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# **Cognitive decision bias among entrepreneurs and investors in televised startup pitch competitions**

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## **Abstract**

This dissertation project explores cognitive decision-making bias in early-stage entrepreneurship and angel investor funding, using data from 1,334 startup pitches of the televised formats *Die Höhle der Löwen* (DE) and *Dragons' Den* (UK). Building on social perception theory, the contributions of this research relate to the multilayered nature of investor decisions, the determinants of overconfidence among entrepreneurs and investors, and the underexplored German investor market. The findings reveal how biases, such as overconfidence and stereotypical reasoning, significantly influence investment decisions and business valuations, highlighting investors' preferences for superficial characteristics like age, gender, ethnicity, and attractiveness of entrepreneurs. Moreover, the research demonstrates the value and limitations of using televised pitch competitions for studying entrepreneurial finance. Implications call for targeted training, diverse evaluation panels, and policy measures to foster a more equitable and profitable startup ecosystem.

## **Zusammenfassung**

Dieses Dissertationsprojekt untersucht kognitive Entscheidungsverzerrungen im Kontext von Early-stage Entrepreneurship und Business Angel Investitionen anhand von 1.334 Startup-Pitches aus den Formaten *Die Höhle der Löwen* (DE) und *Dragons' Den* (UK). Basierend auf der sozialen Wahrnehmungstheorie beziehen sich die Beiträge dieser Forschung auf die vielschichtigen Investorenentscheidungen, die Determinanten von Overconfidence sowohl bei Unternehmern als auch bei Investoren und den wenig erforschten deutschen Angel Investorenmarkt. Die Ergebnisse zeigen, wie Verzerrungen aus Overconfidence und stereotypischem Denken die Investitionsentscheidungen und Unternehmensbewertungen erheblich beeinflussen und heben die Präferenzen der Investoren für oberflächliche Merkmale wie Alter, Geschlecht, Ethnizität und Attraktivität der Unternehmer hervor. Darüber hinaus zeigt die Forschung den Wert und die Grenzen der Nutzung von Pitch-Wettbewerben für die Untersuchung von Finanzierungsentscheidungen auf. Als Implikationen ergeben sich unter anderem gezielte Schulungen, divers aufgestellte Bewertungsgremien und politische Maßnahmen, um ein gerechteres und profitableres Startup-Ökosystem zu fördern.

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## **PART I. SYNOPSIS**

### **1 Introduction**

#### **1.1 Bias in early-stage entrepreneurship and angel investor funding**

The landscape of decision-making in early-stage entrepreneurship is complex, with cognitive bias and subjectivity playing central roles. It is characterized by high levels of risk for all parties involved, given the inherent uncertainty about the future success of entrepreneurial ventures. Overconfidence bias and stereotypical reasoning are highly prevalent in this context, affecting decision-making processes from entrepreneurial opportunity recognition and market entry, through angel investors' evaluation of business potential and the investment decisions (Cain et al., 2015; Graves & Ringuest, 2018; Zacharakis & Shepherd, 2001). When bias impacts the accuracy of these decisions, it entails high cost for entrepreneurs and investors.

Academic researchers have explored cognitive bias in entrepreneurial finance over the past decades, given its significant economic relevance. For instance, angel investors a critical source of funding for early-stage ventures, and their use of heuristics and bias related to entrepreneurial stereotypes can lead to discrimination against entire entrepreneurial minorities (Boulton et al., 2019; Maxwell et al., 2011; B. Smith & Viceisza, 2018; Sohl, 2022). Furthermore, it can lead to overconfidence as well as missed opportunities, resulting in a systematic misallocation of funding across global markets (Morazzoni & Sy, 2022a).

This dissertation project delves into the realm of cognitive bias among entrepreneurs and investors through an empirical analysis of startup pitch competitions. A total of  $N = 1,334$  pitches from the televised formats *Die Höhle der Löwen* (DE) and *Dragons' Den* (UK) serve as rich sources of behavioral data, offering insights into the complexities and challenges faced by startups and their investors. Each individual study in this project sheds light on specific

cognitive biases along the different stages of decision-making in the interaction of entrepreneurs and investors.

## 1.2 The phenomenon of televised startup pitch competitions

First aired as Japanese format *The Tigers of Money* in 2001 and now most famously known as *Shark Tank* or *Dragons' Den*, televised startup pitch competitions have received high public interest throughout the past two decades and have been adapted worldwide. They all follow the same premise: Entrepreneurs introduce themselves and pitch their venture in front angel investors to secure funding in return for equity shares. Angel investors, who receive no prior information about the venture, interact with the entrepreneurial team and ask clarifying questions before deciding whether to offer them an investment deal. The detailed process of the German format *Die Höhle der Löwen* is illustrated below (Table 1).

**Table 1**

*Multi-stage process on televised startup pitch competitions, specifically Die Höhle der Löwen*

Stage	Process
<b>1. Application and pre-selection</b>	Entrepreneurs fill out an online application and are invited to briefly pitch their startup to the producers. The production select promising entrepreneurs to pitch in front of the investors in the upcoming season. Angel investors receive no information regarding the candidates prior to the pitch.
<b>2. Pitch</b>	Entrepreneurs, appearing in teams or alone, pitch their business idea in about 2-5 minutes, covering their ideation process, anticipated market demand, the solution their product offers, and funding needs. Pitches often include requisites and live product samples for investors.
<b>3. Investor interaction</b>	Angel investors ask clarifying questions about the product, market, and entrepreneurial team. They may share their own experiences with the product category and discuss the attractiveness of the opportunity with other investors.
<b>4. Negotiation and deal</b>	Based on the pitch and interaction, investors can make offers differing from the entrepreneurs' proposal, followed by negotiations about equity shares. Multiple investors may invest together if all parties agree. The handshake deal made between investors and entrepreneurs during production is a declaration of intent. If no offer is made or accepted, the entrepreneurs leave without funding.

<b>5. Due diligence</b>	The handshake deal triggers a due diligence process, where the investor's team validates market and business details. After a successful due diligence process, and if all parties still agree, capital is transferred in return for equity shares.
<b>7. Airing and public reaction</b>	There can be 5-8 months between the pitch/production and airing. Pitches are often discussed in the media after airing, especially if the deal fell through.

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These formats bear significant economic and societal implications, acting as vital sources of capital, strategic support, and publicity for startups (Blaseg & Hornuf, 2024; B. Smith & Viceisza, 2018). Simultaneously, they shape the public perception of the startup ecosystem and influence the expectations of aspiring entrepreneurs seeking external capital.

