Category	Investors' characteristics	
Butticè et al. (2023)	The study examines the extent to which the relationship between gender diversity and venture performance changes when the roles of investor and investee are not coherent with the gender-derived expectations of their ascribed social group	Quantitative	5,075 venture deals (Crunchbase)	Funding success (binary); investment success (Investment results in IPO; binary)	Investors' gender	Gender	Investors' characteristics	
Clayton (2023)	Do founder characteristics of gender, immigrant, and racial minority group membership moderate the relationship between participation in different types of entrepreneurial support organizations and the funding received?	Quantitative	771 funded life sciences firms (PLACE: Research Triangle Region Database)	Total amount of external finance (state, federal, and VC)	Incubator participation Mentoring program participation	Education	Entrepreneurs' characteristics	
Greene et al. (2001)	This exploratory study utilizes longitudinal data to track US VC investments by proportion, stage, industry, and gender	Quantitative	4,306 ventures (Kauffman Centre for Entrepreneurial Leadership)	Funding received (binary)	Investors' industry preference	Venture industry	Ventures' characteristics and strategy	

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Guzman and Kacperczyk (2019)	Are women equally disadvantaged throughout the entrepreneurship pipeline, or do gender disparities arise more at some points than others?	Quantitative	1,875,087 business registration records merged with data from VentureXpert	Startup receives VC funding within two years after the founding date (binary)	Investors' sophistication	Experience	Investors' characteristics
Hao et al. (2024)	How do entrepreneur-investor gender interactions affect the funding of female startups in China?	Mixed methods	762 entrepreneurs and 300 investors (television show <i>We Are the Hero</i>); post-funding performance of 467 firms (Tianyancha)	Voting to invest (binary); amount of funding offered	Investors' gender Length and type of questions that investors asked	Gender Attitudes and beliefs	Investors' characteristics
Howell and Nanda (2023)	The study explores whether random exposure to VC judges in a startup competition increases the likelihood of getting VC-backed among male and female entrepreneurs after they graduate	Quantitative	647 pitches (pitch competition at Harvard Business School)	VC-backed startup (binary)	Access to VCs	Social relationships	Entrepreneurs' characteristics
Johansson et al. (2021)	The study investigates deeper differences in the way governmental venture capitalists (GVCs) cognitively process to evaluate investment proposals from women and men entrepreneurs	Mixed methods	77 investment proposals that GVCs evaluated; interviews with GVCs	Investment potential evaluation	Business potential Company history	Experience	Entrepreneurs' characteristics

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Karlström et al. (2023)	How do investors' gender perceptions influence VC investment decisions?	Qualitative	Interviews with five female and five male investors (2022; Norwegian VC funds)	Evaluation; funding allocation	Investors' gender	Gender	Investors' characteristics
Lins and Lutz (2016)	The study examines whether access to VC for female entrepreneurs is more constrained than for their male counterparts considering their educational background and innovativeness	Quantitative	3,137 ventures (KfW/ZEW Startup Panel reports)	Share of external capital to total capital	University degree R&D activity Women ask for less money	Education Venture industry Negotiation strategy	Entrepreneurs' characteristics Ventures' characteristics and strategy
Malmström et al. (2017)	How do GVCs socially construct gender stereotypes when assessing the potential of female and male entrepreneurs applying for VC?	Mixed methods	Observations: GVCs' discussions of 125 VC applications, press releases	Entrepreneurial potential; approval and dismissal rate; funding amount approved	Gender stereotype activation within GVC group	Communication and language	Investors' characteristics
Malmström et al. (2018)	How are stereotypical gender notions of both men and women entrepreneurs embedded in VCs' assessments and analyses?	Mixed methods	126 VC applications, business reports (Retriever Business), interviews with GVCs	Venture potential; funding amount	Gender-stereotypical notions related to growth ambition	Venture orientation	Ventures' characteristics and strategy

