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Failure signals in sustainable crowdfunding: distinct reactions driven by crowd investors' experience

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Abstract A significant number of crowdfunding campaigns, including sustainable campaigns, fail after securing successful funding. Although failure implies investment losses for crowd investors and potentially impacts investors' future investment behavior, our understanding of how crowd investors respond to failures remains limited. This study proposes that prior crowdfunding experience explains important differences in how crowd investors react to failure signals. Drawing on signaling theory, we argue that prior crowdfunding experience results in less adverse reactions to failure signals. Moreover, we propose that crowdfunding experiences explain differences in the reactions to failure signals of sustainable campaigns. Two vignette-based experiments (studies

1 and 2) reveal that experienced investors react less negatively to investment failures than those without this experience. Further, our studies show a reverse effect for sustainable campaigns, suggesting that experienced crowd investors tend to be less forgiving of failures in environmental campaigns than commercial ones, compared to inexperienced crowd investors. An additional empirical survey indicates that a possible explanation for the differences between crowd investors' reactions may be found in the specific personal values of crowd investors. We contribute to entrepreneurial finance and crowdfunding literature by showing how experienced crowd investors interpret conflicting signals—failure and sustainability—emphasizing the role of investor characteristics in shaping signal effectiveness.

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Plain English Summary Sustainable ventures face significant funding challenges, especially after failures. Our research finds that while crowd investors with crowdfunding experience generally react more forgivingly to failures, they are notably less lenient with environmental campaigns, exhibiting a “double loss” (losing financial return and sustainable impact) and reducing subsequent investments. This double loss phenomenon is an important finding for entrepreneurial finance research and suggests that expectations of environmental ventures carry particular weight. Recognizing differences in crowd investors' behavior depending on their diverse backgrounds is vital for addressing how various campaigns—environmental

or commercial—produce joint effects with failure signals and change crowd investors' future behavior. Our study offers actionable insights for entrepreneurs and crowdlending platforms. Entrepreneurs should recognize that experienced crowd investors are more likely to reinvest despite past failures, emphasizing the need for building a community with recurring crowd investors. To encounter the double loss effect concerning environmental campaigns, crowdlending platforms may mitigate negative reactions by increasing transparency about the potential risks as well as impacts of environmental campaigns by providing frequent updates on campaigns and offering educational initiatives on the nuances of sustainability.

Keywords Crowd investor · Experience · Failure · Investment behavior · Sustainable ventures

JEL Classification L26 · A13 · G23 · M13 · Q01

1 Introduction

Crowdfunding has emerged as a vital funding mechanism for young ventures, in particular sustainable ventures (Penz et al., 2022; Slimane & Rousseau, 2020), and an interesting investment option for a distinctly motivated crowd (e.g., Mollick, 2014). Due to high information asymmetry between ventures and crowd investors, signaling (e.g., the ventures' environmental/social value) is an important mechanism to explain a campaign's success (e.g., Allison et al., 2015; Calic & Mosakowski, 2016; Siebeneicher & Bock, 2022). While signaling is crucial to understanding how crowdfunding campaigns succeed, failure equally shapes crowdfunding dynamics (e.g., Vanacker et al., 2019). Approximately one-third of ventures in crowdlending fail to deliver on their promises, leading to investment losses for investors (Civardi et al., 2023; Iyer et al., 2015). In crowdlending, where ventures offer loans at fixed interest rates, a failure implies a loss of the expected financial return as well as investment (Böckel et al., 2020; Slimane & Rousseau, 2020), and in the case of sustainable campaigns, even the loss of the promised social and/or environmental value. Thus, failure is crucial as it is an informational signal from entrepreneurs or platforms to the crowd likely to affect future investment behavior (Huang et al., 2022; Taj, 2016).

So far, the theoretical understanding of how failure signals impact crowd investors' decisions, particularly in sustainable campaigns, remains limited (e.g., Dinh et al., 2024; Hornuf et al., 2021; Huang et al., 2022). Recent research has just started to explore failure signals in the context of crowdfunding (e.g., Dorfleitner et al., 2023; Kgoroadira et al., 2019), examining aspects such as how prior entrepreneurial failure signals influence investors' support of a campaign (Huang et al., 2022). However, there remains a dearth of knowledge concerning failure signals that follow successful fundraising and crowd investors' reactions to these (Hörisch, 2019). Recent research has begun to shed light on this area, revealing that crowd investors experience a significant "default shock" after an investment failure (Dorfleitner et al., 2023). Additionally, research in sustainable crowdfunding has further demonstrated that support for sustainable campaigns tends to diminish more sharply after failures than commercial campaigns (Hornuf et al., 2021). While these studies provided valuable initial insights into crowd investors' reactions after failure, scholars have increasingly highlighted the importance of considering the diversity among crowd investors (Cummings et al., 2020; Mochkabadi & Volkmann, 2020). In particular, crowd investors differ significantly in their levels of experience (e.g., Battisti et al., 2024), which can influence their reactions to signals (Bafera & Kleinert, 2023; Spence, 1973). For example, recent research highlights that crowd investors' reactions vary by experience level, with inexperienced and experienced investors showing differing preferences for female- and male-led ventures (Bapna & Ganco, 2021) and diverse investor types reacting differently to legitimacy signals (Fisher et al., 2017). Given these distinctions, we propose that the effect of failure signals on crowd investors depends on their prior experience. This may be particularly evident in crowdlending, as these platforms are highly inclusive and attract investors from diverse backgrounds (Burtch et al., 2014; Dushnitsky et al., 2016). Therefore, we ask *how do crowd investors react to failure signals of sustainable campaigns depending on their prior experiences?*

By drawing on signaling theory (Spence, 1973), our study proposes that the effect of signals, including failure and sustainability, depends on the prior experience of crowd investors. First, we argue that the negative effect of failure signals is buffered when investors have prior crowdfunding experience. This

may be due to distinct cognitive mechanisms shaped by learning experiences. Experienced crowd investors develop a refined cognitive framework that influences their ability to interpret signals, such as failure, more accurately (Bapna & Ganco, 2021), and enhances resilience in the face of failure (Chu et al., 2014). Second, we propose a reversed effect in the context of sustainable campaigns (i.e., social or environmental), expecting that, unlike typical resilience to failure signals, experienced crowd investors may respond more negatively when they experience failure signals in the context of sustainable campaigns. This reverse effect may be attributed to distinct values and stronger emotional involvement (Moysidou & Spaeth, 2016), which play a certain role in interpreting signals, especially in threatening situations (e.g., Bar-Haim et al., 2006).

Our findings align with these theoretical propositions, demonstrating that experienced crowd investors react differently to failure signals compared to their inexperienced counterparts. Specifically, we observed that experienced crowd investors are more likely to invest after receiving failure signals than inexperienced crowd investors, reflecting their distinct cognitive framework. However, this pattern reversed in the context of environmental campaigns. Experienced crowd investors exhibit a stronger adverse reaction to environmental campaigns' failure signals than to commercial campaigns. Interestingly, we found no significant differences in reactions to social campaigns. Post hoc analyses further revealed that experienced investors differ significantly in their values, which may explain their unique behavioral patterns.

This study offers three main contributions to previous research. First, we advance entrepreneurial finance research by examining crowd investor behavior after the failure of ventures that previously secured successful funding (Dorfleitner et al., 2023; Hornuf et al., 2021). While prior studies suggest that entrepreneurial failures may increase an entrepreneur's appeal by signaling resilience and learning (Huang et al., 2022; Souakri et al., 2023), we find that investment failure triggers negative reactions from experienced and inexperienced crowd investors. This highlights the need to distinguish between entrepreneurial failure, signaling valuable learning experiences as focused on in previous studies (Roccapriore et al., 2021; Zunino et al., 2022), and investment failure, implying crowd investors' personal loss. By adding the investment failure perspective, we extend research into the varied effects of failure signals

(e.g., Huang et al., 2022; Kleinert et al., 2022; Piening et al., 2021; Roccapriore et al., 2021; Rossi et al., 2023).

Second, we advance crowdfunding research by demonstrating the critical role of investor experience in interpreting failure and sustainability signals (Battisti et al., 2024; Cummings et al., 2020), moving beyond studies that treat crowd investors as a homogenous group (e.g., Davis et al., 2017; Dinh & Wehner, 2022). Contrary to earlier work suggesting uniform investor responses, we show that experienced investors tend to be more forgiving of investment failures, potentially due to significantly higher self-transcendence values. This underscores the importance of recognizing crowd investors' diverse characteristics, which may shape their cognitive and emotional reactions to investment signals in complex and context-specific ways.

Third, we contribute to signaling theory by showing that the effectiveness of signals varies depending on both investor type and campaign context. Our findings extend the literature on signaling in entrepreneurship (Bafera & Kleinert, 2023; Huang et al., 2022; Rodríguez-Garnica et al., 2024) and sustainable entrepreneurship (e.g., Cervelló-Royo et al., 2020; Penz et al., 2022) by revealing that experienced investors react more negatively in environmental campaigns than in commercial ones. This highlights the dynamic interaction between conflicting signals: failure, which suggests a lack of competence (e.g., Zunino et al., 2022), and environmental signals, which imply responsibility and positive impact (e.g., Siebeneicher & Bock, 2022). Thus, we enrich signaling theory in the context of entrepreneurship (Bafera & Kleinert, 2023) by emphasizing how conflicting signals are interpreted differently depending on investor characteristics and contextual factors, highlighting the variability in their effectiveness across diverse audiences and situations.

2 Theoretical background and hypotheses

2.1 Crowdlending and investor experience

Crowdlending, also named lending- or debt-based crowdfunding, has emerged as the prevailing force within the crowdfunding market landscape, contributing to over 60% of the global crowdfunding revenue in 2022 (GrandViewResearch, 2022). In particular, sustainable ventures find significant potential in crowdlending as they, for example, aim to reduce

greenhouse gas emissions and, hence, do not offer material rewards, which are prevalent in reward-based crowdfunding (Hörisch, 2019). In crowdlending, entrepreneurs seek capital to obtain loans from non-traditional investors. In return for these loans, entrepreneurs promise interest on the loan amount for the project's duration (Bruton et al., 2015). Upon successful funding, meaning the campaign has reached its capital goal, outcomes include either repayment of the loan with interest to all investors or, in the event of venture failure, non-repayment and loss of funds for the investors (e.g., Dorfleitner et al., 2023; Vanacker et al., 2019). The impact of such failure extends beyond the entrepreneurs (e.g., Piening et al., 2021; Smollan & Singh, 2021) and affects investors because encountering a failure signifies an investment failure and influences investors' perception of risk and future campaign evaluations (e.g., Roccapiore et al., 2021). Crowdlending is suitable for studying how investors react to failure due to its inherent risk of failure (Vanacker et al., 2019). Given the challenges of identifying high-potential ventures in risky environments like crowdlending, investors' experience likely plays a key role in their decisions (Bapna & Ganco, 2021). The involvement of a diverse range of investors—including small-scale individual investors, friends, and family members, and those with prior crowdfunding experience—makes it an ideal context for comparing behaviors and decision-making among different types of investors, who may react differently to failure (Burtch et al., 2014; Cumming & Hornuf, 2022; Dushnitsky et al., 2016; Hornuf et al., 2020).