Importantly, these formats also provide a unique sample for entrepreneurship researchers. Numerous studies have been published observing data from the US format *Shark Tank* (Boulton et al., 2019; Hohl et al., 2021; Jetter & Stockley, 2023; Poczter & Shapsis, 2016; B. Smith & Viceisza, 2018), its Canadian counterpart *Dragons Den* (Maxwell, 2011; Maxwell et al., 2011; Maxwell & Lévesque, 2014), or the British version also named *Dragons Den* (Blaseg & Hornuf, 2024; Pollack et al., 2012). Observing these formats helps understand the entrepreneurial process and angel investor decisions based on first impression, which may be driven by overconfidence or bias related to stereotypes. Additionally, since they involve real investments in real ventures, structured data can be collected on the consequences of the handshake deals and subsequent performance of all ventures, whether they received investments or not.

### 1.3 Research gaps and questions addressed in this dissertation project

This dissertation project builds on the academic literature of cognitive bias in entrepreneurship, and startup pitch competitions. Considering the most recent studies in this context, we identified three overarching research gaps addressed throughout this project.

First, there is convincing evidence that angel investors use decision heuristics to assess the attractiveness of a venture based on entrepreneurial team characteristics (Boulton et al., 2019; Maxwell et al., 2011; Schreiber et al., 2024). However, most studies only consider singular

dependent variables, such as binary investment decisions, ignoring decision consequences. To better understand angel investor decision-making, it is crucial to consider the likelihood of investment offers and deal agreements, their valuations of the business, as well as the consequences of these decisions, such as deal cancellations and the long-term venture performance, both for those that received an investment and those that did not. This is necessary to determine if different kinds of angel investor bias result in systematic decision errors.

Second, a large body of research states that overconfidence is prevalent in both entrepreneurial and investor decision-making (Graves & Ringuest, 2018; Koellinger et al., 2007; Kraft et al., 2022; Zacharakis & Shepherd, 2001). At the same time, there is still insufficient evidence on the determinants driving these overconfident decisions. Are early-stage entrepreneurs more overconfident regarding their market entry decisions and business valuations when their ideation process is based on subjective experience? Are angel investors more overconfident when entrepreneurial team characteristics match stereotypes? What role does the diversity of entrepreneurial teams and investors play in this context? Understanding the circumstances of these biases is necessary to mitigate them and make the startup ecosystem more judicious and successful for all parties involved.

Third, most studies of pitch competitions focus on samples of North American angel investors (Boulton et al., 2019; Jetter & Stockley, 2023; Maxwell et al., 2011). Like many other geographies outside of North America, the German investor market is empirically underexplored, and this is the first major research project analyzing the German format *Die Höhle der Löwen* from multiple perspectives. Thus, a key contribution of this research is the specific focus on German angel investors.

This dissertation comprises four individual studies that build on and complement one another to fill these research gaps. The next chapters outline the overarching theoretic background and the empirical approach of leveraging televised startup pitches for research.

## **2 Theoretical background**

### **2.1 Decision-making under uncertainty and information asymmetries**

Entrepreneurship research and this dissertation specifically draw on well-established theoretical frameworks from economics and psychology. Considerations about decision-making under uncertainty and the construct of information asymmetries are helpful to better understand the dynamics in the startup pitch context (Courtney et al., 2017; Glücksman, 2020; Harrison & Mason, 2017; Venugopal, 2017).

From the entrepreneurial perspective, there is great uncertainty related to the entrepreneurs' limited knowledge of the true market demand and competitive environment. For instance, they must make market entry decisions without knowing for sure if and how many customers will purchase their product, how the industry may change, and how competitors will behave in the future (O'Brien et al., 2003; Packard et al., 2017).

Investors also face great uncertainty about the venture and the market, and earlier funding rounds involving business angels are particularly characterized by higher risk (Sohl, 2022). This uncertainty is intensified due to the information asymmetries between them and the entrepreneurs (Glücksman, 2020). Entrepreneurs naturally have greater knowledge about their business' potential, operability, and challenges, but can only share a limited amount within the timeframe of a startup pitch. Moreover, given their need for capital in this dynamic, it is conceivable that entrepreneurs exaggerate positive information to enhance their venture's legitimacy and omit information about challenges that would make an investment less likely.

## **2.2 Overconfidence bias and systematic decision error**

Given the inherent uncertainty about the future performance of the venture, all entrepreneurial action constitutes high risk for all parties involved. Optimism and confidence are thus a prerequisite for action on both the entrepreneur and investor sides (Graves & Ringuest, 2018; Kraft et al., 2022). However, when subjective confidence levels are higher than objective accuracy based on the available information, they succumb to overconfidence bias, which is highly prevalent in entrepreneurship (Cooper et al., 1988; Gudmundsson & Lechner, 2013; Koellinger et al., 2007; Kraft et al., 2022; Lowe & Ziedonis, 2006).

User entrepreneurship, for instance, is the phenomenon of entrepreneurs building products based on their own personal experience and need (Shah et al., 2012; Shah & Tripsas, 2007, 2012). This egocentric approach to opportunity recognition can be linked to subjective overestimation of market demand in the context of highly uncertain market entry decisions (Cooper et al., 1988; Fuchs et al., 2019; O'Brien et al., 2003). Thus, user entrepreneurs are assumed to be particularly prone to overconfidence bias, leading to excessive market entry in niche markets and ultimately resulting in lower success rates for the startups of user entrepreneurs (Moore et al., 2007; Srivastava et al., 2024; Srivastava et al., 2022).

For angel investors, overconfidence bias can lead to excessive investments in startups which later fail, constituting false positive decisions in the framework of signal detection theory (Jain & Nag, 1996; Stanislaw & Todorov, 1999; Zacharakis & Shepherd, 2001), depicted in Figure 1. Occasionally, overconfident investments may be identified and corrected after the due diligence process, resulting in deal cancellations. Conversely, other determinants and decision criteria may induce underestimation of startups and missing out on investment opportunities, which constitute false negative decisions (Sohl, 2022). Both types of decision error negatively affect the accuracy and economic returns of the investments.

		Business outcome	
		Great success	Low success
Investor decision	Invest	Correct decision True positive	<b>Overconfidence</b> Type I error ( $\alpha$ ) False positive
	Reject	<b>Missed opportunity</b> Type II error ( $\beta$ ) False negative	Correct decision True negative

**Figure 1.** *Signal detection framework of investor decision-making*

The high risk of financial loss, coupled with the inherent optimism and overconfidence on both sides, shapes the decision dynamics of the startup pitch context. Given the limited information available for investors to make their decision, they likely rely on all signals they can observe during the pitch. Prior research suggests they employ a heuristic combination of formal analysis of the venture and their subjective perception of the entrepreneurial team (L. Huang & Pearce, 2015; Maxwell et al., 2011). Notably, the latter is often impacted by attributions and stereotypes related to demographic representativeness and makes them particularly prone to systematic bias.