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Malmström et al. (2020)	How does signaling an entrepreneurial attitude trigger thoughts that induce VCs to approve or deny funding for female and male entrepreneurs?	Mixed methods	131 VC applications, observations: GVCs' verbal discussions and thoughts, negotiation sheets	Raised financial share	Promotion and prevention cognitions of VCs Entrepreneurial attitude signals	Communication and language	Investors' characteristics
Nigam et al. (2022)	The study explores potential differences between men's and women's access to capital from a feminist framework and gender stereotypes in India	Quantitative	87 technological digital startups (data based on online resources and startup reports)	Funding amount	Degree from a reputed educational institute Serial founder Prior experience as (technological) software engineer Social network (social media)	Education Experience Social relationships	Entrepreneurs' characteristics
Pistilli et al. (2023)	The study examines the issue of entrepreneurial gender bias by focusing on the underlying mechanisms (stigma and experience from prior entrepreneurial failure) that impact the likelihood of receiving funding	Quantitative	Data on 612 "failed," 684 "serial," and 792 "novel" startups (Crunchbase)	Firm received external funding (binary)	Type of entrepreneur (failed, novel, serial)	Experience	Entrepreneurs' characteristics

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms			Dimension
					Boundary condition	Category	Industry	
Schillo and Ebrahimi (2022)	The study investigates the gender distribution of key professionals in VC-funded digital start-ups, as compared to information technology hardware and life sciences and biotechnology start-ups, as well as the impact of gender on VC funding	Quantitative	8,164 VC-funded firms (CapitalIQ)	Funding amount		Venture industry		Ventures' characteristics and strategy
Snellman and Solal (2023)	The study examines the consequences of gender homophily in the context of entrepreneurship	Mixed methods	2,136 venture deals (Crunchbase), experimental data with video manipulations with 134 participants, interviews (entrepreneurs and VCs)	Subsequent financing round (binary); perceived pitch quality (scale)	Shareholders' gender	Prior funding and shareholders		Ventures' characteristics and strategy
Tinkler et al. (2015)	How do tangible education and work history credentials work in tandem with cultural beliefs about gender to influence the evaluative process that underlies VC decisions made in high-growth, high-tech entrepreneurship?	Mixed methods	Interviews with Silicon Valley VCs and entrepreneurs, experimental data on evaluated business plans from 114 MBA students	Entrepreneur evaluation: leadership capability (scale), competence (scale), sociability (scale) venture evaluation: optimism for the venture (scale), investment amount in %	Technical background qualifications	Experience		Entrepreneurs' characteristics
						Social relationships		

Table 5 (continued)

Author(s)	Research question / aim	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Vogel et al. (2014)	This study examines the impact of diversity within entrepreneurial teams on investors' funding decisions	Quantitative	Experimental data of 2,894 participants with fictitious funding opportunities	Willingness to invest (scale)	n.a	n.a	n.a
Voitkane et al. (2019)	Do women (men) VCs assess women's (men's) ventures differently than men's (women's)?	Mixed methods	Observations and 18 interviews from VC decision-making meetings, VCs' investment potential ratings (168 investor-entrepreneur dyads)	Investment potential valuation (34 attributes)	Investors' gender	Gender	Investors' characteristics
Wang et al. (2023)	The study examines whether social media use can improve funding outcomes for firms founded by women and by other people who lack connections to the investor network	Quantitative	Social media adoption and usage of 115,984 firms (Twitter), venture deals (Crunchbase)	Log lead funding (funding since founding and before exit)	Twitter engagement	Media presence	Ventures' characteristics and strategy
Xu et al. (2024)	Does adding female investors improve gender equality in funding opportunities for target firms?	Mixed methods	Data on 151 VC firms' investments (2008–2016; VentureXpert, SDC, PitchBook); 20 interviews with senior VCs (2020 & 2023)	Percentage of funded women-led ventures	Investors' gender Political identity Shared prior employment affiliation	Gender Attitudes and beliefs Experience	Investors' characteristics

Note. The table provides an overview of studies that examine gender differences in VC ($n = 27$). The authors, the year of publication, the research question or aim, the research design, the data source, the sample size, and the funding outcome measure are given for each study. In addition, the table shows which mechanisms of gender differences the study examines and how we grouped the boundary conditions into our categories and dimensions based on the thematic analysis