Existing research underscores the importance of prior crowdfunding experience in investor decision-making (e.g., Kim & Viswanathan, 2019; Mochkabadi & Volkmann, 2020). For instance, Bapna and Ganco (2021) found that inexperienced and experienced equity crowd investors engage in distinct cognitive mechanisms, leading to different interest levels in ventures based on the entrepreneurs' gender. Additionally, Hornuf et al. (2020) showed that more experienced crowd investors exhibit a local bias, while Kim and Viswanathan (2019) demonstrated that experienced investors' expertise disproportionately influences later investors in crowdfunding markets. The insights and patterns established through previous investments profoundly shape how investors evaluate future opportunities (e.g., Dorfleitner et al., 2023;

Hornuf et al., 2021). The frequent reengagement of experienced investors, evidenced by high rates of repeated investment in the crowdlending sector (Andersen et al., 2019), underscores the relevance of experience in their decision-making. Therefore, understanding the differences in how experienced and inexperienced crowd investors process signals is critical, as distinct cognitive mechanisms likely drive distinct responses in future investment behavior.

2.2 Signaling theory

Signaling has been extensively studied in the management literature (e.g., Banks et al., 2019; Eckardt et al., 2018; Taj, 2016; Venkataramani et al., 2022) and has begun to be investigated in entrepreneurship (e.g., Ahlers et al., 2015; Bafera & Kleinert, 2023; Battisti et al., 2024). Signaling aims to influence the audience and its desired outcomes by signaling informational cues (signals) sent from one entity, the signaler, to another, the receiver (Taj, 2016). Prior research suggests that investors often evaluate the intangible qualities of a venture's potential by interpreting signals from entrepreneurs and the venture's attributes (Connelly et al., 2011). Signaling theory (Spence, 1973) provides a framework for understanding the types of information that influence investors' decisions, such as the characteristics of the entrepreneur (Ahlers et al., 2015), the language used in the campaign (Anglin et al., 2018), or the venture's mission (Berns et al., 2020). This theory explains how entrepreneurs use meaningful signals to reduce information asymmetries and secure resources (Connelly et al., 2011; Spence, 1973; Steigenberger & Wilhelm, 2018). In crowdfunding, information asymmetry is prevalent (Courtney et al., 2017), fulfilling a crucial condition of signaling theory (Spence, 2002). Usually, entrepreneurs (signalers) send positive signals, such as entrepreneurs' credibility or project quality (Huang et al., 2022), and avoid sending negative signals (Taj, 2016). However, sending negative signals becomes unavoidable in the case of venture failure. Venture failure arises when "a fall in revenues and/or a rise in expenses are of such a magnitude that the firm becomes insolvent and is unable to attract new debt or equity funding; consequently, it cannot continue to operate under the current ownership and management" (Shepherd, 2003, p. 318).

Steigenberger and Wilhelm (2018) discovered that signals are interpreted not only for their content but also through connotative meanings, which draw more attention and increase the visibility of the content signals. They identify three main ways signals can influence the audience: emotionally (pathos), logically (logos), and by boosting the sender's credibility (ethos). Signals emphasizing camaraderie and community behavior, for example, through social or sustainable goals, tend to be emotionally charged (e.g., Liang et al., 2023; Steigenberger & Wilhelm, 2018). Additionally, alarming statements designed to elicit concern, for example, through failure signals, may also appeal to emotions. Conversely, signals highlighting a venture's economic activities or capabilities tend to appeal to reasoning and logical processes by the receiver (Steigenberger & Wilhelm, 2018).

2.3 Failure signals and crowdfunding experience

Although signals are intended to convey information, how they are perceived and interpreted depends on the receivers and, thus, influences behavior. Hence, various receivers can interpret signals differently (Connelly et al., 2011; Taj, 2016). Connelly et al. (2011) found that the receiver's characteristics, such as education, motivations, emotion, values, and experience, determine the signals' effectiveness. Similarly, Bafera and Kleinert (2023) identified that receivers' ability can influence signal interpretation across various entrepreneurial finance research. Receivers' ability relates to detecting and comprehending signals depending on their capacity, which is influenced by their specific knowledge, backgrounds, and experiences (e.g., Allison et al., 2017). Receivers can only respond to signals they notice and understand, but this ability varies among individuals due to unique characteristics (Bafera & Kleinert, 2023).

In the context of crowdfunding, research has shown that prior experience can influence signal interpretation (Bapna, 2017; Bapna & Ganco, 2021). Therefore, we hypothesize that crowd investors with distinct experience levels react differently to failure signals, generally and in particular in the context of sustainable campaigns. We distinguish between two types of crowd investors: (1) *inexperienced investors* who are new to crowdfunding but have general knowledge of investments in stocks and other funds, and (2) *experienced investors* with previous

crowdfunding experience in any other crowdfunding type. We propose that the crowdfunding experience implies at least two essential factors that enable distinct cognitive processes (Bapna, 2017; Bapna & Ganco, 2021). On the one hand, missing crowdfunding experience may lead to overemphasizing the initial experience in this context for future investment decisions among inexperienced crowd investors. On the other hand, experience in the crowdfunding context may help to cope with failure.

Crowdfunding experience may result in different behaviors among crowd investors because of diverging learning experiences (Bapna, 2017; Bapna & Ganco, 2021). Generally, individuals "learn by using the outcomes of their actions (feedback) to revise their beliefs" (Shepherd, 2003, p. 320). As such, experienced crowd investors, shaped by learning experiences (Choo & Trotman, 1991), develop a refined cognitive framework (Choo & Trotman, 1991), influencing their ability to interpret signals (Bapna & Ganco, 2021). In contrast, inexperienced investors often find it challenging to interpret signals (Bapna & Ganco, 2021). Research in the general investment context supports the idea that experience in a specific domain (Choo & Trotman, 1991) helps experienced investors better cope with ups and downs (Chu et al., 2014; Koestner et al., 2017). In that vein, research shows that experienced investors are more likely to reinterpret a loss as a valuable learning opportunity, often attributing investment failures to their own decisions rather than blaming the market or external factors (Chu et al., 2014). Hence, experience allows investors to interpret signals, such as failure signals, more accurately (Bapna & Ganco, 2021), and enhances resilience in the face of failures (Chu et al., 2014). This may also be evident in crowdlending, where despite approximately one-third of loans defaulting (Iyer et al., 2015; Vanacker et al., 2019), investors often continue to engage after experiencing failures (Andersen et al., 2019; Shneor et al., 2024). Hence, experienced crowd investors may understand that failure is an inherent aspect of the process, particularly in crowdlending, due to the higher risks associated with early-stage ventures or small and young businesses (Vanacker et al., 2019).

In contrast, for investors experienced in traditional assets but new to crowdfunding, a loss in their initial crowd investment can disproportionately negatively impact their perceptions and future decisions. Unlike

experienced crowd investors, who had the chance to develop a more nuanced understanding of risks specific to crowdfunding, newcomers lack the experiential framework needed to contextualize such losses. Psychology literature shows in several contexts that initial information or early impressions can serve as a cognitive anchor, with early outcomes heavily influencing future attitudes and perceptions in unfamiliar domains (Furnham & Boo, 2011; Tversky & Kahneman, 1974). Thus, losing their first crowdfunding experience may anchor these investors' perception of crowdfunding as particularly high-risk, leading to an outsized aversion to further involvement. This aversion may increase because individuals experience losses more intensely than equivalent gains, impacting their decision-making and risk assessment (Kahneman & Tversky, 1979). Concerning individual investors in the traditional investment context (i.e., stock trading), Barber and Odean (2013) reinforce this view by arguing that initial investment losses often lead to heightened caution and risk aversion in subsequent decisions, as investors are likely to overemphasize the riskiness of crowdfunding based on their first experience. Additionally, Thaler's (1999) insights into mental accounting suggest that first-time investors may compartmentalize crowdfunding as a separate, higher-risk category based on this initial experience. Consequently, without the benefit of varied experiences, these inexperienced investors may overemphasize the risks associated with crowdfunding and become hesitant to re-engage, even in future, potentially more successful ventures. Hence, we hypothesize:

Hypothesis 1 (H1). *Experienced crowd investors allocate higher investments after encountering a failure signal than inexperienced crowd investors.*

2.4 Failure signals, sustainable campaigns, and crowdfunding experience

We propose that the crowdfunding experience will play a reversed role in the context of sustainable campaigns as this context may elevate emotional arousal in addition to the cognitive mechanisms described before. Emotions play an important role in interpreting signals, especially in threatening situations (e.g., Bar-Haim et al., 2006). In crowdfunding, emotional involvement is also critical in decisions among

experienced crowd investors (Moysidou & Spaeth, 2016). Emotional reactions and other soft factors often replace hard data in crowdfunding investment decisions (Hoegen et al., 2018). Thus, emotional involvement in crowdfunding campaigns (Moysidou & Spaeth, 2016) may be present in the case of success and failure (Makki & Van Hemmen, 2022).

Signals related to sustainability (Liang et al., 2023) carry a strong emotional charge (Steigenberger & Wilhelm, 2018), potentially increasing their appeal to experienced crowd investors. Although sustainable signals initially attract positive attention (Liang et al., 2023), those signals may trigger adverse emotional reactions when occurring together with failure signals. Specifically, failure signals, processed according to sustainable (social or environmental) signals, may harm future funding possibilities compared to commercial signals by experienced crowd investors. Since signals can be interpreted by cognitive mechanisms but are also influenced by personal characteristics (Bafera & Kleinert, 2023; Connelly et al., 2011), such as emotions and values, we believe these factors impact how experienced and inexperienced investors react to those signals.

Experienced crowd investors who typically hold higher self-transcendence values (Tenner & Hörisch, 2021), including strong biospheric values like deep concern for humanity and the environment (Schwartz, 1992), tend to react more intensely to both positive and negative sustainable signals (Conte et al., 2023a, b). Specifically, when negative sustainable signals arise—such as failing to achieve a sustainable impact—individuals with strong self-transcendence values often experience more intense negative emotions (Conte et al., 2023a, b). This is because they interpret these failures as threats to deeply held sustainable beliefs and values (Conte et al., 2023b). In the crowdfunding context, experienced crowd investors, who often support campaigns based on shared sustainable values, similarly hold high expectations for positive social and environmental impacts alongside financial returns (Bocken, 2015). Consequently, when a sustainability campaign fails, these investors may face an intense emotional reaction regarding the loss experienced: the financial loss and the unfulfilled positive, sustainable impact (Hornuf et al., 2021), threatening their core beliefs (Conte et al., 2023b). This dual loss may invoke negative cognitive stress (Thoits,

1995), which may deepen frustration and discouragement and reduce their likelihood of investing in future sustainability campaigns. We contend that emotionally charged signals, such as those associated with sustainability and failure, amplify the negative impact and are likely to provoke quicker and more intense reactions by experienced crowd investors (e.g., Steigenberger & Wilhelm, 2018).