### 2.3 Social perception theory and stereotyping

Social perception theory explores the cognitive processes behind social perception, attribution, and resulting behavior towards others (Cook, 2021). In this line of research, the attribution of traits based on superficial characteristics and stereotypes has been established as an automated cognitive process, which can result in faster decision-making but often comes at the cost of accuracy, inducing systematic decision error (Cook, 2021; Snyder et al., 1977; Taylor, 1981; Tversky & Kahneman, 1974; van Knippenberg & Dijksterhuis, 2000). Studies in the context of entrepreneurship, for instance, show that specific superficial characteristics of entrepreneurs are

often mistakenly viewed as indicators of success and thus favored by investors (Boulton et al., 2019; Brooks et al., 2014; Harrison et al., 2015; Wickham, 2003). Such biases affect the likelihood of receiving investment offers and the valuation of those deals. Consequently, this bias not only entails suboptimal outcomes for angel investors but also perpetuates discrimination, making it harder for minority entrepreneurs to secure funding at the same level as others.

Specifically, evidence from prior research in the pitch context indicates a bias against female entrepreneurs related to gender stereotypes (Balachandra et al., 2019; Hohl et al., 2021; Jetter & Stockley, 2023). These stereotypes entail that entrepreneurial traits such as risk-taking, boldness, and aggressiveness are more associated with men, while women are judged as less able to lead a startup (Baughn et al., 2006; Edelman et al., 2018). Recent evidence suggests that female entrepreneurs receive less funding but are more profitable in comparison to male entrepreneurs, establishing that the present gender funding gap creates a systematic misallocation of venture capital for investors and entire economies (Morazzoni & Sy, 2022a). Analysis further shows that removing this gap would increase the industry's aggregate productivity output by 4%.

Another line of research explores age bias in entrepreneurship, based on the notion that older individuals are often discriminated against in the business context (Nelson, 2005; Zhao et al., 2021). The stereotype prescribes that older entrepreneurs are assumed to be less productive, motivated, and persistent than younger founders, and are less likely to receive offers from angel investors in the US pitch competition *Shark Tank* (Boulton et al., 2019).

The inconsistent representation of ethnic minorities within entrepreneurial circles can also be linked to stereotypical bias among investors regarding the ethnicity of entrepreneurial teams (Blanchard et al., 2008). They may be attributed with weaker political skills and lower rates of business survival (L. Huang et al., 2013; Z. Li & Johansen, 2021), or just generally



discriminated against because they are perceived as an ethnic out-group from the perspective of non-diverse angel investor panels (Maxwell, 2011). This notion is underscored by evidence that black entrepreneurs receive fewer and less valuable investment offers than others in the US pitch competition *Shark Tank* (Boulton et al., 2019).

Alongside gender, age, and ethnicity, investors may further be biased by stereotypes around the physical attractiveness of entrepreneurs. Higher levels of attractiveness are stereotypically associated with more positive traits and prior evidence suggests that attractive entrepreneurs are rated as more persuasive (Brooks et al., 2014; Klebl et al., 2022; Lorenzo et al., 2010; Schreiber et al., 2024). However, there is still a considerable research gap regarding the attractiveness bias of angel investors in the startup pitch context.

Further stereotypical bias of angel investors may relate to characteristics of the entrepreneurial team such as team size or composition. For instance, prior studies indicate a bias of angel investors towards larger teams (Boulton et al., 2019; Croce et al., 2017; Maxwell et al., 2011) and entrepreneurial teams that include a family component, i.e. siblings or parent and child (Edelman et al., 2016). Therefore, these various superficial characteristics that have been shown to influence social perception are considered as determinants of angel investor decision bias.

## **3 Method**

### **3.1 Sample and procedure**

Over the course of this research project, we constructed a unique dataset based on startup pitches, investor decisions, and subsequent startup performance in the context of the German televised pitch competition *Die Höhle der Löwen* (abbr.: *DHDL*; German for “The Lions’ Den”) and its British counterpart *Dragons’ Den*.

We leveraged the broadcasters’ online resources for an initial overview of startups and then trained a group of 6 independent observers to watch and code all pitches, interactions and

investor decisions broadcasted between August 2013 and May 2023 according to predefined coding sheets. Video recordings of all pitches are publicly available through streaming services. For studies C and D, data about the completion of deals after due diligence and subsequent startup performance were collected through structured web search.

Based on the varying perspectives and research questions, we focused on different independent and dependent variables in each of our four individual studies. Table 2 provides an overview of the samples underlying each study and the variable relationships in focus.

**Table 2.**

*Overview of data underlying the individual studies*

Study	Sample source	Sample size	Research focus
<b>A. They want what I want</b>	<i>Die Höhle der Löwen (DE)</i> , Seasons 1-10, 2014-2021	$N = 553$	Deal outcomes and entrepreneurial overvaluation by user entrepreneurship
<b>B. Investing in people, not in products</b>	<i>Die Höhle der Löwen (DE)</i> , Seasons 1-10, 2014-2021	$N = 553$	Deal outcomes by entrepreneurial characteristics (age, gender, ethnicity, and attractiveness)
<b>C. In search of unicorns</b>	<i>Die Höhle der Löwen (DE)</i> Seasons 1-12, 2014-2022; augmented by web search	$N = 638$	Investor overconfidence and underestimation (Investment vs. subsequent performance) by entrepreneurial characteristics
<b>D. Yes today, no tomorrow</b>	<i>DHDL</i> Seasons 1-13; <i>Dragons' Den (UK)</i> , Seasons 11-20, 2013-2023 augmented by web search	$N = 1,334$	Deal cancellation by count and gender of investor and entrepreneurial teams

### 3.2 Validity

Various televised formats have been leveraged by researchers to study a range of behavioral patterns, complementing empirical insights from surveys, laboratory studies, and large economic databases (Jetter & Stockley, 2023). Specifically, startup pitch competitions have been continuously examined in previous research to better understand the behavior of both entrepreneurs and investors in a high-stakes environment (Table 3). While leveraging these formats for research has become more common in recent years, it is crucial to discuss both the strengths and limitations inherent in these televised formats.

*Accessibility of data.* The primary advantage of using these formats as a research database is the accessibility of data. Episodes are broadcast and archived in many geographies, and hence provide researchers with easy access to a wealth of information, including non-verbal information available from the video material. Coding of the interaction allows researchers to capture potential confounders of the hypothesized relationships (e.g., product categories, revenue information, presentation strategies, year of the pitch, etc.), most of which can be objectively assessed for all pitches. This information can be analyzed to uncover decision patterns and trends that would not become evident in traditional startup funding databases.

*Reality value:* The high-stakes nature of televised pitch competitions creates an environment that can reveal genuine entrepreneur behavior and investor strategies. With substantial investments on the line, entrepreneurs are under pressure to present their ideas convincingly and investors are motivated to make the best possible decisions (as compared to experimental settings with fictional or endowed money).