Table 6 Overview of articles on business angel (BA) investment

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Becker-Blease and Sohl (2007)	The study investigates the equality of women's access to BA capital by examining whether men and women entrepreneurs differ in the rate at which they seek and are awarded BA capital and whether there is evidence of sex-based homophily in the seeking and awarding process	Quantitative	Survey data of 174 BA portals (The Center for Venture Research) and survey data from contacted BAs	Yield rates (ratio of deals funded to deals submitted); average equity percentage; average investment amount	Investors' gender	Gender	Investors' characteristics
					Seek rates	Negotiation strategy	Ventures' characteristics and strategy
Bellucci et al. (2024)	This study explores the impact of gender on entrepreneurial finance, analyzing both the supply and demand sides of early-stage equity financing through BA investments	Quantitative	756 BA funding deals (Zephyr)	Larger-than-median amount of BA financing (binary)	Investors' gender	Gender	Investors' characteristics
Boulton et al. (2019)	The study examines the impact of personal characteristics (including gender, race, and age) on investment outcomes	Quantitative	707 pitch videos (Shark Tank)	Investment decision (binary); final valuation (ratio of valuation received to the initial valuation requested)	Investors' gender	Gender	Investors' characteristics
					Requested valuation	Negotiation strategy	Ventures' characteristics and strategy
Chen et al. (2023)	How does political ideology shape BAs' investment preferences in women-owned ventures?	Quantitative	7,141 venture deals (PitchBook)	Percentage of women-owned ventures in a BA's investment portfolio	Investment experience	Experience	Investors' characteristics
					Investors' political ideology	Attitude and beliefs	

Table 6 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Edelman et al. (2018)	The study explores whether the gap in women's BA funding concerns the entrepreneur's gender-role stereotype more than the type of business formed	Quantitative	324 BA summary sheets and entrepreneurs' venture proposals from BA group	Number of investor comments, number of signals the entrepreneur sent, number of signals the BA recorded	Total positive/negative comments the investor made	Communication and language	Investors' characteristics
Harrison and Mason (2007)	The study examines the characteristics and behavior of women Bas and their implications for the financing of women-led businesses	Quantitative	Surveys from 40 Bas of 15 BA networks	Funding decision (binary)	n.a	n.a	n.a
Hohl et al. (2021)	The study aims to detect characteristics among entrepreneurs that explain the gender gap in entrepreneurship	Quantitative	895 pitch videos (Shark Tank)	Pitch success (binary)	Group pitch	Social relationship	Entrepreneurs' characteristics
Jetter and Stockley (2023)	The study aims to answer whether and, if so, how gender interactions matter in explaining consequential gender gaps in real life	Quantitative	4,893 investor-entrepreneur interactions (<i>Shark Tank</i>)	Investment offer (binary)	Investors' gender	Gender	Investors' characteristics
					Deal valuation	Negotiation strategy	Ventures' characteristics and strategy
					Investors' gender	Gender	Investors' characteristics

Table 6 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Khurana and Lee (2023)	The study investigates non-rationality (the tone of conversation) and the role of heuristics and biases in the narrative formed during high-stake pitch competitions	Quantitative	50 pitch videos (<i>Shark Tank</i>)	Deal offering (binary)	Sentiment reactions	Communication and language	Investors' characteristics
Pocztar and Shapsis (2018)	Are women less likely to secure BA investments because of their gender alone?	Quantitative	495 pitches (<i>Shark Tank</i>)	Offer received (binary); final company valuation; bid-ask-spread; funding amount	Female entrepreneurs ask for less money	Negotiation strategy	Ventures' characteristics and strategy
					Industry	Venture industry	Ventures' characteristics and strategy
					Asking dollar and equity shares	Negotiation strategy	
Sohl and Hill (2007)	The study addresses whether women BAs tend to invest in women entrepreneurs	Mixed methods	528 surveys from 11 BA organizations/syndicates	Women entrepreneur lag (yield rate for all entrepreneurs minus the yield rate for women entrepreneurs); percentage of funding allocation	Investors' gender	Gender	Investors' characteristics

Note. The table provides an overview of studies that examine gender differences in BA investment ($n = 11$). The authors, the year of publication, the research question or aim, the research design, the data source, the sample size, and the funding outcome measure are given for each study. In addition, the table shows which mechanisms of gender differences this study examines and how we grouped the boundary conditions into our categories and dimensions based on the thematic analysis

Table 7 Overview of studies on more than one traditional equity financing form or equity financing in general