Conversely, we expect that inexperienced crowd investors are more likely to invest in sustainable campaigns after encountering a previous failure. We assume inexperienced crowd investors are less emotionally involved, which may be attributed to different prevalent values, such as self-enhancement values, leading to a distinct emotional intensity (e.g., Schwartz, 1994). Hence, we believe inexperienced crowd investors show less emotional involvement linked to the failed sustainable impact and, therefore, focus more on themselves than on the invested projects (e.g., Czaja & Röder, 2020). Moreover, inexperienced investors often exhibit overconfidence in their investment knowledge (Czaja & Röder, 2020), leading them to underestimate risks and overestimate their ability to predict market movements (Barber & Odean, 2013). This overconfidence exposes them to higher levels of risk, particularly in sustainable projects, which are characterized by higher uncertainty and multiple goals (Bacq & Janssen, 2011; Cervelló-Royo et al., 2020), making them riskier investments compared to other projects. Given this, we hypothesize:

Hypothesis 2 (H2). *Experienced crowd investors allocate lower investments after encountering failure signals for (a) environmental or (b) social campaigns than inexperienced crowd investors.*

3 Overview of studies

We conducted three studies with independent samples. For studies 1 and 2, we conducted vignette experiments based on a between-subject design to measure social judgments and analyze causal relationships (Aguinis & Bradley, 2014; Hsu et al., 2017). Vignettes are brief, descriptive scenarios presented to participants with specific situations and characters, aiming to explore their reactions or decisions (Aguinis & Bradley, 2014; Atzmüller & Steiner, 2010). While

previous studies primarily relied on platform content analysis to understand what attributes make crowd investors invest in crowdfunding (Allison et al., 2015; Calic & Mosakowski, 2016; Parhankangas & Renko, 2017), there is still a lack of platform data on post-funding updates and failures from investors' perspectives. While campaign failures are publicly disclosed, the specific responses of individual crowd investors to such post-funding activity failures are typically not shared publicly, as platforms usually keep such information private. Hence, we follow other entrepreneurship research (Fellnhöfer & Deng, 2023; Mueller & Shepherd, 2016) by employing two experimental vignettes. In doing so, we can observe causal reactions to failure while manipulating and controlling for selected factors unavailable in platform data. To explore potential explanations for the observed behaviors, we conducted a third study in terms of a post hoc survey assessing the personal characteristics and values of experienced and inexperienced crowd investors. Specifically, we examined differences in self-transcendence and self-enhancement values (Dinh & Wehner, 2022; Tenner & Hörisch, 2021), offering further insight into how crowd investors' characteristics influence investment behavior.

3.1 Overview study design: study 1 and study 2

In both studies, we initially presented participants with investment campaigns (social, environmental, and commercial), followed by the failure signal inducing investment loss among crowd investors. Participants were randomly assigned to one of the three experimental vignettes, each signaling a different value: social, environmental, or commercial. By employing these three experimental vignettes, we follow the approach taken by previous studies examining differences between these campaigns, supporting the triple bottom line (e.g., Nielsen & Binder, 2021; Siebeneicher & Bock, 2022). To examine experienced and inexperienced crowd investors' reactions to a failure signal, we designed an experimental setting involving both the pre-funding phase, where participants were asked to make an initial investment decision, and the post-funding phase, where they faced the failure signal indicating a loss of their investment. This approach aimed to create a more realistic decision-making context that resembled actual investment scenarios. The pre-funding phase increased

the authenticity of the subsequent investment failure and allowed for a more comprehensive understanding of participants' reactions (e.g., Schaubroeck & Williams, 1993). The experiment commenced with a uniform introduction provided to all participants, presenting the concept of crowdlending and prompting them to envision themselves on a return-oriented crowdlending platform called *Investia* (see Appendix 9.1.). Alongside general information, participants were informed about the potential occurrence of investment failure, which could lead to a partial or total loss of their investment. As we focus on the context of return-oriented crowdlending, participants were offered a hypothetical financial return of 7%, in addition to repayment of their loan if the crowdlending project was successful.

3.2 Differences between study 1 and study 2

Although study 1 and study 2 have the same procedure, they vary in manipulations and samples across experiments to ensure robust findings that effectively address the research question. This methodological approach enhances the generalizability and reliability of the results. Table 1 shows an overview of the distinction between the studies. Study 1 examined three ventures across various industries (similar to Siebeneicher & Bock, 2022) to understand how crowd investors react to failure. In contrast, study 2 focused on a single industry but varied the ventures' goals to improve the validity and comparability of investors'

reactions (Hornuf & Siemroth, 2023). Additionally, study 1 participants received a bonus from their employer to invest, whereas study 2 participants earned funds through a task, enhancing engagement and realistic value perception (e.g., Baumeister et al., 1998; Loewenstein & Issacharoff, 1994). We also adjusted the gender distribution to a more realistic 70% male and 30% female ratio, reflecting typical crowdfunding demographics (Shneor et al., 2024).

4 Study 1

4.1 Sample

To identify the necessary sample size, we used an a priori power analysis drawing on G*Power (Faul et al., 2009). We chose a significance level of $\alpha = 0.05$ and a power level of $1 - \beta = 0.95$, which provided a conservative estimate for the required sample size. Following Cohen's (1988) guideline, we selected a medium effect size index of 0.15. The power analysis indicated that we would need at least 153 participants to achieve sufficient statistical power using linear multiple regression with a fixed model and a single regression coefficient. Based on this power analysis, this study fulfilled the requirement by recruiting 160 participants. We collected our sample from Bilendi & respondi, an ISO 20252:2019 certified panel service provider based in Germany. Our sample consisted of 127 inexperienced crowd investors with

Table 1 Overview distinctions (studies 1 and 2)

	Study 1	Study 2
Sample		
Gender distribution	53% male	70% male
Panel provider	Bilendi & respondi	Prolific
Study design		
Fictional money	Gifted bonus from employer	A task to earn money
Investment amount	€1000	€3000
Campaigns (vignettes)	Distinct industries	Single industry: Finance a briquetting plant to process collected biomass into briquettes for energy production
<i>Environmental</i>	App for reusable takeaway boxes for restaurants	Reduce CO ₂ emissions by approximately 6000 tons
<i>Social</i>	App for integrating refugees into the German labor market	Creating around 100 new jobs to reduce Africa's poverty
<i>Commercial</i>	App for financial advice, providing investors with expertise and coaching	+ 1% early-bird bonus and a + 1% preferential interest rate

general investment experience (i.e., experience with exchange-traded commodities or funds, government bonds, stocks, unit trusts, angels investing, private equity funds, and options (e.g., Butticè et al., 2022)) and 33 experienced crowd investors. Table 2 summarizes the sample characteristics for all three studies.

4.2 Research design

Participants were randomly assigned to one of the three experimental vignettes, each signaling a different value: social ($n = 50$), environmental ($n = 53$), or commercial ($n = 57$). The social signal focused on developing a digital platform to facilitate the integration of refugees into the German labor market (see Appendix 9.2.). The environmental signal centered around a digital platform for renting reusable takeaway boxes in the catering industry (see Appendix 9.3). The commercial signal aimed to boost revenue by creating a digital platform for financial advice, providing investors with expertise and coaching (see Appendix 9.4.). All vignettes exhibited parallel structure and word count. Based on pretest feedback,

a standardized sentence on the respective venture's high growth potential and profit margins was included for consistency.

Participants were given a fictitious amount of €1000, framed as an unexpected bonus payment from the employer. Participants were asked to allocate between €0 and €1000 of their fictitious money to the assigned campaign as their first investment decision. They were told the amount not invested would stay in a bank account without interest. Afterward, all participants received a failure signal of the assigned manipulated campaign. An email from the crowdlending platform *Investia* informed the participants about the investment failure due to unforeseen problems of the venture and announced that investors lost their initial investment and would not receive any return (see Appendix 9.5.). Subsequently, participants were again given an unexpected bonus payment from the employer with a fictitious amount of €1000. They were asked about allocating their subsequent investment, between €0 and €1000, to a campaign similar to the one they were assigned in the pre-funding phase.

Table 2 Sample characteristics for all studies

	Study 1		Study 2		Post hoc survey	
	Experienced crowd investors ($n = 33$)	Inexperienced crowd investors ($n = 127$)	Experienced crowd investors ($n = 108$)	Inexperienced crowd investors ($n = 200$)	Experienced crowd investors ($n = 101$)	Inexperienced crowd investors ($n = 103$)
	Mean (<i>SD</i>) or percentage		Mean (<i>SD</i>) or percentage		Mean (<i>SD</i>) or percentage	
Personal demographics						
Male (%)	54.50	52.00	71.30	68.50	78.20	72.80
Age (years)	37.06 (11.46)	43.89 (14.05)	35.06 (7.49)	34.66 (9.39)	33.37 (8.92)	32.87 (9.21)
Education (%)						
Apprenticeship	27.30	40.20	21.30	24.50	16.80	21.30
Bachelor	18.20	18.10	37.00	31.50	37.60	35.00
Master	42.40	29.90	34.30	30.00	26.70	29.10
Ph.D	6.10	2.40	2.80	5.00	6.90	4.90
Investment experience (years)	6.70 (7.23)	11.26 (11.18)	6.48 (6.04)	5.75 (5.66)	6.85 (6.57)	5.16 (4.92)
Employment experience (years)	15.73 (12.83)	20.78 (13.43)	10.54 (7.76)	10.07 (8.97)	9.88 (7.88)	9.60 (8.62)
Income (%)						
Under €3000	21.30	39.70	44.40	52.00	37.60	48.50
Above €3000	75.80	56.70	52.80	42.50	58.40	47.60

4.3 Measures

Subsequent investment after investment failure We followed previous experimental research that operationalized the invested allocation of the crowd lenders as a success indicator (Kanze et al., 2018; Shneor & Vik, 2020). In the experiment, participants were asked to imagine being in a crowdlending situation where they could invest up to €1000. A slider was employed as the chosen scale, enabling participants to select an amount within the €0 to €1000 range. After encountering a failure signal of their initial investment, participants were allowed to invest a new amount of earnings in a campaign (i.e., How much of your €1000 would you like to invest in start-ups like the one presented before through crowdlending?).

Crowdfunding experience We built a dummy variable to measure whether participants were experienced or inexperienced crowd investors (1 = crowdfunding experience, 0 = no crowdfunding experience).

Campaign We chose the commercial campaign as the reference category to measure the moderation effects of the social and environmental campaign compared to the commercial campaign. Hence, we built dummy variables that reflected our vignettes.