*Highly controlled environment:* The competitions offer real-time interactions between entrepreneurs and investors, providing an authentic glimpse into their decision-making processes. Before the pitch, angel investors do not receive any information about the entrepreneurs or about which products would be presented. After listening to the pitch, they can ask questions to inform their decision and negotiate with the entrepreneurs, all of which is observable to researchers. The feedback they provide is valuable for understanding the criteria and considerations that influence their decisions. Moreover, this real-time dynamic is challenging to replicate in more traditional research settings.

*Pre-selection:* Although there is a wide range of entrepreneurs and industries featured, there is a pre-selection of startups in similar development stages, and all interactions follow a similar structure (see section 1.2). Admittedly, the pre-selection can be prone to entertainment bias

(e.g., producers favoring startups with compelling storylines) and there seems to be an overrepresentation of business-to-consumer startups, both of which limits the generalizability of findings to the wider population of startups. This potential sample selection bias needs to be considered when making inferences regarding startups of different entrepreneurial groups, industries, and development stages. At the same time, the pre-selection decreases heterogeneity in the data, allows for comparability and ultimately strengthens the internal validity of the results.

**Table 3.**

*Relevant prior research leveraging televised startup pitch competitions*

Author (Year)	Title	Research focus	Sample source	Sample size	Method
Maxwell (2011)	Business angel decision-making	Overview of investor decision-making criteria, incl. capabilities, experiences, and traits	Dragons' Den (CA), 2006-2009	$N = 602$	Employment of three observers to code information exchanges and behavioral cues from the show
Maxwell et al. (2011)	Business angel early-stage decision-making	Use of heuristics in decision-making process of investors (e.g., looking for a fatal flaw)	Dragons' Den (CA), 2005	$N = 150$	Three trained raters coded eight pre-defined variables over a single season
Pollack et al. (2012)	Cognitive Legitimacy as antecedents of new venture funding in televised business pitches	Relationship between entrepreneurial preparedness behavior, perceived cognitive legitimacy, and amount of funding	Shark Tank (US), Dragons' Den (UK), selected pitches from 2005-2010	$N = 113$	Coded entrepreneurial experience, responsiveness, preparedness & cognitive legitimacy of successful pitches with Likert scales
Maxwell and Lévesque (2014)	Trustworthiness: A critical ingredient for entrepreneurs seeking investors	Perceived risk and founder trust-building behavior as factors of investor decision-making	Dragons' Den (CA), 2006-2009	$N = 54$	Used data from Maxwell et al. (2011), focusing on a subset of pitches with trust-building behavior
Daly and Davy (2016)	Structural, linguistic, and rhetorical features of the entrepreneurial pitch	Linguistic exponents and rhetorical devices typical of successful pitches	Dragons' Den (UK), 2005	$N = 13$	Language-based discourse analysis of successful pitches
Jeffrey et al. (2016)	The non-compensatory relationship between risk and return in business angel investment decision-making	Non-compensatory decision-making (heuristics) of investors, i.e., aggregate evaluations of anticipated risk and return	Dragons' Den (CA), 2006-2009	$N = 166$	Used data from Maxwell et al. (2011), focusing on a subset of pitches not rejected for fatal flaw
Cairnes (2016)	Gender biases in entrepreneurship focused reality television	Deal outcomes of business pitches of female entrepreneurs and children entrepreneurs	Shark Tank (US), 2015	$N = 52$	Single-person coding, incl. the variables appearance, background, presentation, and emotionality
Poczter and Shapsis (2016)	Gender disparity in angel financing	Impact of gender on entrepreneurial strategy and amount of funding secured	Shark Tank (US) 2009-2015	$N = 495$	Two research assistants coded each pitch, a third party reconciled any discrepancies between the datasets

<b>Hunt (2016)</b>	<b>Gender differences in venture capital funding on ABC's Shark Tank</b>	Gender differences in deal success and deal valuations	Shark Tank (US), 2009-2012	$N = 235$	Used publicly available datasets that were cleansed and merged, resulting in 35 variables across 235 pitches
<b>B. Smith and Viceisza (2018)</b>	<b>Bite me! ABC's Shark Tank as a path to entrepreneurship</b>	Signaling effect of appearing on shark tank in relation to later funding, innovation, and business survival	Shark Tank (US), 2009-2016	$N = 584$	Coded show episodes as well as data from social media, YouTube, firm websites, Amazon, patent office and company registries
<b>Boulton et al. (2019)</b>	<b>Angels or Sharks? The Role of Personal Characteristics in Angel Investment Decisions</b>	Impact of personal characteristics (gender, race, and age) on offer likelihood and valuations	Shark Tank (US), 2009-2017	$N = 707$	Hand-coded each episode and supplemented data using LinkedIn and firm websites
<b>Sherk et al. (2019)</b>	<b>SharkTank deal prediction: Dataset and computational model</b>	Investment deal prediction based on product category, team composition, valuation, equity, and state origin	Shark Tank (US), 2009-2018	$N = 802$	Used pre-collected data to develop a computational model, controlling for shark-fixed effects
<b>Fernández-Vázquez and Álvarez-Delgado (2020)</b>	<b>The interaction between rational arguments and emotional appeals in the entrepreneurial pitch</b>	Use of emotional appeal vs. rational arguments by entrepreneurs and impact of passion on investor decision-making	Tu Oportunidad (ES), 2013	$N = 10$	Transcription of ten videos on YouTube, qualitative content and rating of the ten videos by 133 students
<b>Muschallik (2020)</b>	<b>Zusammenspiel zwischen Gründern und Investoren am Markt für Wagniskapital</b>	Descriptive analysis of information asymmetry between business angels and startup founders	Die Höhle der Löwen (DE), 2016-2019	$N = 258$	Used pre-collected data and included an overview of rejection reasons
<b>Nguyen et al. (2020)</b>	<b>Shark Tank TV Show: An effective channel of funding and commercializing innovation</b>	Impact of product and business innovativeness on success in the show and popularity afterwards	Shark Tank Vietnam (VNM), 2017-2019	$N = 133$	Hand-coding of 133 pitches with 15 variables per pitch
<b>Hohl et al. (2021)</b>	<b>Gender diversity effects in investment decisions</b>	Gender diversity effects in investment decisions (deal success, asking and deal valuations)	Shark Tank (US), 2009-2019	$N = 895$	Watching all pitches and collecting quantitative data manually
<b>Zhang et al. (2021)</b>	<b>Disagreement and mitigation in power-asymmetrical venture capital reality TV shows</b>	Relationships among cultural variation, power, disagreement, and mitigation devices of investors and entrepreneurs in pitch setting	Shark Tank (US), Dragons' Den (CN)	$N = 20$	Transcription, categorization, and coding of verbal, vocal and visual disagreement devices
<b>Lavanchy et al. (2022)</b>	<b>Blood in the water: An abductive approach to startup valuation on ABC's Shark Tank</b>	Startup valuation and deal success as predicted by equity offered by entrepreneurs	Shark Tank (US), 2009-2015	$N = 495$	Manual construction of dataset out of different sources