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Astebro et al. (2022)	How do gender and ethnic diversity affect VC funding and team performance when teams are primality homogenous compared with when teams are already diverse?	Quantitative	5,090 venture deals (PitchBook, Crunchbase, VentureSource)	Obtains funds in first round (binary); VC funding amount raised in first round	Diverse context (share of female founders in the sector and country of the start-up)	Geographic and cultural context	Contextual factors
Brooks et al. (2014)	How do entrepreneurs' gender and physical attractiveness influence investment decisions?	Quantitative	90 pitch videos from pitch competition, survey data from web-based experiment	Pitch success (binary); investment choice (binary and scale)	Physical attractiveness	Physical appearance and behavior	Entrepreneurs' characteristics
Compton et al. (2022)	The study examines gendered disparities in funding available to non-profit, for-profit, and hybrid social ventures, as well as among ventures with and without invention-based technologies	Quantitative	17,440 startups that applied to accelerator (GALI)	Total equity received	Venture type (hybrid social, non-profit only, invention-based, and tech-focused)	Venture orientation	Ventures' characteristics and strategy
Dams et al. (2022)	The study explores the impact of accelerator programs in business performance and explains the differential effect on female entrepreneurs	Quantitative	1,274 startups that received at least one seed-stage round of financing (AngellList and other)	Cumulative equity investment amount (indicator)	Accelerator participation	Education	Entrepreneurs' characteristics
Ewens and Townsend (2020)	The study examines whether female entrepreneurs are at a disadvantage in raising capital due to their gender and, if so, why	Quantitative	17,780 venture deals (AngellList and other)	Number of investors who share info on start-up; number of investors who request an introduction; number of investors who invest in a startup	Investors' gender Investment experience	Gender Experience	Investors' characteristics

Table 7 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Gicheva and Link (2013)	The study estimates the relative probability that woman-owned firms can attract private investments to fund the transition of technology developed under the sponsorship of the Small Business Innovation Research (SBIR) program to an innovation to enter the market	Quantitative	Surveys from 323 projects that received Phase II research awards from the National Institutes of Health SBIR program	Private investment received (binary)	Size of the Phase II award	Prior funding and shareholders	Ventures' characteristics and strategy
Gicheva and Link (2015)	The study extends Gicheva and Link's earlier work (2013) by expanding both the sample of awards to all relevant agencies and the structure of the empirical model	Quantitative	Surveys from 1,027 projects that received Phase II research awards from the National Institutes of Health SBIR program	Private investment received (binary); ratio of private investment amount and SBIR award amount	Nascent entrepreneur	Experience	Entrepreneurs' characteristics
Huang et al. (2021)	The study examines how disparities in funding outcomes may be due to differences in how entrepreneurs communicate their ventures	Quantitative	129 pitches from a startup workshop, 1,284 applications to VC firm, experimental data on 238 investors' evaluations	Likelihood of investment (binary and scale)	Location of US census/firm	Geographic and cultural context	Contextual factors
Kanze et al. (2020)	Are female founding CEOs penalized when raising funds for their ventures based on the industry served?	Quantitative	392 ventures and 130 investors (TechCrunch), survey data of early-stage investors	Funding amount; uncapped valuations; perceived fit; retained equity percentage	Investors' sophistication	Communication and language	Entrepreneurs' characteristics
					Industry fit	Experience	Investors' characteristics
						Venture industry	Ventures' characteristics strategy

Table 7 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Kanze et al. (2018)	(1) Do investors communicate differently depending on whether they address female as opposed to male entrepreneurs?	Quantitative	Video footage of question-and-answer interactions of 189 startups (TechCrunch), venture deal data (Crunchbase and other); survey data from an experiment with audio pitches	Total funds raised across various funding rounds; fund allocation (\$)	Prevention and promotion questions	Communication and language	Investors' characteristics
	(2) How does an investor's question impact an entrepreneur's response?						
	(3) Can this interaction help explain their divergent funding outcomes?						
Lauto et al. (2022)	The study assesses the interplay between the degree of female ownership and three signals, namely the equity investment of the parent university; the human and social capital of the founders, expressed by the status as a full professor; and their technological capabilities	Quantitative	526 academic spin-offs (Netval)	Funding amount of private investments	Number of patents	Experience	Entrepreneurs' characteristics
					Amount invested by parent university	Prior funding and shareholders	Ventures' characteristics and strategy
					Amount invested by full professors		
Liao et al. (2023)	The study examines when VCs are more likely to invoke the anticipated funding preference of peer investors that may lead them to disfavor women entrepreneurs and how they develop such anticipation	Quantitative	895 pitches (<i>Shark Tank</i>), experimental data from 282 investors	Venture funding support: investment received (binary); deal valuation received in \$; funding likelihood (scale); funding amount	Venture novelty	Venture orientation	Ventures' characteristics and strategy