Control variables In our study, we included several control variables identified by previous research as relevant to the decision-making process in crowdlending (e.g., Penz et al., 2022; see Appendix 10.5). First, we controlled for sociodemographic characteristics as Tenner and Hörisch (2021) found that attributes such as age, gender, and investment experience are associated with individuals who engage in crowdfunding. Additionally, to enhance the validity of participants' responses, we included a measure of social desirability (Penz et al., 2022), employing the scale by Haghighat (2007). Social desirability is, for example, measured as "Do you always practice what you preach to people?" Finally, recognizing the significant role of risk willingness in crowdfunding decisions (e.g., Wasiuzaman et al., 2021), we included risk-taking (Menkhoff & Sakha, 2016) measured, for instance, as "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risk?"

4.4 Implementation and manipulation checks

We take several steps to minimize the risk of potential biases in the experiment (Podsakoff et al., 2012). First, we conducted a manipulation check after each of the three vignettes to ensure participants' comprehension of the vignettes (Shadish et al., 2003). Participants were asked to select the correct value of the campaign (e.g., for participants who read the environmental vignette: "An environmental value is central to the young venture and its activities"; for participants who read the social vignette: "A social value is central to the young venture and its activities"). An incorrect response resulted in exclusion from the experiment. Second, we included an attention check to improve data quality. This check required participants to select a specific response option (e.g., "For this item, please select 'strongly disagree'"). All participants passed the attention check successfully and could continue participating in the experiment (Kung et al., 2018). Third, we also implemented a reality check (Maute & Dubés, 1999), which showed that the scenarios were perceived as (all equally) realistic.¹ Fourth, we checked for randomization across the sample. We found no significant differences in the sample characteristics between the vignettes and crowd investors' crowdfunding experience (Appendix 9.6).

4.5 Analytical procedure

We employed an ordinary least squares (OLS) regression to analyze the impact of the crowdfunding experience on investment decisions after a failure while controlling for initial investment behavior by including the initial investment. This approach allowed us to accurately isolate the effect of the crowdfunding experience on subsequent investment decisions, providing robust insights into behavioral changes over

¹ We measured the realism of the experiments and manipulation (Maute & Dubés, 1999) with three items ("How realistic was the described situation?"; anchors ranging from 1 [*not realistic at all*] to 7 [*very realistic*]; $M = 5.16$; "How well were you able to put yourself into the described situation?"; anchors ranging from 1 [*very poor*] to 7 [*very well*]; $M = 5.43$; "Hands on your heart, how carefully did you read the scenario?"; scale between 1 [*not very carefully*] and 7 [*very carefully*]; $M = 6.18$). The analysis of variance (ANOVA) between the realism items and our vignettes show no statistical significant difference, $F(2,157) = 0.38, p = .69$.

Table 3 Means, standard deviations, and correlations (study 1)

		<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1	Initial investment allocation	375.31	241.78							
2	Subsequent investment after investment failure	233.75	220.74	.63**						
3	Crowdfunding experience	.21	.41	.13	.19*					
4	Investment experience years	10.32	10.63	-.04	.00	-.17*				
5	Gender crowd investor	1.53	.50	.04	.13	.02	.24**			
6	Age crowd investor	42.48	13.80	-.07	.03	-.20*	.58**	.14		
7	Social desirability	1.35	.24	-.09	-.03	-.11	-.15	.02	.10	
8	Willingness to take risks	3.61	1.40	.14	.12	.29**	-.05	.30**	-.26**	-.05

N = 160; gender: female = 1, male = 2, investment experience in years, social desirability: yes = 1, no = 2

***p* < .01

**p* < .05

time. As we further want to understand how different campaigns influence their reactions to failure, we employed a moderation analysis conducting OLS. Robust standard errors were evaluated to address potential heteroscedasticity concerns, and the variance inflation factor (VIF) was examined to detect any possible multicollinearity issues. It is worth noting that all VIF values remained well below the recommended threshold values (i.e., < 5; Cohen et al., 2002), ensuring the absence of significant multicollinearity. In addition, we performed several procedures to enhance the clarity of randomizations and avoid potential bias commonly caused by social desirability, willingness to take risks, investment experience years, age, and gender (Podsakoff et al., 2012). Overall, no significant effects of these influential factors were observed in our analysis.

4.6 Results

Table 3 shows the descriptive statistics, including our variables' means, standard deviations, and correlations.

Overall, the subsequent investments made after a failure were significantly lower than the initial investments across all participants ($M = -141.56$, $SD = 199.70$), $t(159) = -8.96$, $p < 0.001$. However, we ran an OLS and a moderation analysis using OLS to examine our H1 and H2, which investigated whether prior crowdfunding or no prior crowdfunding experience leads to different reactions to failure signals. The results revealed that prior crowdfunding experience

significantly influences how crowd investors react to investment failure ($b = 67.63$, $p = 0.06$). Hence, experienced crowd investors invest significantly more money after encountering failure than inexperienced crowd investors. Thus, H1 can be supported.

Furthermore, we examined H2a and H2b, investigating whether the interaction between the crowdfunding experience and the sustainable campaigns predicts subsequent investment after failure. Table 4 shows the results of the moderation analysis, and Fig. 1 visualizes the mean values of the experienced and inexperienced crowd investors in t1 and t2 across the three campaigns. The results indicated that an environmental campaign significantly moderated the effect between the crowdfunding experience and subsequent investment after failure ($b = -144.35$, $p = 0.08$). However, no significant moderation was found between a social campaign, the crowdfunding experience, and subsequent investment after failure signal ($b = -88.45$, $p = 0.30$). Thus, we find support for H2a and reject H2b.

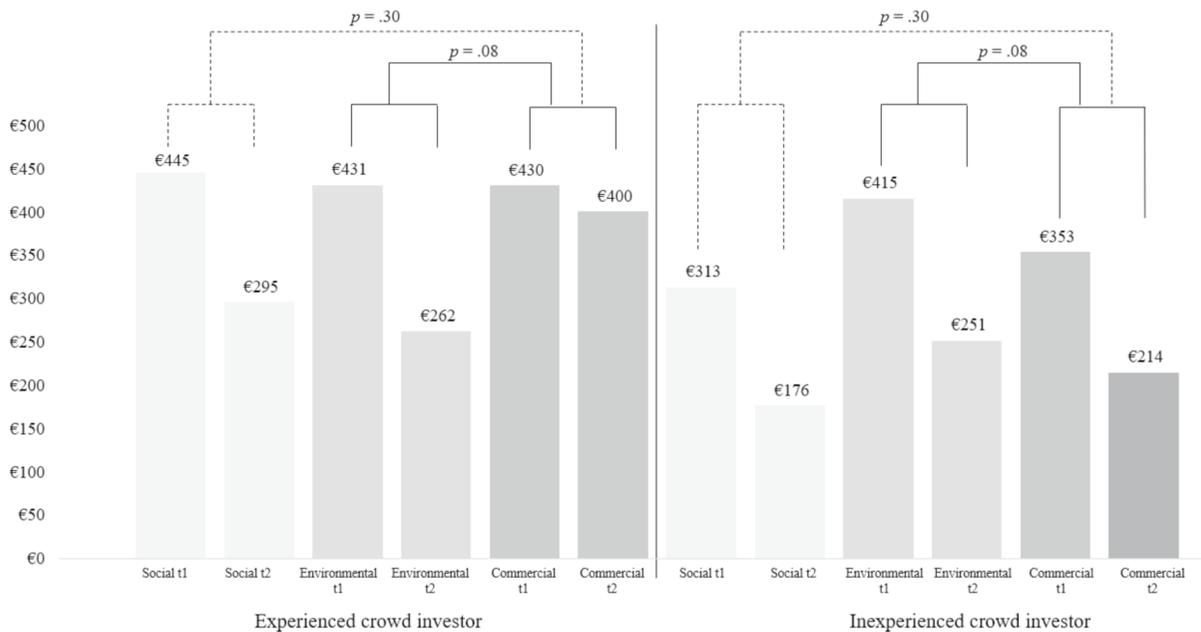
4.7 Conclusion study 1

Our study found that different investor types react differently to failure signals and failure signals in environmental campaigns. Specifically, experienced crowd investors tend to invest significantly more after encountering failure signals than inexperienced crowd investors. This indicates that experienced crowd investors are generally more forgiving after failure and maintain a positive outlook

Table 4 Regression coefficients, standard errors, and model summary after failure (study 1)

Variable	Model 1			Model 2			Model 3					
	<i>b</i>	<i>SE</i>	β	<i>p</i>	<i>b</i>	<i>SE</i>	β	<i>p</i>	<i>b</i>	<i>SE</i>	β	<i>p</i>
Controls												
Initial investment allocation	.57	(.06)	.62	<.001	.57	(.06)	.62	<.001	.56	(.06)	.62	<.001
Gender	45.44	(29.57)	.10	.13	42.04	(30.07)	.10	.16	39.43	(29.99)	.09	.19
Age	1.61	(1.30)	.10	.22	1.71	(1.31)	.11	.19	1.88	(1.31)	.12	.15
Investment experience years	-.74	(1.67)	-.04	.66	-.65	(1.68)	-.03	.70	-.86	(1.68)	-.04	.61
Social desirability	24.79	(58.22)	.03	.67	28.69	(58.89)	.03	.63	24.24	(58.80)	.03	.68
Willingness to take risks	-1.33	(11.16)	-.01	.91	.21	(11.30)	.00	.99	.61	(11.31)	.00	.95
Main effects												
Crowdfunding experience	67.63	(35.75)	.12	.06	69.24	(36.02)	.13	.06	150.38	(61.06)	.28	.01
Environmental					-27.48	(33.85)	-.06	.42	2.10	(37.67)	.00	.95
Social					-31.57	(33.49)	-.07	.35	-16.07	(37.17)	-.03	.67
Interaction terms												
Environmental x Crowdfunding experience									-144.35	(81.02)	-.18	.08
Social x Crowdfunding experience									-88.45	(85.12)	-.10	.30
Constant	-151.53			.14	-143.47			.17	-153.09			.14
<i>R</i> ²				.40				.39				.40

N = 160; *b*, unstandardized effect; *SE*, standard error; β , standardized effect; *DV*, dependent variable; reference category is inexperienced crowd investor = 0 and commercial campaign = 0; *Social*, social campaign; *Environmental*, environmental campaign; gender: female = 1, male = 2



Note. Experienced crowd investor $n = 33$, social $n = 10$, environmental $n = 10$, commercial $n = 13$, inexperienced crowd investor $n = 127$, social $n = 40$, environmental $n = 40$, commercial $n = 47$, t1 = initial investment, t2 = subsequent investment after encountering failure; dashed comparisons are non-significant

Fig. 1 Mean of investment before and after failure signals depending on crowdfunding experience (study 1)

for future investments. We observe a reversed trend when examining the joint effects of failure signals following environmental signals. Experienced crowd investors significantly reduce their investments in environmental campaigns after experiencing a failure compared to their investments in commercial campaigns, compared to inexperienced ones. These findings underscore the importance of differentiating between investor types within crowdfunding, as they process signals differently and exhibit varied investment behaviors in response to these signals.