<b>Jáki et al (2022)</b>	<b>Key Competencies of Startup Teams Sought After by Investors</b>	Impact of person-specific competencies on investor decisions	Among Sharks (HU), 2019	$N = 34$	Evaluation of team characteristics on Likert scales based on the pitch
<b>Jetter and Stockley (2023)</b>	<b>Gender match and negotiation: evidence from angel investment on Shark Tank</b>	Gender gap and gender match (similarity bias) in venture capital financing	Shark Tank (US), Seasons 1-11	$N = 977$	Manual watching and coding; modelled funding incl. gender, asking valuation and category
<b>Blaseg &amp; Hornuf (2024)</b>	<b>Playing the Business Angel: The Impact of Well-Known Business Angels on Venture Performance</b>	Startup survival and web traffic as predicted by the popularity of business angels	Shark Tank (US), Dragons' Den (CA, UK), Die Höhle der Löwen (DE)	$N = 2,902$	Video analysis using AWS, retrieved additional data from startup databases

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*Note.* This summary is non-exhaustive, focusing on the studies most relevant to our research questions.

## 4 Overview and contribution of studies

The following section briefly summarizes the content of the four individual studies of this dissertation project. It includes information about the underlying theoretical constructs, the applied statistical methods, and the status of scientific dissemination for each article.

### 4.1 A. They want what I want

<b>Title</b>	<b>They want what I want: User entrepreneurship, egocentric bias, and overconfidence in early-stage entrepreneurial decision-making</b>
<b>Author</b>	Livia Boerner
<b>Abstract</b>	User entrepreneurship is the phenomenon of entrepreneurs developing and commercializing a business idea to fulfil their own subjective need. The paper explores this phenomenon with a focus on understanding its downsides linked to egocentric bias and overconfidence. For this study, a research team coded and analyzed $N = 553$ pitches of early-stage startups in the pitch competition <i>Die Höhle der Löwen</i> . Controlling for a range of covariates, results suggests that end-user entrepreneurs systematically overestimate the valuation of their business idea compared to others, indicating egocentrically biased and overconfident market entry decisions. Correspondingly, they are less likely to secure funding from investors and obtain significantly lower business valuations overall. These findings complement the literature on pitch competitions, early access to funding and bias in entrepreneurial decision-making.
<b>Constructs</b>	User entrepreneurship, Opportunity recognition, Overconfidence, Egocentric bias
<b>Method</b>	Logistic regression analysis, Two-stage linear regression analysis
<b>Contribution</b>	Single-authored project
<b>Scientific dissemination</b>	<p>Presented at <i>European Academy of Management Annual Conference 2024 (EURAM)</i>, June 2024, Bath, United Kingdom</p> <p>Published in <i>EURAM 2024 Conference Proceedings</i>, ISSN 2466-7498, ISBN 978-2-9602195-6-2</p> <p>Published in <i>Working Papers Dissertations</i>, Paderborn University, Faculty of Business Administration and Economics, No 121: <a href="https://EconPapers.repec.org/RePEc:pdn:dispap:121">https://EconPapers.repec.org/RePEc:pdn:dispap:121</a></p>



## 4.2 B. Investing in people, not in products

<b>Title</b>	<b>Investing in people, not in products: how age, gender, ethnicity, and attractiveness of entrepreneurial teams influence the decision-making of angel investors in Germany</b>
<b>Authors</b>	Livia Boerner, Thomas Fritz, Bernd Frick
<b>Abstract</b>	The high-risk decision environment and information asymmetries associated with investing in early-stage startups in pitch competitions make angel investors prone to biased decision-making. Drawing from social perception theory, this study examines how angel investors' decisions are influenced by observed personal characteristics of entrepreneurial teams, based on representative stereotypes. Analyzing a dataset of $N = 553$ startup pitches from the German televised competition <i>Die Höhle der Löwen</i> , this study reveals that the likelihood of securing deals with German angel investors and the resulting business valuations are linked to certain superficial team characteristics. Specifically, the age, diverse ethnicity, and physical attractiveness of the entrepreneurial team have a significant positive effect on deal probabilities. Moreover, angel investors offer lower deal valuations to teams of older and female entrepreneurs, suggesting the presence of a systematic bias. These insights contribute to understanding the role of stereotypes in entrepreneurial finance and address the challenges related to bias in access to capital for early-stage startups in Germany.
<b>Constructs</b>	Information asymmetry, Social perception Theory, Stereotyping, Age bias, Gender bias, Ethnicity bias, Attractiveness bias
<b>Method</b>	Logistic regression analysis, Two-stage linear regression analysis
<b>Contribution</b>	All authors equally contributed to the project.
<b>Scientific dissemination</b>	Presented at <i>G-Forum Jahreskonferenz 2023</i> , September 2023, Darmstadt, Germany Results shared in national media (see Appendix A1)  Published in <i>Journal of Business Economics</i> , Accepted 12. September 2024, Published 02. October 2024; Citation: Boerner, L., Fritz, T. & Frick, B. Investing in people, not in products: how age, gender, ethnicity, and attractiveness of entrepreneurial teams influence the decision-making of angel investors in Germany. <i>J Bus Econ</i> (2024). <a href="https://doi.org/10.1007/s11573-024-01206-7">https://doi.org/10.1007/s11573-024-01206-7</a>

## 4.3 C. In search of unicorns

<b>Title</b>	<b>In search of unicorns: Overconfidence and missed opportunities due to stereotypical founder bias in televised startup pitch competitions</b>
<b>Author(s)</b>	Livia Boerner, Bernd Frick, Thomas Fritz
<b>Abstract</b>	This study examines investment decision accuracy and founder-related bias of angel investors in startup pitch competitions. We use a unique dataset of $N = 638$ pitches and investment decisions from televised German format <i>Die Höhle der Löwen</i> and evaluate subsequent venture performance based on survival and product-market fit. Building upon signal detection theory, two types of decision error are distinguished to explore investor bias. Our results suggest that angel investors are more likely to make overconfident (false positive) investments when ventures are pitched by more attractive entrepreneurs or family-based teams. Additionally, ventures pitched by younger, female, or less attractive teams are systematically underestimated, resulting in missed opportunities (false negative). Our study contributes to

	the literature by highlighting the impact of founder-related investor bias on the quality of their investment decisions.
<b>Constructs</b>	Social perception Theory, Stereotyping, Signal detection theory, Overconfidence, Missed opportunities, Age bias, Gender bias, Attractiveness bias, Family effect
<b>Method</b>	Multinomial logistic regression analysis
<b>Contribution</b>	All authors equally contributed to the project.
<b>Scientific dissemination</b>	Presented at <i>Interdisciplinary European Conference of Entrepreneurship Research (IECER)</i> , October 2023, Covilha, Portugal  Published in <i>Working Papers Dissertations</i> , Paderborn University, Faculty of Business Administration and Economics; No 122: <a href="https://EconPapers.repec.org/RePEc:pdn:disap:122">https://EconPapers.repec.org/RePEc:pdn:disap:122</a>