Table 7 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Lueg and Ni (2020)	What aspects determine access to financial capital for female entrepreneurs in Denmark and Indonesia?	Quantitative	Surveys from 210 entrepreneurs	Funding access to angel capital (binary); funding access to venture capital (binary)	Egalitarian societies	Geographic and cultural context	Contextual factors
Macchione et al. (2022)	The study tests whether gender-based company cues, employment sector, and CEO gender lead to disparities in willingness to invest in start-up companies	Quantitative	Experimental data from a student (n = 646) and community (n = 301) sample	Interest in investing (scale)	Industry (STEM)	Venture industry	Ventures' characteristics and strategy
Murphy et al. (2007)	The study examines signals perceived by outsiders pertaining to the risk preference, legitimacy, and social capital of female-run ventures and links them to venture funding, net worth, and longevity outcomes	Quantitative	711 new ventures (PSED)	Formal funding success (binary)	Social capital (relationships with other people) and expert capital (access to expert mentors)	Social relationships	Entrepreneurs' characteristics
Nguyen et al. (2023)	How do evaluators' benevolent sexist attitudes affect their assessments of men- and women-led start-ups?	Quantitative	Experimental vignette studies of 312 participants with start-up and investing experience	Funding allocation amount	Evaluators' benevolent sexism	Attitude and beliefs	Investors' characteristics

Table 7 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Soleimani and Stauffer (2022)	To what extent and how does the composition of the new venture team at the time of founding impact the likelihood of its acquisition? The study includes gender diversity, nationality diversity, diversity of education level, and industry experience level	Quantitative	3,140 ventures (Kauffman firm survey)	Acquisition likelihood (binary)	n.a	n.a	n.a
Yu et al. (2024)	How do macro crises (GFC and COVID-19) shape the perceived incongruence between traditional stereotypes of the female gender role and male stereotypes regarding the entrepreneur's role and thereby influence the financing of female entrepreneurs?	Quantitative	191 experiment participants (Prolific); data on 3,028 BAs and VCs (Crunchbase)	Willingness to invest; number of female-founded ventures	Crisis (Global Financial Crisis and COVID-19)	Economic context	Contextual factors
Zhao et al. (2021a)	The study investigates whether disadvantages for females relative to males persist in social entrepreneurial equity financing	Quantitative	12,379 for-profit ventures with social motives (Entrepreneurship Database Program)	Amount of equity investment received since founding; received equity investment (binary)	Social value orientation	Venture orientation	Ventures' characteristics and strategy

Note. The table provides an overview of studies that examine gender differences in more than one traditional equity financing form or equity financing in general (n = 19). The authors, the year of publication, the research question or aim, the research design, the data source, the sample size, and the funding outcome measure are given for each study. In addition, the table shows which mechanisms of gender differences this study examines and how we grouped the boundary conditions into our categories and dimensions based on the thematic analysis

Table 8 Overview of studies on equity crowdfunding (ECF)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Andrieu et al. (2021)	Are online equity investors on ECF platforms positively disposed towards making ECF funds available to female entrepreneurs and, if so, to what extent?	Quantitative	184 ECF campaigns (Wiseed and other)	Funding percentage of campaign (completion percentage of funding goal)	n.a	n.a	n.a
Bapna and Ganco (2021)	(1) Do investors in ECF respond differently to male founders than to female founders? (2) Does this difference, if it exists, vary based on the investor's gender and the experience?	Quantitative	Data on 8,050 investors from one ECF campaign (controlled field experiment and survey)	Interest in the venture invested (binary); amount invested	Investors' gender Investor experience	Gender Experience	Investors' characteristics
Barbi and Mattioli (2019)	The study examines the role of human capital (gender composition of founding team) as a credible signal of a venture's quality in ECF	Quantitative	Data on 521 funded ECF companies (Crowdcube)	Funding amount; number of investors	n.a	n.a	n.a

Table 8 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Battaglia et al. (2021)	The study aims to provide new empirical evidence on the relationship between female entrepreneurship and ECF, focusing on how the level of masculinity in a country influences this relationship	Quantitative	626 ECF campaigns (multiple European platforms)	Number of investors; percentage of the amount raised at the end of each campaign	Gender equality (a country's levels of masculinity and femininity)	Geographic and cultural context	Contextual factors
Cicchello and Kazemikhasragh (2022)	The study aims to investigate gender-related differences in the behavior of crowd investors in firms seeking equity financing in Latin America	Quantitative	492 ECF campaigns (multiple Latin American platforms)	Number of (female, male) investors	Investors' gender	Gender	Investors' characteristics
Cicchello et al. (2022)	The study explores the relationship between the gender composition of the entrepreneurial team and the likelihood of a project being overfunded	Quantitative	492 ECF campaigns (multiple Latin American platforms)	Project success (binary); overfunding (binary)	n.a	n.a	n.a
Cicchello et al. (2021)	The study investigates the relationship between the gender composition of the entrepreneurial team and the probability of success of equity crowd-funded projects	Quantitative	492 ECF campaigns (multiple Latin American platforms)	Project success (binary); Overfunding in %; number of investors; investors' average pledge	n.a	n.a	n.a