5 Study 2

5.1 Sample

To test the robustness of our findings from study 1, we conducted study 2, where we revised sample

characteristics and adjusted the vignettes. In study 2, we ensured a more balanced sample by increasing the number of participants with crowdfunding experience and adjusting the ratio to better reflect the actual distribution in the investment community (70% male, 30% female, as typical in crowdfunding and investment sectors, e.g., Shneor et al., 2024). Additionally, to make our results more comparable, we used the existing vignettes of Hornuf and Siemroth (2023) representing a single industry, varying only in the signals they emitted: social, environmental, or commercial.

Similar to study 1, we recruited participants experienced in crowdfunding and participants without crowdfunding experience but with general investment experience (i.e., experience with exchange-traded commodities or funds, government bonds, stocks, unit trusts, angel investing, private equity funds, and options (e.g., Butticiè et al., 2022)). Our final sample consists of 308 participants recruited via the incentivized platform ProLific. The sample is subdivided into 108 experienced and

200 inexperienced crowd investors. Descriptive information of the two subsamples is reported in Table 2.

5.2 Research design

We mirrored the research design guiding study 1 with minor changes to improve the robustness of our results in different cases. The experiment began with a uniform introduction provided to all participants, presenting the concept of crowdlending and prompting them to envision themselves on a return-oriented crowdlending platform (see Appendix 9.1.). Alongside general information, participants were informed about the potential occurrence of investment failure, which could lead to a partial or total loss of their investment.

To model the pre-funding phase, participants engaged in an unrelated task before making the initial investment decisions, allowing them to earn the funds necessary for the allocation. This task-connected approach enhances engagement and realistic value perception (e.g., Baumeister et al., 1998), rendering earned money more tangible than simply receiving it as a gift or unexpected bonus (Loewenstein & Issacharoff, 1994). The task involved counting the number of “i” letters in a presented definition of crowdlending to promote recall. Participants whose responses deviated no more than 20% from the correct response proceeded, and all those with higher deviations were excluded. Upon successfully completing the task, participants were informed that they would receive €3000 as a reward for their performance, which they could subsequently invest. We decided to adjust the award from €1000 to a generous amount—€3000—to provide them with adequate funding possibilities, as investments above €1000 are also common in crowdlending.² Providing participants with up to €3000 reflects the realistic investment behaviors of crowd

investors, offering them a plausible range of freedom for their investment decisions. As evidenced by the average investments in our study (initial investment: $M = 1,067.14$, $SD = 849.00$; investment after failure: $M = 627.18$, $SD = 725.18$), the amount aligns well with real-life investment patterns, making the €3000 limit practical and representative. We first started the experiment by collecting demographic information and introducing crowdlending. Then, we asked participants to imagine they were on a crowdlending platform and found one project they were interested in.

Afterward, participants were randomly assigned to one of the three experimental vignettes, each signaling a different focus: social ($n = 104$), environmental ($n = 103$), or commercial ($n = 101$). Although all three vignettes were based on the same venture (i.e., the same industry), each sent a different signal. We modified the vignettes from Hornuf and Siemroth’s (2023) field experiment study based on the *bettervest.com* crowdlending platform and prior campaigns. The specific venture described in all three signaling conditions focuses on *Sana*, which aims to finance a briquetting plant to process collected biomass into briquettes for energy production.

To emphasize environmental and social signals, we removed most financial and economic information, except for the promised 7% return on investment over the 4-year project period. The environmental signal highlighted that the project could reduce CO2 emissions by approximately 6000 tons and address five UN Sustainable Development Goals (SDGs). For the social signal, we added that the project would create around 100 new jobs, reduce Africa’s poverty, and approach five UN SDGs. Additionally, for the commercial signal, we included information about a + 1% early-bird bonus and a + 1% preferential interest rate (see Appendices 10.1–10.3 for details).

In the first investment scenario, participants were asked to designate their self-earned fictitious investment allocation between €0 and €3000 to the assigned campaign as their first investment decision. Afterward, all participants received a failure signal of the assigned manipulated campaign. An email from the crowdlending platform informed the participants about the investment failure due to unforeseen problems of the venture. It announced that the investors lost their initial investment and would not receive any return (see Appendix 9.5.). Subsequently, participants were again given the task of counting the number of “a” letters in the crowdlending definition to earn money, which they could use

² Based on a search on various crowdlending platforms (Lande.com or Crowdestor.com), we identified an average investors portfolio of around €3500. We also conducted an analysis to determine the mean investment per campaign within a subset of 15 campaigns that were randomly extracted from the historical records of the *bettervest.com* platform spanning recent years. The calculation methodology involved the division of the cumulative investment amount by the corresponding count of investors participating in each individual campaign. The resultant average investment per project was €1173. Accordingly, we have set an upper limit of €3000 to give participants sufficient realistic flexibility.

to make a subsequent investment after failure. They were to allocate their subsequent investment, between €0 and €3000, to a campaign similar to the one they were assigned in the pre-funding phase.

5.3 Measures

To ensure robustness and comparability with our previous findings, we used the same measures in study 2 as those employed in study 1 (see study 1 measures and Appendix 10.5 for details). This consistent methodology allows us to directly compare the results across studies, enhancing the reliability of our conclusions. By maintaining the same measures, we can accurately assess whether individuals with crowdfunding experience respond differently to failures than those without such experience and evaluate the impact of sustainable campaigns in a more controlled and balanced sample. This methodological rigor helps to validate our findings and provides a solid foundation for our research conclusions.

We have also undertaken the same great efforts to ensure that study 2 is designed to minimize the risk of potential biases (Podsakoff et al., 2012) (see study 1, Sect. 4.4). Specifically, we implemented a manipulation check after each of the three vignettes to ensure participants' comprehension of the vignettes (Shadish et al., 2003). We also included an attention check to improve data quality. This check required participants to select a specific response option (e.g., "For this item, please select 'strongly disagree'"). Every participant successfully passed this check. Moreover, we also implemented a reality check (Maute & Dubés, 1999), which showed that the scenarios were perceived as (all equally) realistic.³ Lastly, we conducted a randomization check across the sample for our three vignettes. We found no significant differences in the sample characteristics between the vignettes (see Appendix 10.4).

³ We measured the realism similar to study 1 ("How realistic was the described situation?"; anchors ranging from 1 [*not realistic at all*] to 7 [*very realistic*]; $M = 5.15$; "How well were you able to put yourself into the described situation?"; anchors ranging from 1 [*very poor*] to 7 [*very well*]; $M = 5.69$; "Hands on your heart, how carefully did you read the scenario?"; scale between 1 [*not very carefully*] and 7 [*very carefully*]; $M = 6.33$). This implies that our participants indeed confirmed that (1) the described situation was realistic and (2) they were well able to put themselves into the described situation. The ANOVA between the realism items and our vignettes show no statistical significant difference, $F(2,1305) = 0.77, p = .46$.

5.4 Results

The statistical analysis mirrored that of study 1. Robust standard errors were evaluated to address potential heteroscedasticity concerns, and the VIF was examined to detect any possible multicollinearity issues. As in study 1, all VIF values remained well below the recommended threshold values (i.e., < 5 ; Cohen et al., 2002), indicating the absence of significant multicollinearity. In addition, we performed several procedures to enhance the clarity of randomizations and avoid potential bias commonly caused by social desirability, willingness to take risks, investment experience years, age, and gender (Podsakoff et al., 2012). Overall, no significant effects of these influential factors were observed in our analysis.

Table 5 reports the descriptive statistics, including our variables' means, standard deviations, and correlations.

Similar to study 1, the subsequent investments made after a failure were significantly lower than the initial investments across all participants ($M = -439.97, SD = 643.52, t(307) = -12.00, p < 0.001$). To examine our H1 and H2, which investigated whether prior crowdfunding or no prior crowdfunding experience leads to different reactions to failure signals, we ran an OLS and a moderation analysis using OLS. The results revealed that prior crowdfunding experience significantly influences how crowd investors react to investment failure ($b = 143.31, p = 0.03$). Hence, experienced crowd investors allocate significantly more money after encountering failure than inexperienced crowd investors. Thus, H1 can be supported.

Furthermore, we examined H2a and H2b, which investigated whether the interaction between the crowdfunding experience and the sustainable campaigns predicts subsequent investment after failure. Table 6 presents the findings of the moderation analysis, and Fig. 2 visualizes the effects. The results indicated that an environmental campaign significantly moderated the effect between the crowdfunding experience and subsequent investment after failure ($b = -548.60, p < 0.001$). However, no significant moderation was found between a social campaign, the crowdfunding experience, and subsequent investment after the failure signal ($b = -244.53, p = 0.12$). Thus, we find support for H2a and reject H2b.

5.5 Conclusion study 2

In this second study, we observed similar effects to those found in study 1. Our findings reveal that

Table 5 Means, standard deviations, and correlations (study 2)

		<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1	Initial investment allocation	1067.14	849.00							
2	Subsequent investment after investment failure	627.18	725.27	.68**						
3	Crowdfunding experience	.35	.48	-.08	.04					
4	Investment experience years	6.01	5.80	.07	.06	.06				
5	Gender crowd investor	1.69	.46	-.14*	-.11	.03	.13*			
6	Age crowd investor	34.80	8.76	.10	.02	.02	.54**	.02		
7	Social desirability	1.46	.29	.00	.04	.00	.01	-.04	-.03	
8	Willingness to take risks	4.14	1.22	.05	.00	.08	.03	.26**	-.05	-.12*

N = 308; gender: female = 1, male = 2, investment experience in years, social desirability: yes = 1, no = 2

***p* < .01

**p* < .05

different types of investors process failure signals and the combination of failure and environmental signals in distinct ways. Notably, experienced crowd investors are inclined to invest significantly more after encountering failure signals than inexperienced crowd investors. This suggests that experienced crowd investors generally exhibit a higher tolerance for failure and a more optimistic outlook for future investments.

When analyzing the impact of a failure signal following an environmental signal, we identified divergent investment behaviors between experienced and inexperienced crowd investors. After a failure, experienced crowd investors tend to substantially decrease their investments in environmental campaigns, whereas they maintain higher investment levels in commercial campaigns. In contrast, inexperienced crowd investors demonstrate increased investment in environmental campaigns after failure.