#### 4.4 D. Yes today, no tomorrow

<b>Title</b>	<b>Yes today, no tomorrow. Exploration of deal cancellations in televised pitch competitions</b>
<b>Author(s)</b>	Livia Boerner, Bernd Frick
<b>Abstract</b>	Early-stage entrepreneurs exert significant efforts to secure deals with angel investors during televised startup pitch competitions. However, a substantial number of these deals are cancelled during the subsequent due diligence process. Drawing upon interpersonal persuasion theory and information asymmetries in the pitch context, we investigate deal cancellations as instances of biased communication and strategic misrepresentation. Analyzing a novel dataset comprising $N = 1,334$ pitches from the British format <i>Dragons' Den</i> and the German format <i>Die Höhle der Löwen</i> , we explore the occurrence and determinants of deal cancellations. Our examination delves into differences related to gender and team size of the involved parties, pitch format, and the level of financial risk. Our findings reveal a bias against female investors, higher cancellation rates for more costly deals and a significant country effect. This work sheds light on the usually opaque due diligence processes and interpersonal dynamics inherent in entrepreneurial finance, offering new insights into the black box of deal cancellations.
<b>Contracts</b>	Information asymmetry, Due diligence, Deal cancellation, Overconfidence, Gender differences
<b>Method</b>	Logistic regression analysis, Two-stage probit regression analysis with fixed effects model
<b>Contribution</b>	All authors equally contributed to the project.
<b>Scientific dissemination</b>	Presented at <i>84th Annual Meeting of the Academy of Management (AOM 2024)</i> , August 2024, Chicago, USA  Published in <i>Working Papers Dissertations</i> , Paderborn University, Faculty of Business Administration and Economics; No 123: <a href="https://EconPapers.repec.org/RePEc:pdn:disap:123">https://EconPapers.repec.org/RePEc:pdn:disap:123</a>

## **5 Conclusion**

### **5.1 Summary of findings**

Collectively, all four studies contribute to a comprehensive understanding of decision-making dynamics in and around pitch competitions. The individual findings underscore the pervasive nature of bias, ranging from egocentric tendencies among entrepreneurs to stereotypical influences on angel investor decisions and the dynamics leading to deal cancellations.

Study A reveals that user entrepreneurs, who developed a business idea based on their subjective need, obtain fewer deals and lower resulting deal valuations compared to others. Moreover, user entrepreneurship is the main predictor of entrepreneurial overconfidence, as becoming apparent in the systematic overestimation of business valuation.

Study B takes on the perspective of angel investors and shows how their decision-making is linked to superficial characteristics of entrepreneurial teams. Specifically, older age, ethnicity, and physical attractiveness of entrepreneurs have a significant positive impact on offer and deal probabilities. Notably, angel investors tend to offer lower deal valuations to teams of older and female entrepreneurs, suggesting the presence of a systematic bias. These results further suggest that investors use different heuristic criteria for extending offers (intuitive process driven by superficial characteristics) versus deciding on a reasonable business valuation.

Preferences for certain characteristics, however, do not automatically imply decision error. Study C takes this notion further and includes observable indicators of subsequent venture performance to determine how these preferences result in overconfidence and missed opportunities. The results confirm that angel investors possess a discerning (significantly better than chance) ability to identify startups with long-term viability and product-market fit. At the same time, bias related to stereotypical characteristics of entrepreneurs increases the chance for decision error: Pitches of highly attractive entrepreneurs and family-based teams result in more

overconfident investments of business angels. Conversely, young age, female gender, and low attractiveness of entrepreneurs increase the likelihood for underestimation and missed opportunities. Further analyses show that decision error is influenced by the level of risk involved. Specifically, overconfidence is more likely when the requested valuations are low, and high valuations seem to entail more cautious decision-making, resulting in missed opportunities due to a perceived lack of favorable risk-reward trade-offs. These findings underscore how crucial it is for angel investors to consider the performance of their past investment and include negative decisions to understand missed opportunities.

Finally, study D explores the cancellation of the handshake deals after production and finds that cancellation is significantly more likely for high-investment deals, and overall, less likely in the German format (*DHDL*) than in the UK (*Dragons' Den*). Female investors must cancel deals more often, indicating higher levels of entrepreneurial exaggeration towards them in the pitch, but this effect is only significant in the German sample. This analysis is the first of its kind to shed some light into the black box of due diligence processes.

Considering the findings from all individual studies together, three main conclusions can be derived to address the overarching research questions and inspire future scientific exploration:

**1. Decisions of angel investors exceed a simple yes or no:** We observe how varied founder and investor characteristics differently impact offer and deal probabilities, business valuations, subsequent performance, and deal cancellations. This suggests different cognitive processes for decision-making in the pitch context, highlighting the importance of considering these dependent variables individually. Expanding the scope of prior research of pitch competitions (Boulton et al., 2019; Jetter & Stockley, 2023; Maxwell et al., 2011), we also find that it is crucial to consider subsequent investment success to understand decision error, with results showing that angel investors must also monitor the performance of rejected opportunities to

better understand their potential bias. Overlapping and summarizing the four individual studies, for instance, results show how investors' bias against female gender has no apparent impact on deal probabilities in the first place, and does not affect the likelihood of deal cancellations, but results in significantly lower deal valuations and, considering how well their ventures perform subsequently, provokes underestimation resulting in missed opportunities for investors.

## **2. Egocentricity and stereotypes drive overconfidence of entrepreneurs and investors:**

Early-stage entrepreneurs are shown to be overconfident in their market entry decisions based on egocentric bias in opportunity recognition. Investors make more overconfident investment decisions when startups are pitched by attractive entrepreneurs and families, while younger, female, and less attractive entrepreneurs are systematically underestimated. Our findings underscore how the diversity of entrepreneurial teams and investor panels is a crucial success factor for more accurate decision-making. For instance, considering the pitfalls of user entrepreneurship, diverse entrepreneurial teams likely have less egocentrically biased ideas. Emphasizing age and gender diversity in their screening helps angel investors not to miss out on promising investment opportunities.

**3. Angel investors in Germany show similar, albeit not identical bias as others:** Our project complements the existing body of research which before mainly focused on samples of North American investors. Results show how German investors' gender bias only surfaces when considering deal valuations and subsequent performance, which is in line with results of US investors. In contrast, the finding of an age bias towards older entrepreneurs, and systematic underestimation of younger teams regarding investment deals appears to be unique to the German sample. Beyond, the neutral to positive impact of diverse ethnicity found in study B contrasts with Boulton et al. (2019), who find lower valuations for black entrepreneurs in the US sample. In direct comparison, ethnicity bias in the sense of racial discrimination is less

pronounced in Germany than in the US. This underscores the importance of including samples from different geographies in academic research.