Table 8 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Cumming et al. (2021)	The study investigates whether gender, age, ethnicity, and geography affect the choice of ECF offerings vs. initial public offerings (IPOs) on traditional stock markets and whether these characteristics increase the likelihood of a successful offering	Quantitative	167 ECF offerings (Crowdcube)	Funding success (binary); number of investors	n.a	n.a	n.a
De Crescenzo et al. (2020)	The study explores how contingency factors (including gender among others) combine and causally connect to lead to possible success or failure in ECF rounds	Qualitative	344 ECF campaigns (Crowdcube)	ECF success (target achieved)	n.a	n.a	n.a
Geiger and Oranburg (2018)	The study explores the relationship between gender and funding raised and the moderating role of a campaign's funding target	Quantitative	243 ECF campaigns (SEC and other)	Funding amount	Campaign's funding target	Negotiation strategy	Ventures' characteristics and strategy
Giudici et al. (2020)	The study investigates whether matchings in ECF are more likely if homophily exists between investors and investees	Quantitative	4,696 investor-entrepreneur dyads (multiple Italian platforms)	Realized investor-entrepreneur tie (binary)	Investors' gender	Gender	Investor's characteristics

Table 8 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Johnson et al., (2018; only Study 2)	The study examines investor stereotypes and implicit bias in ECF decisions	Quantitative	Experimental data from 73 potential investors	Willingness to fund (scale and in \$)	Implicit gender bias	Attitude and beliefs	Investors' characteristics
Kleinert and Mochkabaadi (2022)	The study examines the success of female entrepreneurs in technology ventures in light of the quality signals of management experience and media coverage	Quantitative	263 ECF campaigns from technology ventures (Crowd-cube)	Number of investors; funding amount raised at campaign end	Management experience Media coverage	Experience Media presence	Entrepreneurs' characteristics Ventures' characteristics and strategy
Malaga et al. (2018)	The study aims to understand whether Title II ECF represents an opportunity for women-owned companies to raise capital at rates similar to companies owned by men	Quantitative	6,234 ECF offerings (Crowdnetic)	Funding success rate; percent of minimum target; capital commitments (binary)	Industry Funding target	Venture industry Negotiation strategy	Ventures' characteristics and strategy
Prokop and Wang (2022)	(1) Does a gender gap in ECF exist? (2) Is a gender gap present in seasoned ECF campaigns? (3) How might female entrepreneurs adjust their pitching behavior to counteract potential discrimination from crowd investors?	Quantitative	231 ECF campaigns (Seedmatch and other)	Funding target reached (binary); funding amount; number of investors	Seasoned campaign Funding threshold	Negotiation strategy	Ventures' characteristics and strategy

Table 8 (continued)

Author(s)	Research aim / question	Research design	Data and sample	Funding outcome measure	Mechanisms		
					Boundary condition	Category	Dimension
Rossi et al. (2021)	The study investigates factors (including gender among others) that influence several outcomes of the funding process	Quantitative	3,576 ECF offerings (Seedrs and other)	Success of offering (binary); funding amount	Investor- vs. entrepreneur-led platforms	Platform characteristics	Contextual factors
Venturelli et al. (2020)	How do ethnic and gender similarity between investor and entrepreneur affect the investment amount?	Quantitative	81 ECF campaigns (Crowdcube)	Amount invested	Investors' gender	Gender	Investors' characteristics
Zhao et al. (2021b)	How do lead investors and entrepreneurs' development stages affect women-led firms' financing performance in the ECF market?	Quantitative	259 ECF campaigns (Dreammove and other)	Funding amount; number of investors	Lead investor	Prior funding and shareholders	Ventures' characteristics and strategy

Note. The table provides an overview of studies that examine gender differences in ECF ($n = 18$). The authors, the year of publication, the research question or aim, the research design, the data source, the sample size, and the funding outcome measure are given for each study. In addition, the table shows which mechanisms of gender differences this study examines and how we grouped the boundary conditions into our categories and dimensions based on the thematic analysis

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*Articles marked with an asterisk are included in our review

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