6 Post hoc survey

Our two experimental studies demonstrated that prior experience shapes how failure signals are interpreted and influences behavior accordingly. This variation suggests that different types of crowd investors exhibit distinct behavioral patterns. To further understand the psychological underpinnings of these differences, particularly the specific traits of these investor types, we conducted a third study—a survey focusing on personal values (e.g., Tenner & Hörisch, 2021). This aspect is critical as previous research highlights the significance of personal characteristics such as

motivation and values in interpreting signals (e.g., Bafera & Kleinert, 2023). The third study is essential to deepen our understanding of these influences and to elucidate how they may contribute to the varied responses observed in crowdlending contexts.

6.1 Sample

To measure differences in characteristics, such as personal values between experienced and inexperienced crowd investors, we surveyed a sample of 204 participants (who had not participated in the previous study) via Prolific. The sample included 101 participants with crowdfunding experience and 103 without crowdfunding experience but with nonprofessional investment experience (e.g., stocks). Descriptive sample characteristics are reported in Table 2.

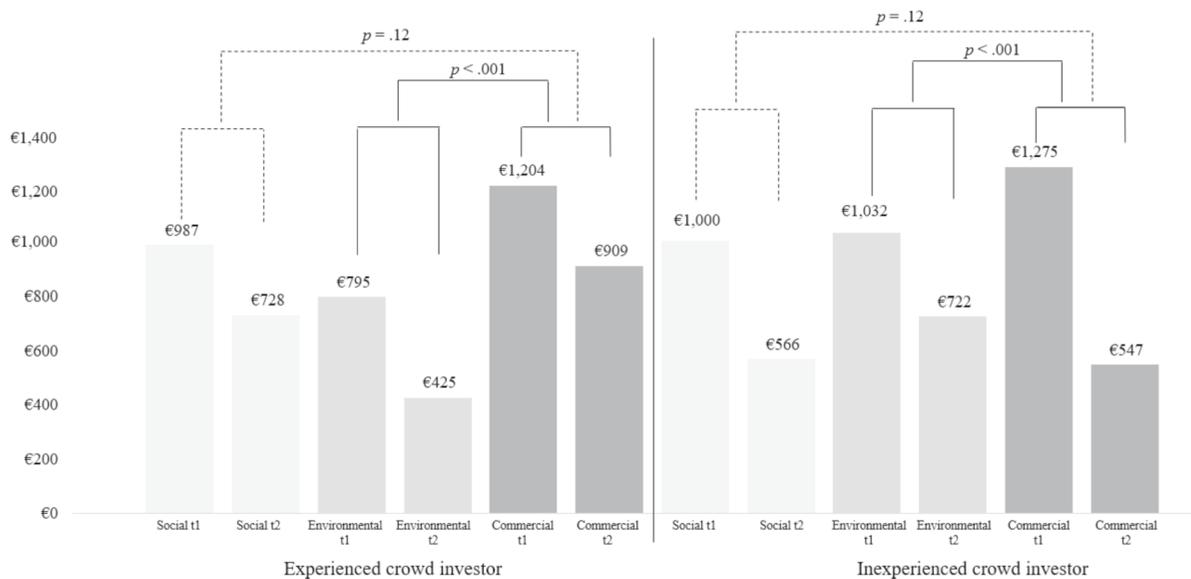
6.2 Measures

We used the Portrait Values Questionnaire (PVQ) to capture personal values, focusing on self-transcendence (universalism (biospheric) and benevolence) and self-enhancement (power and achievement) values following prior studies in the crowdfunding context (Dinh & Wehner, 2022; Tenner & Hörisch, 2021). The PVQ is based on Schwartz's basic human value theory (Schwartz, 2003). The PVQ employed concise descriptions of fictional individuals to capture participants' personal values implicitly. Subsequently, participants

Table 6 Regression coefficients, standard errors, and model summary after failure (study 2)

Variable	Model 1			Model 2			Model 3				
	<i>b</i>	<i>SE</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>p</i>		
Controls											
Initial investment allocation	.59	(.04)	<.001	.60	(.04)	.70	<.001	.59	(.04)	.70	<.001
Gender	-4.04	(70.03)	.00	-5.01	(69.90)	.00	.94	10.12	(68.85)	.01	.88
Age	-5.97	(4.17)	.07	-6.09	(4.17)	.07	.15	-5.28	(4.10)	-.06	.20
Investment experience years	6.05	(6.34)	.05	6.20	(6.33)	.05	.33	6.66	(6.23)	.05	.29
Social desirability	78.73	(104.55)	.03	75.39	(104.95)	.03	.47	84.61	(103.25)	.03	.41
Willingness to take risks	-25.65	(26.30)	.04	-26.27	(26.26)	.04	.32	-29.16	(25.85)	-.05	.26
Main effects											
Crowdfunding experience	143.31	(64.22)	.09	135.80	(64.28)	.09	.04	412.89	(114.59)	.27	<.001
Environmental				116.00	(75.58)	.08	.13	304.01	(91.58)	.20	<.001
Social				115.39	(75.20)	.08	.13	183.42	(89.70)	.12	.04
Interaction terms											
Environmental x Crowdfunding experience								-548.60	(156.16)	-.26	<.001
Social x Crowdfunding experience								-244.53	(156.85)	-.11	.12
Constant	118.10		.66	45.12		.86		-87.37		.74	
<i>R</i> ²		.46			.46				.48		

N = 308; *b*, unstandardized effect; *SE*, standard error; *β*, standardized effect; *DV*, dependent variable; reference category is inexperienced crowd investor = 0 and commercial campaign = 0; *Social*, social campaign; *Environmental*, environmental campaign; gender: female = 1, male = 2



Note. Experienced crowd investor $n = 108$, social $n = 37$, environmental $n = 41$, commercial $n = 30$, inexperienced crowd investor $n = 200$, social $n = 67$, environmental $n = 62$, commercial $n = 72$, t1 = initial investment, t2 = subsequent investment after encountering failure; dashed comparisons are non-significant

Fig. 2 Mean of investment before and after failure signals depending on crowdfunding experience (study 2)

were asked to rate the extent to which the described person resembled themselves on a Likert scale ranging from 1 (*not resembling me at all*) to 7 (*strongly resembling me*). Cronbach's alphas for self-transcendence and self-enhancement values were 0.73 and 0.77, respectively.

6.3 Results

A one-way analysis of variance (ANOVA) revealed significant differences in self-transcendence values between experienced ($M = 5.57$, $SD = 0.80$) and inexperienced crowd investors ($M = 5.32$, $SD = 0.93$), $F(1,202) = 3.98$, $p = 0.04$. A further ANOVA regarding the subcategory of biospheric value within the self-transcendence values shows a significant difference between experienced ($M = 5.70$, $SD = 1.20$) and inexperienced crowd investors ($M = 5.11$, $SD = 1.32$), $F(1,202) = 11.34$, $p < 0.001$. No significant difference was found for self-enhancement values between experienced ($M = 4.26$, $SD = 1.28$) and inexperienced crowd investors ($M = 4.30$, $SD = 1.20$), $F(1,202) = 0.04$, $p = 0.83$.

7 Overall discussion

This article aimed to explore how failure signals affect investment behavior among different crowd investors and shed light on the context of sustainable campaigns. In particular, our findings deepen our understanding of how prior funding experience changes the effect of negative signals on crowd investors and may explain why investors show divergence in their future investment behavior (Huang et al., 2022; Roccapriore et al., 2021; Rossi et al., 2023). As hypothesized, both studies revealed that experienced crowd investors react differently to a failure signal than inexperienced crowd investors. First, experienced crowd investors invest significantly more after encountering failure signals than inexperienced crowd investors. Second, we found that experienced crowd investors, compared to inexperienced crowd investors, react more negatively to the failure of environmental compared to commercial campaigns. We do not find a significant effect in comparison to a social campaign. Thus, for environmental campaigns, crowd investors'

experience seems to reverse their reaction to failure compared to inexperienced crowd investors. Furthermore, our post hoc analyses show that experienced crowd investors significantly differ in their personal values, which may provide a tentative explanation for distinct reactions compared to inexperienced investors. These results allow us to derive several theoretical and practical implications.

7.1 Theoretical implications

First, our research contributes to the growing literature that examines the different failure perspectives in entrepreneurial finance (e.g., Dorfleitner et al., 2023; Huang et al., 2022; Kgoroadira et al., 2019; Roccapiore et al., 2021) by adding a perspective concerning the impact of investment failure on investors' decisions. Elucidating the impact of investment failure on investors' decisions is our contribution to the recent, growing literature examining the different failure perspectives, for instance, crowdfunding platforms' reactions (Kleinert et al., 2022), entrepreneurs' coping mechanisms (Gottschalk & Mueller, 2022; Piening et al., 2021; Rossi et al., 2023), and venture capital, early-stage, or crowd investors' reactions to prior entrepreneurial failures (Huang et al., 2022; Roccapiore et al., 2021; Souakri et al., 2023). We explore the post-funding phase, specifically how crowd investors respond to failure signals after successfully funded campaigns.

Our research reveals that a failure signal determines future investors' decision-making. This finding is of particular importance given the recurring involvement of investors and entrepreneurs in the crowdfunding landscape (Andersen et al., 2019; Lee & Chiravuri, 2019), underscoring the role of previous experience in influencing future investment decisions and, consequently, in securing funding for entrepreneurial ventures. Contrasting with studies that found crowd investors (Huang et al., 2022) or venture capital investors (Souakri et al., 2023) positively evaluating prior entrepreneurial failure, our research identifies a negative impact of failure: crowd investors tend to decrease their future investments following investment failure. While prior studies highlighted that previous failures could enhance an entrepreneur's appeal by demonstrating resilience and learning (e.g., Souakri et al., 2023; Zunino et al., 2022), our findings indicate a different reaction to investment failure. This discrepancy

underscores the importance of distinguishing between two distinct failure perspectives: prior entrepreneurial and investment failure. The former refers to an entrepreneur's past unsuccessful ventures (e.g., Czakon et al., 2024), which might be seen positively as valuable learning experiences contributing to an entrepreneur's growth and capability. In contrast, investment failure involves financial losses incurred by crowd investors, typically leading to increased caution and risk aversion (Dorfleitner et al., 2023; Roccapiore et al., 2021). These contrasting perceptions necessitate a nuanced understanding of how different types of failure signals are viewed by crowd investors, as each type can influence future funding decisions in unique ways.