## **5.2 Reflections on methodology**

This dissertation project confirmed our idea that startup pitch competitions such as *DHDL* and *Dragons' Den* provide a great source of insights for entrepreneurship research. Being able to observe genuine investing behavior in a relatively standardized and controlled environment is a unique opportunity, which proved to bear intriguing results in addition to more traditional data collection approaches. It is important to reflect on both the advantages and the limitations of this methodology to derive recommendations for future research in this field.

Employing a team of multiple observers to double-code all interactions based on the video material worked well overall. Admittedly, some variables are arguably more prone to subjectivity of observers than others: While recording the business valuation resulting from a deal is simple, characteristics such as ethnicity, attractiveness, charisma, and entertainment value are more subjective by nature. We are convinced that quantifying and including these measures provides intriguing perspectives and can resolve endogeneity issues, so it is worth it to include these measures. However, it is crucial take appropriate measures to reduce the risk of subjective observer bias. We recommend ensuring that observers are equipped with clear coding instructions and go through multiple test rounds of coding to accomplish common understanding of all variables, reducing subjectivity and establishing inter-rater reliability.

In contrast to the limited information available from venture funding databases, observing televised pitch competitions allows for insights on both successful and unsuccessful interactions between entrepreneurs and investors. Furthermore, it is generally possible to collect data about the subsequent performance of each venture in the market. Having said that, we found the data availability for anything that happens after the pitch is limited. While it was possible to identify

which deals got cancelled, the specific reasons for cancellation remain obscure for the most part. Considering the long-term venture performance, we determined survival status and web traffic for the individual startups, which is helpful to categorize more successful from less successful startups, but these are merely proxies for success. Ideally, one could gather revenue data to measure the financial reward of equity investments. Longitudinal data collection, tracking the progress of each venture over the course of 5-10 years and focusing on investor exit situations would provide additional insights into the accuracy of their decision-making.

Finally, we acknowledge the generalizability of results is somewhat limited due to the selection of startups and investors as well as the televised format per se. The startups that pitch in these competitions are predominantly in the consumer products business. To some extent, this lower variance in this dataset increases the internal validity of findings. At the same time, the external validity is restricted, as no reliable inferences are possible for underrepresented sectors such as biotech and B2B software. The relatively small panel of investors may not be representative of the general population of angel investors, and they may have individual decision-making criteria based on their own background, education, experience and political orientation (J. Chen et al., 2023; Moritz et al., 2022). We also suggest future researchers consider the impact of the social dynamic among the different investors in the panel. Last but not least, the public format of the televised competitions can further impact the decision-making of investors: They might adapt their investment decisions anticipating potential public scrutiny and allegations of discriminatory behavior, and in this case show less stereotypical bias than in private settings. We recommend further research to conduct comparative studies, validating the findings with supplementary data sources from non-televised pitch competitions to make sure the findings are not artifacts of the televised format.

### **5.3 Implications and outlook**

The insights from this dissertation project not only can inspire future academic research but also be translated into implications for practitioners in the realm of early-stage entrepreneurship. Overall, a deeper understanding of the prevalence and determinants of decision bias serves those seeking to mitigate suboptimal outcomes in their decision-making and foster a more judicious and profitable entrepreneurial ecosystem.

Early-stage entrepreneurs must continuously seek diverse perspectives to improve their success in opportunity recognition and not succumb to overconfidence related to egocentric bias. They should emphasize objective metrics and comprehensive market analysis when making market entry decisions instead of relying on their subjective experience. When seeking external capital in pitch competitions, they could join specific trainings workshops to enhance their presentation skills and emphasize the strength of their team and venture objectively. Female entrepreneurs, for instance, should clearly outline previous successes, qualifications, and unique strengths, giving less room for gender stereotype attributions. More specifically, they should value their business confidently supported by empirical data and evidence to avoid gender bias leading to lower funding rates. They can leverage the media and public pitch competitions to gain visibility for their venture and challenge investor stereotypes. Ethnic minority entrepreneurs, for instance, appear to benefit from the public scrutiny that discourages discriminatory behavior. Importantly, all entrepreneurs should refrain from exaggerated legitimacy claims in their pitch to avoid the negative impact of deal cancellations after the due diligence process.

To avoid the high cost related to systematic decision error, angel investors should take measures to be more objective and inclusive in their decision-making. They should participate in regular training on unconscious bias and inclusive decision-making, actively seek out entrepreneurial teams representing a broad range of backgrounds and focus on structured evaluation criteria such as market potential and product innovativeness. In addition, investors should foster



relationships with diverse groups of other investors and advisors or join collaborative evaluation panels to challenge their subjective beliefs. Finally, our findings show how important it is for angel investors to monitor and review the accuracy of their past investment decisions, including rejected ventures. Only then can they reflect on bias leading to missed opportunities and draw lessons from them.

Last, our findings emphasize the importance of policymakers' engagement towards a more equitable and successful startup economy. There is a great societal interest in improving the objectivity and quality of angel investor decision-making. Policymakers can contribute to a more inclusive entrepreneurial culture through the provision of purposeful education, inclusive research grants, and network opportunities for different entrepreneurial minorities. They can implement monitoring systems to ensure accountability of investor decisions and launch campaigns to raise awareness about entrepreneurial and investor decision bias, highlighting the availability of support resources. To this effect, we conclude that public pitch competitions such as *DHDL*, *Dragons' Den*, or *Shark Tank* are important vehicles to promote the visibility of diverse entrepreneurial groups and contribute to the ongoing public debate about biased decision-making in entrepreneurial finance.

This dissertation project underscores the profound impact of cognitive biases in the dynamic interplay between entrepreneurs and angel investors, exploring the nuanced decision-making processes that shape early-stage entrepreneurial ventures. By leveraging empirical data from televised pitch competitions, this project expands the academic as well as public discourse and offers practical insights. Future research and initiatives must continue to investigate, address, and mitigate these biases to unleash the full potential of entrepreneurial creativity and talent, and drive sustainable economic growth.