Second, we contribute to the crowdfunding debate by offering a granular differentiation between differing types of crowd investors rather than considering them as a homogenous group (Bapna & Ganco, 2021; Battisti et al., 2024). This adds to previous work that considers crowd investors uniform (e.g., Davis et al., 2017; Dinh & Wehner, 2022). Hence, we addressed the research call by Cummings et al. (2020) and Mochkabadi and Volkmann (2020) to investigate the behavior of different crowd investors. In equity crowdfunding, recent research has started investigating investor types, such as professional, angel-like investors or family and friends within crowdfunding and their behavior, mainly regarding successful campaigns (e.g., Bapna & Ganco, 2021; Battisti et al., 2024; Hornuf et al., 2020; Olsson, 2020). In a broader sense and originating from the management field (Hambrick & Mason, 1984), our findings relate to March and Simon's (1958) notion about the cognitive processes of decision makers. Decision makers are endowed with a cognitive base that filters and evaluates external stimuli (e.g., signals). The cognitive base includes previous knowledge (i.e., experience), which allows for assumptions about future events, alternatives, and the consequences of these alternatives. Transferred to the crowdfunding context, experienced crowd investors might filter and evaluate failure signals based on their knowledge of previous (un)successful crowd investments, leading to a more nuanced understanding of their investments' risks and future gains. In general, our results indicate that young ventures could benefit from experienced crowd investors because they seem to accept failure as part of the process and are more likely to invest in young ventures even if they experienced an investment failure before. Their experience might imply that some new ventures

will fail, but others will strive, so experienced crowd investors might have learned from past investments that at some point, the investment will just fail, but there will also be gains with other investments. Thus, crowd investors' experience might buffer the negative signal of failure and might not be viewed as a downside.

Third, we uncover a reversed effect in the sustainability context, as experienced crowd investors respond more negatively to environmental than commercial failures. While previous studies in the sustainable entrepreneurship literature underlined the positive effects of sustainable signals on funders' perceptions and crowdfunding success (Allison et al., 2015; Nielsen & Binder, 2021; Wehnert et al., 2019), our study introduces a contrasting perspective by highlighting that environmental signals in a failure context can produce adverse effects on crowd investors' behavior. The variations among experienced crowd investors' behavior seem surprising, as experienced crowd investors are typically aware that failure is an inherent aspect of the process, particularly in crowd-lending (Vanacker et al., 2019).

However, experienced crowd investors perceive failure in commercial campaigns as a natural and constructive part of the entrepreneurial journey and their investment portfolio. In contrast, they view failure in environmental campaigns more negatively. Their heightened adverse reaction to environmental and failure signals suggests a more profound concern for the environment, as reflected in their higher biospheric values and a greater emotional involvement (e.g., Conte et al., 2023a). Hence, when negative sustainable signals occur, such as failing to achieve sustainable impact, individuals with strong self-transcendence and biospheric values, such as experienced crowd investors, react more negatively due to perceiving these failures as threats to their core environmental beliefs (e.g., Conte et al., 2023a). Through the emotional attachment to their investments in sustainable campaigns (Moysidou & Spaeth, 2016), experienced crowd investors may perceive losses of environmental campaigns as more substantial, especially when they occur across multiple fronts—financial return on investment and sustainable value. Hornuf et al. (2021) identified similar patterns, noting that crowd investors in equity crowdfunding are more sensitive to failures in environmental campaigns, tending to penalize these campaigns more harshly by reducing future funding. Experienced

crowd investors' reactions may also be intensified by the opaque nature of crowd-lending platforms, which can obscure specific details about the progress and realization of environmental benefits in sustainable projects (Hörisch, 2019). This lack of transparency may heighten their emotional responses, significantly affecting their future investment decisions. Concerning social campaigns, crowd investors did not show significantly different reactions. This implies that environmental and social campaigns may provoke different reactions, necessitating a precise differentiation between social and environmental campaigns (e.g., Siebeneicher & Bock, 2022).

Moreover, our study refines signaling theory in sustainable entrepreneurship (e.g., Allison et al., 2015; Butticiè et al., 2017; Calic & Mosakowski, 2016; Nielsen & Binder, 2021) by highlighting how experienced and inexperienced crowd investors interpret conflicting environmental and failure signals differently. Our study results diverge from previous research. For instance, Wehnert et al. (2019) observed positive complementary effects of signals related to prior crowdfunding success and environmental factors on funders' perceptions. Similarly, Allison et al. (2015) and Nielsen and Binder (2021) reported that environmental signals alone positively influence crowdfunding success. In contrast, our findings revealed that environmental signals have negative combined effects when paired with failure signals, altering the investment behavior of experienced crowd investors. Hence, we demonstrate that signals are not interpreted in isolation but in combination, where one signal conflicts (e.g., failure signals) with another (e.g., environmental signals) can significantly reshape the perception of another. Hence, we demonstrate how conflicting signals can have negative effects. This finding contrasts with prior research, such as Huang et al. (2022), which suggests that conflicting signals, such as combining failure and success experiences, can be beneficial by signaling opportunities for learning and credibility. By integrating crowd investors' characteristics, particularly their experience level, we show that various individuals interpret conflicting signals differently, leading to diverse behavioral outcomes. This underscores the complex interplay between different conflicting signals, suggesting that the interpretation of those signals is not fixed but contingent on their combination and the investors' characteristics.

7.2 Practical implications

Our study offers insights into the behavior of different types of crowd investors after encountering failure signals, providing practical implications for entrepreneurs and crowdlending platforms. Understanding the distinct behavior of different investor types is crucial in managing expectations and building a supportive community around their ventures (Vogeley et al., 2023). Entrepreneurs should recognize that investors on crowdlending platforms process signals differently based on their distinct values and characteristics. Being aware of these differences is crucial when designing and launching campaigns. For example, entrepreneurs should be attentive to signs that indicate repeat investments from crowd investors, such as reviews, comments, or active participation in the community. Identifying crowd investors who consistently engage in crowdlending platforms can be crucial, as these experienced investors are more likely to support new projects despite previous failures. However, while our results fostering crowdfunding experience and engaging experienced crowd investors are generally beneficial, there is a particular need for specialized support and education in the area of sustainability. In this sector, there seem to be different mechanisms, such as emotions, that can influence crowd investor behavior and decision-making processes. For example, crowdlending platforms could enhance transparency regarding the progress and outcomes of environmental projects. By providing detailed and frequent updates, platforms can mitigate the opacity that exacerbates negative reactions among experienced investors to project failures. Additionally, platforms could enhance their educational initiatives targeted at experienced crowd investors by focusing on the nuances of sustainability. These programs should clarify the risks of such investments while integrating effective communication strategies that underscore environmental projects' long-term benefits and impacts. Such initiatives may help mitigate negative effects after failures and maintain ongoing investor interest and support.

7.3 Limitations and future research implications

As with every other study, our experiments are not without limitations due to our chosen materials, methods, and sample, which point to potential directions for future research (Simons et al.,

2017). First, our vignettes offer a suitable way to study real-life behavior and possess good predictive power for real behavior. However, experimental designs may yield minor effects due to their simplification but uncover meaningful causal relationships among variables (e.g., Podsakoff & Podsakoff, 2019; Taylor, 2006). While aiming to replicate a realistic crowdlending campaign, we can only simulate certain attributes of the genuine lending campaign. It is essential to recognize that investments in crowdlending are intricate, dependent on the interplay of various project attributes, including elements such as images and videos, which collectively shape and influence the behavior of crowd investors (e.g., Parhankangas & Renko, 2017). Hence, future research should explore how crowd investors make decisions in projects with diverse attributes to address these limitations. Moreover, we focused on the crowdlending context, positioned between traditional funding methods like venture capital and lower-risk models such as rewards-based crowdfunding (e.g., Bapna & Ganco, 2021), which may provide insights that bridge these funding methods. While venture capital investors are typically more experienced (e.g., Kim & Viswanathan, 2019) and already face uncertainty with sustainable ventures (Bocken, 2015), there remains a gap in understanding how experienced venture capital investors react to signals of failure and sustainability. We encourage future research to examine these dynamics, as this could extend our findings and address potential disadvantages sustainable ventures face. Moreover, in lower-stakes contexts like reward-based crowdfunding, investors generally behave more like consumers, with more newcomers and fewer experienced investors (Chan & Parhankangas, 2017). Hence, those inexperienced investors in low-stakes settings may parallel the tendencies of inexperienced crowd investors in our study. However, we encourage future studies to investigate our findings within different crowdfunding types.

Second, our study relies on decisions made with fictional monetary amounts, potentially leading to different effects than studies using real money and actual platform data. Future research could benefit from merging the strengths of experimental design with actual platform data to test external validity and offer a comprehensive perspective on the behavior of

crowd investors. Third, it is essential to emphasize that we did not include a specific causal attribution for investment failure in our manipulation of failure. Although our reality checks revealed that participants categorized investment failure as realistic, it is important to acknowledge that the lack of a defined cause could be a limitation because different causes of failure may lead to different reactions (e.g., Nutt, 1999). Hence, future research should investigate the influences of different reasons for failure, as they may shape subsequent investment decisions.

Fourth, while our experimental design condenses the timeline of investment decisions to fit the lab setting, this might impact the study's external validity. However, the immediate feedback in this controlled environment may amplify participants' emotional and cognitive responses to failure. Although the proximity of events intensifies these reactions, they still offer valuable insights into underlying behavioral tendencies that align with those observed over more extended periods in real-world scenarios (e.g., Kahneman & Tversky, 1979; Shefrin & Statman, 1985). Thus, the core findings regarding investor behavior after failure remain relevant and informative even with the condensed timeline.

Fifth, while our chosen between-subject design is valuable for comparing behaviors and reactions (Aguinis & Bradley, 2014), it is essential to recognize the potential relevance of a within-subject design. In real life, individuals often can choose from a set of options (Charness et al., 2012), akin to the scenarios seen in crowdlending investments. Consequently, investors' responses to failure may vary depending on whether their personally selected option failed. However, it is worth noting that our between-subject design holds significant value because it provides the relevant advantage of a randomized sample occurring before the experience of failure. Lastly, concerning our sample, we specifically chose a German context, which can be seen as representative of other European countries (Hörisch & Tenner, 2020). However, our findings may not be readily applicable beyond this European context due to distinct institutional factors that significantly influence individual reactions (Schwartz, 1994), reactions to failure (Lewis et al., 2010), and preferences for sustainable values, which can vary among national cultures (Bento et al., 2019). To enhance the reliability of our results and gain

deeper insights, it would be beneficial to engage in cross-continental studies (Hörisch & Tenner, 2020).

8 Conclusion

Our study sheds light on how crowd investors react to failure signals in the context of sustainable campaigns and how their reactions depend on their prior experience. We found that experienced investors generally invest significantly more after failures but are more sensitive and less willing to invest in environmental campaigns that do not achieve their goals. This reaction may stem from heightened emotional responses, as distinct values come into play alongside the double loss phenomenon—highlighting the unique expectations associated with environmental campaigns. These insights point to the need for tailored crowdfunding strategies that account for investors' specific experiences and values.

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Data Availability Data is made available upon reasonable request.

Declarations

Conflict of interest The authors declare no competing interests.

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Appendix 1. Study 1

Hypothetical scenario initial investment

You have a well-paid job and already invest a fixed percentage of your income in the financial market.

You recently read an article about crowdfunding and now want to invest in projects of young ventures via a crowdfunding platform. Crowdfunding allows you, as a private investor, to support young ventures while earning an attractive financial return.