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## Appendix

### A1. Media dissemination

DIE ZEIT N° 14 30. März 2023 WIRTSCHAFT 27



# Megajungs gesucht

Eine Studie zeigt, dass die Investoren der Gründershow »Die Höhle der Löwen« gutes Aussehen belohnen und Frauen weniger Geld geben VON JENS TÖNNESMANN

**G**ut möglich, dass am Montag wieder mehr als eine Million Menschen einschalten, wenn auf Vox die neue Staffel der Gründershow »Die Höhle der Löwen« anläuft, kurz DHDL. Und gleich zu Beginn könnten sie Klischee-Blings spielen. Da stellen nämlich zwei sportliche Männer in T-Shirts den Investoren – Löwen genannt – ihre Geschäftsidee vor. Die beiden sind Anfang 20, haben ihr Start-up mit dem Geld aus einem Ferienjob angeschoben und dann mit einem 3-D-Drucker eine Art Geldbeutel mit flechtigen Fächern für Schlüssel, Karten und Münzen angefertigt – natürlich in der Garage der Oma. Als das Geschäft ansetzt, haben sie ihr Studium geschmissen, klar, »Vorbilder für viele Jugendlichen« seien die beiden, findet der Löwe, Milliardär und Studienabbrecher Carsten Maschmeyer. Dann »die Reife und dieser Mut«, kurzum: »Zwei Megajungs!«

Die Sendung wurde vorher aufgezeichnet. Ob das Duo am Ende Geld von den Löwen bekommt, wird hier nicht verraten. Aber Geldgeber, die in eine jüngere Version von sich selbst investieren, Megajungs in Megajungs, sind in der Start-up-Szene weit verbreitet. Das ist ein Grund, warum es Frauen schwerer haben, an Wagniskapital zu kommen. Existieren solche Vorurteile auch in jener Gründershow, die seit 2014 von Millionen gesehen wird? Die aus Sicht der Vox-Unterhaltungschefin Kirsten Petersen so erfolgreich ist, weil die Zuschauerinnen und Zuschauer »hautnah miterleben, wie ein Pitch ihre eigene Lebenswirklichkeit und den Karriereweg maniger Menschen verändern kann?«

Eine noch unveröffentlichte Studie eines Forschungsteams von der Uni Paderborn und der FH Aachen zeigt: Ja – es gibt solche Bias auch bei DHDL.

Für die Studie haben die Psychologin Livia Boerner und die Ökonomen Thomas Fritz und Bernd Frick alle zwölf Staffeln von DHDL analysiert. 216 Stunden Material mit insgesamt 636 Präsentationen von Geschäftsideen (»Pitches«). Dabei erfasste das Forscherteam unter anderem, ob die Gründer männlich oder weiblich waren, wie attraktiv sie aussahen, wie alt sie waren und ob sie einen Migrationshintergrund hatten. Und sie haben die Deals notiert: Konnten die Gründer die Löwen überzeugen? Wie viel Geld haben sie erhalten, und wie viele Firmenanteile mussten sie hergeben?

Dazu muss man wissen: Die Löwen wissen anfangs nichts über die Kandidaten und haben nur begrenzte Zeit, mehr herauszufinden. Sie lesen reichlich, kritisieren manchmal (»Ihr denkt zu groß, aber plant zu klein«), stellen viele Fragen (»in welchen Regalen aldet du dich?«) – und müssen sich jedes Mal auch auf ihr Bauchgefühl verlassen, wenn sie aussagen (»ich kann das nicht ins Regal bringen«) oder ein Angebot unterbreiten (»Wir rocken das!«).

Aus den Studienergebnissen können Menschen lernen, die selbst gründen wollen. Die Jungunternehmer müssen sich demnach bei einem Deal im Schnitt auf eine etwa halb so hohe Bewertung ihrer Firma einlassen wie anfangs gefordert. Sie sollten also pokern. »Und es lässt sich ziemlich gut erforschen, wie Investoren entscheiden und welche Verzerrungen ihre Entscheidungen prägen«, sagt Livia Boerner.

Dabei zeigt sich: Zwar bieten die Löwen Frauen und Männern gleich häufig Deals an. Allerdings bewerten die Löwen Start-ups von weiblichen Gründerteams laut der Studie im Durchschnitt um 30 Prozent niedriger als die von männlichen Teams. »Frauen bekommen im Vergleich weniger Vertrauen entgegengebracht und müssen in der Folge mehr Anteile abgeben oder mit weniger Kapital auskommen«, sagt Livia Boerner. Ältere Gründer erhalten außerdem eher einen Deal, jüngere mehr Geld. Und: Je attraktiver die Gründer sind, desto eher bieten die Löwen ihnen einen Deal an. Immerhin: Bei dessen Höhe spielte das Aussehen keine Rolle. »Wenn es ans Portemonnaie geht, werden die Löwen sehr rational, manche verzerrenden Effekte verschwinden«, sagt der Ökonom Thomas Fritz.

Solche Bias sind ein Problem – nicht nur für Gründer, die aufgrund von Äußerlichkeiten zu kurz kommen. Auch für die Investoren selbst haben sie Nachteile: Sie unterschätzen womöglich aussichtsreiche Start-ups – und überschätzen andere.

Trotzdem glaubt die Unterhaltungschefin Kirsten Petersen von Vox nicht, dass solche Verzerrungen in der Show eine Rolle spielen: »Was die Investmenthöhe der einzelnen Start-ups angeht, sehen wir keinen Unterschied zwischen männlich und weiblich geführten Unternehmen.« Jeder Löwe habe eigene Vorstellungen, aber die würden sich auf das jeweilige Unternehmen und dessen Teamzusammensetzung und Potenzial beziehen, nicht auf Geschlecht, Alter oder Migrationshintergrund. »Man achte darauf, weiblich geführten Unternehmen in der Sendung eine Präsenz zu geben«, sagt Petersen, der Sender wolle ein »möglichst diverses Gründerinnen-Spektrum« abbilden und unterstützen.

Zumindest zum Auftakt der neuen Staffel gelingt das nicht: Bei den von Vox für die erste Folge ausgesuchten Pitches ist jeweils höchstens eine von drei Löwinnen zugegen, in einem gar keine. Und unter den zehn Gründern findet sich gerade mal eine Frau.

DIE ZEIT N° 14 30. März 2023 WIRTSCHAFT

**WirtschaftsWoche**

**Wieso werden Frauen niedriger bewertet?**

In der TV-show »Die Höhle der Löwen« präsentieren Gründerinnen und Gründer ihr Glück.

**ELLE** FASHION BEAUTY LIFESTYLE DECORATION TRAVELLER FEMALE EMPOWERMENT HOROSKOP SHOP

**stern**

**Studie zeigt: Gründererfolg von Alter abhängen**

**GRÜNDERSZENE** MAGAZIN PLUS PODCAST JOBBÖRSE EVENTS MEHR

**Wer schön ist, bekommt einen Deal: Eine Studie offenbart, wovon sich DHDL-Investoren beeindrucken lassen**

**BRISANTE STUDIE ÜBER ZWÖLF STAFFELN**

»Höhle der Löwen«-Investoren zahlen mehr Geld an attraktive Gründer

**Wolfrum**

**Bessere Deals für s**

Studie der FH Aachen: Nach diesen Kriterien vergeb

**SZ**

**Schönheit zahlt sich aus**

**Ungleichheit in »Die Höhle der Löwen«? Studie stellt Show-Konzept in Frage**

**Frankfurter Allgemeine**

**ist, bekommt bei »Die Höhle der Löwen« eher einen**