Crowdfunding aims to aggregate capital via the internet for the implementation of projects by young ventures. Projects are financed by a large number of investors through small loans at fixed interest rates.

On the crowdfunding platform INVESTIA, you can read the project description of a young venture seeking seed capital. The project presented offers a financial return of 7%. If the project is successful, you will receive a return on your investment, including the return, over the project's duration of two years. If the project is not successful, you may lose all or part of your investment.

Vignette social campaign

The young venture SOCIALY is building a digital platform to integrate refugees into the German labor market.

Through an app, refugees can access relevant expertise and learning content to start a career in the German labor market. In this way, SOCIALY helps refugees to build a new life for themselves and at the same time helps other companies to benefit from diversity in the labor market. SOCIALY plans to generate revenue from the use of the platform by companies, which will be used to repay the investment.

The integration of refugees into the labor market is a key goal for the young venture and its activities. SOCIALY plans to provide 6000 refugees with a career in the German labor market each year.

The project presented offers a return on investment of 7%.

The project is located in an industry with high growth potential and high profit margins. Assume that the business plan looks good.

Vignette environmental campaign

The young venture ECOLY is building a digital platform for the rental of reusable containers for takeaway food from restaurants in Germany.

Through an app, consumers can rent reusable containers from partner restaurants for free and return them to all participating restaurants within 14 days. In this way, ECOLY aims to significantly reduce waste from disposable packaging and thus counteract the waste of resources. Through the use of reusable containers, ECOLY plans to generate revenue from the restaurants, which will be used to repay the investment.

Reducing CO₂ emissions is a central goal of the young venture and its activities. ECOLY plans to save approximately 6000 tons of CO₂ emissions per year.

The project presented offers a 7% return on investment.

The project is located in an industry with high growth potential and high profit margins. Assume that the business plan looks good.

Vignette commercial campaign

The young venture FINLY is building a digital platform for providing financial advice to investors in Germany.

Through an app, investors can access expert knowledge and coaching to create a personal financial plan. In this way, FINLY aims to provide modern access to the financial market and automated investments. FINLY plans to generate revenue from investments made in the app and through partner companies, which it will use to repay the amount invested.

Increasing the company's revenue is a central goal of the young venture and its activities. FINLY plans to reach approximately 6000 customers annually.

The project presented offers a 7% return on investment.

The project is located in an industry with high growth potential and high profit margins. Assume that the business plan looks good.

Hypothetical scenario failure signal

After a while, you receive an email informing you of the status update of the project on the crowdfunding platform. You log in to your investor area and the project description appears again:

Dear Investor,

We would like to inform you that during the implementation of the project of the young venture

SOCIALY/ECOLY/FINLY, unforeseen problems arose, which ultimately led to the failure of the project. Therefore, we regret to inform you that the repayment of the investment has failed. This means that all investors have lost their investment and will not receive any return.

We regret this and remind you that this type of investment carries a risk of total loss. We would be pleased if you would continue to invest via the platform to support the ideas of young ventures.

Yours sincerely
Your Investia Team.

Randomization check (study 1)

Variable	Campaign	Experienced crowd investors				Inexperienced crowd investors			
		<i>M</i>	<i>SD</i>	<i>p</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>N</i>
Gender	Social	1.50	0.53	0.52	10	1.58	0.50	0.53	40
	Environmental	1.46	0.52		13	1.45	0.50		40
	Commercial	1.70	0.48		10	1.53	0.50		47
Age	Social	33.30	11.98	0.18	10	43.75	13.62	0.49	40
	Environmental	41.62	12.97		13	45.90	14.60		40
	Commercial	34.90	6.97		10	42.30	14.02		47
Investment experience years	Social	5.20	7.30	0.72	10	11.35	11.92	0.47	40
	Environmental	7.69	8.41		13	12.83	12.52		40
	Commercial	6.90	5.86		10	9.85	9.22		47
Willingness to take risks	Social	4.30	1.80	0.96	10	3.69	1.24	0.25	40
	Environmental	4.46	1.16		13	3.34	1.37		40
	Commercial	4.45	1.28		10	3.22	1.36		47
Social desirability	Social	1.30	0.26	0.95	10	1.34	0.26	0.39	40
	Environmental	1.31	0.27		13	1.41	0.24		40
	Commercial	1.27	0.22		10	1.34	0.24		47

N = 160; experienced crowd investor N = 33; inexperienced crowd investor N = 127; M, mean; SD, standard deviation; p, p-value

Appendix 2. Study 2

Vignette social campaign

Creating Jobs and Combating Poverty with Briquettes from Waste Recycling

Dear Investor,

Nairobi, like many other large cities, has a waste problem. The city produces approximately 800,000 tons of solid waste annually, of which only 50% is collected. The Kenyan company Sana pursues the strategy of creating jobs through waste recycling. The company collects 60 tons of organic waste daily and provides employment for local workers. The collected materials are converted into valuable new products, such as animal feed and organic fertilizer.

The forward-looking company now wants to finance a briquetting plant and process the collected biomass into biomass briquettes for energy production in an additional step. Through the implementation of this project, not only will around 100 new jobs be created, which can help combat poverty, but also the waste heat generated during the production of the briquettes will be used sensibly in the production of insect-based animal feed.

By participating in these early projects, you support a social concept in Kenya and receive a return of 7% over a period of 4 years in return. The acquisition of this investment is associated with significant risks and may result in the complete loss of the invested assets.

Investment Details:

- UN Development Goals
- Estimated number of jobs created: 100

– Duration: 4 years

1 No Poverty; 2 Zero Hunger; 12 Responsible Consumption and Production; 13 Climate Action; 15 Life on Land.

Vignette environmental campaign

Supporting the Circular Economy in Kenya with Briquettes from Organic Waste

Dear Investor,

Nairobi, like many other large cities, has a waste problem. The city produces approximately 800,000 tons of solid waste annually, of which only 50% is collected. The Kenyan company Sana aims for a zero-waste circular economy in Kenya and contributes every day to waste elimination, which would otherwise be disposed of illegally and untreated in nature. The company collects 60 tons of organic waste daily and converts it into new valuable products, such as animal feed and organic fertilizer.

The forward-looking company now wants to finance a briquetting plant and process the collected biomass into biomass briquettes for energy production in an additional step. In this way, a sustainable energy carrier is created, which serves as a substitute for fossil fuels such as coal, oil, and petroleum. Through the implementation of the project, approximately 6,000 tons of CO₂ are saved annually.

By participating in these early projects, you support a sustainable concept in Kenya and receive a return of 7% over a period of 4 years in return. The acquisition of this investment is associated with significant risks and may result in the complete loss of the invested assets.

Investment Details:

- 5 UN Development Goals
- 6,354 tons of CO₂ savings
- Duration: 4 years

6 Clean Water and Sanitation; 7 Affordable and Clean Energy; 12 Responsible Consumption and Production; 13 Climate Action; 15 Life on Land.

Vignette commercial campaign

Producing Affordable Energy with Briquettes from Waste Recycling

Dear Investor,

Nairobi, like many other large cities, has a waste problem. The city produces approximately 800,000 tons of solid waste annually, of which only 50% is collected. The Kenyan company Sana pursues the strategy of producing new products from waste. The company collects 60 tons of organic waste daily at a low cost and converts it into valuable new products, such as animal feed and organic fertilizer.

The forward-looking company now wants to finance a briquetting plant and process the collected biomass into biomass briquettes for energy production in an additional step. In this way, an affordable energy carrier is created, which serves as a substitute for energy from coal, oil, and petroleum.

By participating in these early projects, you support the company in processing the collected waste more efficiently and thereby producing energy at a lower cost. In return for your support, a return of 7% over a period of 4 years is offered. Investors who invest in the project within the first two weeks will additionally receive an early-bird bonus of 1%.

The acquisition of this investment is associated with significant risks and may result in the complete loss of the invested assets.

Investment Details and Economic Benefits:

- Expected return: 7% over 4 years
- +1% preliminary interest
- +1% early-bird bonus
- Duration: 4 years

Randomization check (study 2)

Variable	Campaign	Experienced crowd investors				Inexperienced crowd investors			
		<i>M</i>	<i>SD</i>	<i>p</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>N</i>
Gender	Social	1.70	0.46	0.40	37	1.69	0.47	0.98	67
	Environmental	1.78	0.42		41	1.68	0.47		62
	Commercial	1.63	0.49		30	1.69	0.47		71
Age	Social	35.24	6.38	0.68	37	35.39	10.10	0.38	67
	Environmental	35.61	7.63		41	33.29	7.63		62
	Commercial	34.07	8.65		30	35.17	10.07		71
Investment experience years	Social	5.97	4.79	0.65	37	5.90	5.51	0.67	67
	Environmental	7.17	6.64		41	5.23	5.68		62
	Commercial	6.17	6.64		30	6.07	5.83		71
Willingness to take risks	Social	4.12	1.21	0.62	37	4.05	1.19	0.83	67
	Environmental	4.33	1.24		41	4.14	1.23		62
	Commercial	4.38	1.07		30	4.01	1.31		71
Social desirability	Social	1.52	0.32	0.35	37	1.49	0.26	0.41	67
	Environmental	1.43	0.31		41	1.42	0.30		62
	Commercial	1.42	0.33		30	1.46	0.28		71

N = 308; experienced crowd investor *n* = 108; inexperienced crowd investor *n* = 200; *M* = mean; *SD*, standard deviation; *p*, *p*-value

Study Variables (Studies 1 and 2)

Variables	Item	Scale	Source
<i>Initial investment allocation</i>	How much of your €1000/€3000 would you like to invest in the start-up presented before through crowdlending?	Slider	E.g., Kanze et al., (2018); Shneor and Vik (2020)
<i>Subsequent investment after investment failure</i>	How much of your €1000/€3000 would you like to invest in start-ups like the one presented before through crowdlending?	Slider	E.g., Kanze et al., (2018); Shneor and Vik (2020)
<i>Crowdfunding experience</i>	Have you ever invested in campaigns via crowdfunding?	Yes/No	
<i>Age</i>	What is your age in years?	Open text	E.g., Tenner and Hörisch (2021)
<i>Gender</i>	Which gender do you feel you belong to?	Female, male, diverse, other	
<i>Investment experience years</i>	Approximately how many years of investment experience do you have?	Open text	E.g., Dinh and Wehner (2022); Penz et al., (2022)
<i>Social desirability</i>	Would you smile at people every time you meet them?	Yes/No	Haghighat (2007)
	Do you always practice what you preach to people?		
	If you say to people that you will do something, do you always keep your promise no matter how inconvenient it might be?		
	Would you ever lie to people?		

Variables	Item	Scale	Source
<i>Willingness to take risks</i>	Are you generally a person who is fully prepared to take risks or do you try to avoid taking risk? When thinking about investing and borrowing, are you a person who is fully prepared to take risk or do you try to avoid taking risk?	Likert scale 1–7	Menkhoff and Sakha (2016)

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